2009

Governmentality, Biopower, and the Debate over Genetic Enhancement

Ladelle McWhorter
University of Richmond, lmcwhort@richmond.edu

Recommended Citation

McWhorter, Ladelle. "Governmentality, Biopower, and the Debate Over Genetic Enhancement." *Journal of Medicine and Philosophy* 34, no. 4 (2009): 409-37. doi:10.1093/jmp/jhp031.

Journal of Medicine and Philosophy, 34: 409–437, 2009
doi:10.1093/jmp/jhp031
Advance Access publication on June 22, 2009

Governmentality, Biopower, and the Debate over Genetic Enhancement

LADELLE McWHORTER
University of Richmond, Richmond, Virginia, USA

Although Foucault adamantly refused to make moral pronouncements or dictate moral principles or political programs to his readers, his work offers a number of tools and concepts that can help us develop our own ethical views and practices. One of these tools is genealogical analysis, and one of these concepts is "biopower." Specifically, this essay seeks to demonstrate that Foucault's concept of biopower and his genealogical method are valuable as we consider moral questions raised by genetic enhancement technologies. First, it examines contemporary debate over the development, marketing, and application of such technologies, suggesting that what passes for ethical deliberation is often little more than political maneuvering in a field where stakes are very high and public perceptions will play a crucial role in decisions about which technologies will be funded or disallowed. It goes on to argue that genuine ethical deliberation on these issues requires some serious investigation of their historical context. Accordingly, then, it takes up the oft-heard charge from critics that genetic enhancement technologies are continuous with twentieth-century eugenic projects or will usher in a new age of eugenics. Foucault explicitly links twentieth-century eugenics with the rise of biopower. Through review of some aspects of the twentieth-century eugenics movement alongside some of the rhetoric and claims of enhancement's modern-day proponents, the essay shows ways in which deployment of genetic enhancement technologies is and is not continuous with earlier deployments of biopower.

Keywords: *biopower, eugenics, Foucault, genetic enhancement, governmentality*

Address correspondence to: Ladelle McWhorter, Department of Philosophy, University of Richmond, Richmond, Virginia, USA. E-mail: lmcwhort@richmond.edu

I. INTRODUCTION

Michel Foucault made no claims about the moral rightness or wrongness of altering human genomes or the human gene pool, but that silence does not bespeak a lack of knowledge of or interest in the science of genetics or its applications. Through his research for *Birth of the Clinic* and *The Order of Things*, Foucault was well versed in the history of both medicine and biology. As part of his candidacy presentation for his position at the Collège de France, he proposed a course on the knowledge of heredity in the nineteenth century "starting from breeding techniques, on through attempts to improve species, experiments with intensive cultivation, efforts to combat animal and plant epidemics, and culminating in the establishment of a genetics whose birth date can be placed at the beginning of the twentieth century" (Foucault, 1997b, 7). As the course description goes on to make clear, what captured Foucault's interest was this early knowledge's rise to epistemic credibility, its ascent toward the status of truth, not its ethical entanglements and implications. But he cannot have been oblivious to them, especially as he turned his attention over the next 8 or 9 years to disciplinary normalization and then to sexuality and biopower. His reticence was not a product of ignorance or neglect but of his own ethical principles. Foucault repeatedly refused to set an ethical agenda for anyone but himself. "People have to build their own ethics," he declared (Foucault, 1997a, 132). Intellectuals and experts may provide information and analyses that serve as resources or "toolkits" for that project, but ultimately people have to exercise their freedom in the creation of their own *ethoi*.

It might seem odd, then, to examine the current debate over the morality of genetic enhancement from a Foucaultian perspective. Certainly any attempt to enter the discussion using Foucault's work as a foundation for making moral claims would be futile. But that is not the aim here. Instead, I intend to show, first, that what passes for ethical deliberation in the philosophical, bioethical, and scientific literature is for the most part not that; it is, rather, a verbal political struggle among sets of people, most of whom have already made up their minds on the ethical issues, who are attempting to position themselves to influence governmental decisions about scientific and medical practices. Second, I will use some of the genealogical tools that Foucault developed in his work on sexuality, biopower, and governmentality to situate this political struggle in a larger historical and political context, which I hope, in keeping with the spirit of Foucault's work, may be of some service in projects of ethical creativity.

II. FIRST, THE POLITICS OF DEBATE

The debate over genetic enhancement purports to be a deliberation about whether one should act in certain ways, such as (1) support (or, in the case of scientists, engage in) genetic research leading to the development of

enhancement technology (and if one is a clinician whether one should then facilitate its application), (2) vote for candidates for public office who would in turn vote for government funding for such research and technological development or at least refuse to ban it, and, perhaps, (3) offer oneself or one's progeny as test subjects. However, *deliberation* implies consideration of others' views, feelings, and worries, something notably missing from most writing on this subject. Instead of attempting to understand their interlocutors' concerns, parties to the debate typically engage those with varying perspectives not as partners in deliberation but as adversaries to be countered or, even, as oppressors to be denounced and resisted.

"What I fail to understand is how other people—or the federal government—could think it is just to prevent me from benefiting my future children," says University of Alabama at Birmingham School of Medicine professor Gregory Pence. "I see no difference between such a ban and a similar ban on parents sending their children to computer camps in the summer: both are intended to better children, both will be done most by people with money, and both are not the business of government" (Stock and Campbell, 2000, 113). Government interference with parental decisions to alter their embryos' genomes is a form of tyranny, Pence implies, and people who want the government to ban enhancement are would-be tyrants. Pence is not the only proponent of enhancement to see the situation that way. Bioethicist John Harris asserts that "the key idea of reproductive liberty is surely respect for autonomy and for the values which underlie the importance attached to procreation. These values see procreation and founding a family as involving the freedom to choose one's own lifestyle and express, through actions as well as through words, the deeply held beliefs and the morality which families share and seek to pass on to future generations" (Harris, 2007, 76). Unless we can demonstrate that great harm will result from parents opting to have their embryos genetically enhanced, Harris maintains, we cannot legitimately prevent their doing so. He insists, further, that all predictions of great harm are faulty or false. Therefore, those who seek to prohibit genetic enhancement pose a serious threat to political liberty.

The right to privacy in reproductive and family matters is not the only principle at stake, according to many advocates of enhancement; the First Amendment's guarantee of religious freedom is also in jeopardy. Many dismiss their opponents' ethical arguments out of hand with the claim that their views are based (ultimately if not always obviously) on religious belief—in other words that, in violation of the Constitution, opponents of genetic enhancement seek to impose their religion the rest of us.[1] Geneticist James Watson, codiscoverer of DNA's double helical structure and cofounder of the Human Genome Project, asserts that, if we can safely enhance people's intelligence, "we've got to go ahead and not worry whether we're going to offend some fundamentalist from Tulsa, Oklahoma" (Stock and Campbell, 2000, 80), presumably a reference to televangelist Oral Roberts and, by extension, the

right-wing political forces that have opposed abortion, *in vitro* fertilization, stem cell research, and numerous other medical and biological initiatives on religious grounds. Similarly, University of Connecticut School of Medicine professor James Hughes condemns opposition to genetic enhancement as nothing but "Luddite mysticism," by which he seems to mean a combination of irrational fear of technology and improper importation of religious tenets into the secular political realm (Stock and Campbell, 2000, 130). Whenever metaphysically inspired legal limits are placed on biological research and technological application, these and many other scientists and medical practitioners believe that injustice is being done. Their writings are attempts to expose that injustice and counter it—a project that leaves little room for seriously entertaining the concerns their opponents express.

Proponents of the freedom to enhance are not the only ones making charges of injustice, however. Many opponents of genetic engineering express fear that enhancement amounts to a resurgence of eugenics, a twentieth-century political movement that resulted in the incarceration and forced sterilization of tens of thousands of Americans, most of whom were poor and many of whom were recent immigrants or members of racial or ethnic minorities. In an article entitled "State-sponsored liberal eugenics has just begun," for example, C. Ben Mitchell and C. Christopher Hook (fellows of the Institute of Biotechnology and the Human Future) warn that "so-called enhancement is merely a desire to re-engineer the human person" (Mitchell and Hook, 2006), an assertion reinforced by proclamations from avowed eugenicists such as Glayde Whitney (whose work is underwritten by the infamous Pioneer Fund founded by twentieth-century scientific racist Wickliffe Draper[2]): "The first century or two of the new millennium will almost certainly be a golden age for eugenics. Through application of new genetic knowledge and reproductive technologies the Galtonian Revolution will come to fruition" (Whitney, 1999, 179). Appalled by such prospects, Mitchell and Hook (2006) go on to ask, "Have we learned none of the lessons of the older eugenic age? … How many will have to die in human re-design experiments …? Moreover, through genetic enhancement, we will inevitably create at least two genetic classes of people: the gene-enhanced and the rest of us. We have not even figured out how to solve access to healthcare for therapeutic and preventive goals. Injustice already abounds in our society. How do we hope even to begin a discussion about equal access to genetic modification for enhancement purposes?". In an essay entitled "Is a New Eugenics Afoot?" historian of science Allen Garland voices similar concerns:

> The early 20th-century eugenics movement was a product of a particular economic, social, and scientific context: a highly transitional period in American economic and industrial expansion, the advent of a new genetic paradigm, and the ideology of rational management by scientifically trained experts. As historian Sheila Weiss has emphasized, there was enough logic to the eugenic argument—saving the hard-pressed taxpayer the burden of supporting masses of supposedly defective

people—to give it popular appeal. For a segment of the biological community, it provided career opportunities that could be justified as the application of their science directly to the solution of social problems. For the wealthy benefactors that supported eugenics, such as the Carnegie, Rockefeller, Harriman, and Kellogg philanthropies, eugenics provided a means of social control in a period of unprecedented upheaval and violence. […]

I would argue that we are poised at the threshold of a similar period in our own history and are adopting a similar mind frame as our predecessors. […]

We seem to be increasingly unwilling to accept what we view as imperfection in ourselves and others. As health care costs skyrocket, we are coming to accept a bottom-line, cost-benefit analysis of human life. This mindset has serious implications for reproductive decisions. […] If eugenics means making reproductive decisions primarily on the basis of social cost, then we are well on that road (Garland, 2001, 61).

For many opponents of genetic enhancement, this discussion is not so much a moral deliberation as a political struggle against forces that they believe would compound economic inequality and oppression.

Regardless of which side one takes on these issues, it is clear that much is at stake—professional careers, billions of dollars in funding for research and potential profits, and millions of human (and not only human) lives. Perhaps, for many people something even more precious is at stake as well: their dreams, their visions, and their worldviews. Most participants in the debate seem to believe that something very crucial is about to be decided, something that once decided cannot be reversed, something far more than a course of research or a set of public policies, and something that will transform all of us, genetically or not. That may be one reason why there is a distinct streak of nastiness running through this literature, why it includes so many personal attacks[3] and denunciations, so much name-calling and incredulity in the face of others' concerns. This debate is a highly sensitive nodal point in an event that Foucault might call an emerging problematization. The issues it encompasses are likely to become more rather than less pressing in the near future, impinging upon our lives in a variety of ways. Thus, the controversy over genetic enhancement technologies demands some careful attention.

III. BUT IS IT REALLY EUGENICS?

Foucault often began his analyses of problematizations at the points within discourses where tensions seem to concentrate. One of those points in the enhancement controversy is the oft-repeated allegation that genetic enhancement amounts to or will usher in a new eugenics movement, a development that most parties to this discussion take to be undeniably bad or even horrific. Proponents of enhancement work hard to distinguish it from eugenics and to establish a stark moral contrast between the twentieth-century movement and

genetic technologies in the present day. Gregory Pence, for example, says he simply supports allowing parents as wide a range of reproductive choices as technologically possible. "This is not state-controlled eugenics (which attempted to take away such choices from parents), but its opposite," he insists. "If a child can be given an extra decade of life by an artificial chromosome, or 50 percent more memory through a therapy in utero, then I personally would feel *obligated* to give my future child such benefits" (Stock and Campbell, 2000, 113).

Although Pence's sense of obligation is not widely shared, his strategy for differentiating his view from eugenics is. In a survey of British professionals, Kerr, Cunningham-Burley, and Amos (1998) found five strategies, which they refer to as "rhetorical boundaries," that genetic researchers and clinicians use to distinguish their practices from eugenics: (1) Eugenics was pseudoscience. (2) The kinds of eugenic human engineering that lay people fear are not technically feasible or realistic; scientists cannot really design and produce people from scratch. (3) Eugenics involved coercive reproductive policies in totalitarian regimes, whereas contemporary selection decisions are made by private individuals and families. (4) Even in the eugenic past, geneticists were not at fault; their work was simply appropriated and abused by eugenicists. And (5) eugenic policies of the past focused on altering the human gene pool or some nationally or racially defined subset thereof, whereas the focus of human genetics now is on addressing individuals' conditions. Although those interviewed in the Kerr study were not necessarily advocates for genetic alteration beyond therapeutic intervention, variations on the rhetorical strategies they use recur in the enhancement literature.[4] Enhancement advocates typically emphasize individual freedom of choice as opposed to state coercion and the absence of nationalistic or racist goals as the impetus for germ-line improvement. Genetic enhancement is not eugenics, most advocates claim, as long as alteration is voluntary and the aim is not the creation of a master race. Eugenics is not part of genetic enhancement's agenda or genealogy.

Critics are not pacified by these assertions. They counter that such arguments misrepresent either the twentieth-century eugenics movement or the twenty-first-century technological and political situation, or both; the two are not nearly as dissimilar as proponents of enhancement would have us think. In fact, many twentieth-century advocates of eugenics were practicing scientists, and some (including Joshua Lederberg, Francis Crick, Edward Tatum, and Theodosius Dobzhansky[5]) were practicing geneticists. Eugenics and genetics overlapped significantly from the 1910s well into the 1930s and to some extent even into the 1950s and 1960s; it is simply false to dismiss eugenics as a pseudoscientific movement. Furthermore, the aims of eugenic policies and programs were multiple and included relieving suffering and reducing taxes; they were not exclusively focused on racist ascendency. Eugenics was widely accepted and implemented not only in totalitarian states

such as Nazi Germany but also in liberal democracies such as the United States and Great Britain. Nor is it the case, as Kerr et al. (1998, 193) point out, that twenty-first-century genetics practitioners focus exclusively on alteration of the individual rather than of the human gene pool and the course of human evolution.

It is true that race plays a much smaller role in this new technological movement than it did in the old eugenics movement. In the past, there were some prominent groups that called for extermination of entire races of people. But it is not true that the old movement was all about race. In fact, its central focus was not races but rather classes of people whose physical or behavioral characteristics made them "unfit" for modern life or "socially inadequate." Extremists wanted to bring about extermination of these people's germ lines through "euthanasia,"[6] but the vast majority of eugenics' adherents favored nonlethal means. In 1922, Cold Spring Harbor's Eugenics Record Office director Harry Laughlin drafted a Model Eugenical Sterilization Law—"an act to prevent the procreation of persons socially inadequate from defective inheritance"—wherein a "socially inadequate person" was defined as "one who by his or her own effort, regardless of etiology or prognosis, fails chronically in comparison to normal persons, to maintain himself or herself as a useful member of the organized social life of the state." Socially inadequate classes of people included:

> (1) Feeble-minded; (2) Insane, (including the psychopathic); (3) Criminalistic (including the delinquent and wayward); (4) Epileptic; (5) Inebriate (including drug-habitués); (6) Diseased (including the tuberculous, the syphilitic, the leprous, and others with chronic, infectious and legally segregable diseases); (7) Blind (including those with seriously impaired vision); (8) Deaf (including those with seriously impaired hearing); (9) Deformed (including the crippled); and (10) Dependent (including orphans, ne'er-do-wells, the homeless, tramps and paupers) (Laughlin, 1922, 446–7).

Nowhere does the model law mention race. But it is worth noting that in the aftermath of military IQ testing during World War I, it was commonly held that close to 90% of African Americans were feeble minded, and published studies of immigrants tested at Ellis Island suggested that the majority of Southern and Eastern Europeans were moronic if not imbecilic. Also of note is the fact that homosexuality in both men and women was officially defined as a form of psychopathic delusion. If completely enacted and enforced, therefore, Laughlin's model law would have sterilized all lesbians, gay men, and bisexuals (a measure which may or may not have had any effect on the number of homosexuals in subsequent generations) and would have eliminated most of the African American population within a few decades, along with many of the newer American immigrant groups such as Italians, Russians, Poles, and Croatians who were thought to suffer disproportionately not only from feeblemindedness but also from alcoholism and insanity. Laughlin's model served as a guide for the men who drafted state

sterilization laws in the 1920s and 1930s, as well as those who designed the eugenic sterilization program in Nazi Germany.[7] Despite the absence of racial categories in the law, there is no question that heterosexism, racism, anti-Semitism, and a generalized xenophobia and ethnocentrism permeated much of the old eugenics movement.

Still, even if application and enforcement of this and similar laws and policies were racist, ethnocentric, and homophobic, the arguments advanced to justify eugenic sterilization and other reproductive restrictions were seldom so. As already noted, proponents emphasized the economic savings that reduction in "dependent" populations would bring, a major selling point for legislators and taxpayers. And they argued for the evolutionary importance of offsetting the humane but unnatural consequences of modern medicine, which enabled people who otherwise would have died of their genetic weaknesses to live beyond puberty. "Until medical science improved social, public health and sanitary conditions, nature's survival of the fittest defended the human race against the dangers of degeneracy," declared William Partlow, superintendent of Alabama's state home for the mentally retarded, in 1936; however, now that "the weak are preserved as well as the strong, if we are to continue as a virile, upstanding race in body and mind, eugenics demands its share of study and attention …" (Partlow, 1936, 12). By midcentury, American Eugenics Society president Frederick Osborn warned that a 97% rate of survival to the thirtieth year, which allowed almost everyone to live long enough to reproduce, could have devastating consequences. "This is more than relaxed selection," he emphasized. "It represents a drastic diminishing in the rate of natural selection, tragic because it points to an increase in the proportion of people born to much suffering" (Osborn, 1968, 70). The only way to prevent devolution was eugenics.

But to characterize twentieth-century eugenics as nothing more than a means of heading off economic and biological disaster is to do a great injustice to its proponents' vision. Once free of responsibility to provide for people unable to provide for themselves, the healthier and more intelligent members of the species would have more children. As a result, the standard measure of normality would be revised upward. If the bottom 10% of each generation were sterilized or otherwise prevented from procreating—as officials such as Harry Laughlin advocated[8]—over time, humanity would evolve into a far more intelligent, moral, disease-resistant, strong, productive, beautiful species. "We possess the power if we will, deliberately and consciously to create a new race, to mould the world of the future," Havelock Ellis wrote in 1911. With careful control over reproduction, one day the human race as a whole could be stronger, healthier, more intelligent, more talented, and of better moral and civic character than even the most successful and well-respected individuals presently alive. That was the eugenic vision of the Progressive Era. Racism infected it just as racism infects any ideology in a racist society; but racism was no more fundamental to it than it was to any

other social movement or institution in the twentieth century. By and large, twentieth-century eugenicists simply wanted the best possible future for their descendants.

They knew there were great technical difficulties to be overcome. Well before the U.S. Supreme Court upheld Virginia's eugenic sterilization law (*Buck v Bell*, 1927), geneticists were pointing out that ridding the breeding population of people who express an undesirable trait does not eliminate the undesirable gene. Many traits are "recessive," so there are many more "carriers" than individuals who are actually afflicted. In 1917, R. C. Punnett, a professor of genetics at Cambridge University, published results of a statistical analysis based on the Hardy-Weinberg Principle which showed that even if 100% of genetically feeble-minded people were prevented from procreating, it would take 684 generations to reduce the number of carriers to one in a million individuals. "Clearly," he wrote, "if that most desirable goal of a world rid of the feebleminded is to be reached in a reasonable time some method other than that of the elimination of the feeble-minded themselves must eventually be found. The great strength of this defect in the population lies in its heterozygotic reserves; if the campaign against it is to meet with success it is at these that it must be directed" (Punnett, 1917, 465). Tests would have to be developed to identify carriers of all traits held to be "dysgenic" and measures put in place to eliminate those individuals, too, from the breeding population. Sterilization of people committed to state institutions for the mentally retarded or mentally ill could be mandated through legislation and court cases, but tracking down phenotypically normal carriers and preventing them from engaging in procreative sex were a far more delicate matter, and state intervention was perhaps not the best or most effective means.

German eugenicists had invented marriage counseling in the 1910s as a way of influencing reproductive behavior in the general population. North American eugenicists were somewhat slow to take up the concept, but in 1930 the first marriage counseling center in the United States opened in Altadena, California, with eugenicist Paul Popenoe as its energetic and dedicated director. Funded through the Human Betterment Foundation by Ezra Gosney (co-author with Popenoe of the eugenic tract *Sterilization for Human Betterment*), the American Institute for Family Relations (AIFR) announced at its opening that it would "disseminate eugenics information and endeavor to aid persons contemplating marriage to make a success of their venture" (Ladd-Taylor, 2001, 311). In addition to dozens of informational publications, the AIFR offered premarital counseling (complete with physical examinations, personality inventories, and marital aptitude tests) emphasizing hereditary fitness and compatibility, advice for couples having difficulties, and training workshops for clergy, teachers, and other professionals who were themselves engaged in couples counseling. The primary goals were to convince "unfit" couples to refrain from procreating and to keep "fit" couples together so that they could procreate more.

Popenoe's pioneering efforts in marriage counseling (including his work with the AIFR as well as his many years as editor of *Marriage and Family Living*, his two books *Modern Marriage: A Handbook* (1925) and *Sex, Love, and Marriage* (1963), his television talk show where Los Angeles couples could air their problems and receive his advice, and his long-running column in the *Ladies' Home Journal* entitled "Can This Marriage Be Saved?") were clearly recognized by his fellow eugenicists as an important contribution to their cause. Laws and governmental policies might restrain the reproductive behavior of some of the "worst" sorts of people, but heavy-handed measures would never operate effectively to insure reproduction among the "best." No democratic government could compel bright young men and women to marry and bear children. Incentives could be put in place—tax breaks, low-interest home loans, and the like—and bachelorhood could be made economically disadvantageous for middle-class men whereas employment and higher education could be made unattractive for middle-class women. But achievement of the eugenics movement's positive goals would require the willing cooperation of individuals and families, and all the eugenicists of the early and mid-twentieth century knew that. The theories and institutions they built helped to create and perpetuate a society in which desire for genetically "superior" offspring would be the norm and in which tolerance for any sort of biological or behavioral deviation was very low, a society in which ordinary individuals could be counted on to make eugenic choices without any official compulsion. As Lee R. Dice, director of the University of Michigan's Institute of Human Biology, put it, "If there is known to be a high probability of transmitting a serious defect, it would be an abnormal person indeed who would not refrain from having children" (Dice, 1952, 2). Thus, in pursuit of eugenic social goals, was born the field that in 1947 geneticist Sheldon Reed dubbed "genetic counseling."[9]

The birth preceded the christening by about 6 years. In 1941, Charles Fremont Dight's estate had conferred a substantial sum of money on the University of Minnesota which, according to his will, would "maintain a place for consultation and advice on heredity and eugenics and for rating of people, first, as to the efficiency of their bodily structure; second, as to their mentality; third as to their fitness to marry and reproduce" (Paul, 1995, 123).[10] In early 1948, soon after Reed gave the new field its name, the Eugenics Record Office (having been renamed the Genetics Record Office in 1939) transferred most of the data Harry Laughlin and his staff had compiled to the Dight Institute, which by then was also supported by money from the estate of Charles M. Goethe, a financier who devoted much of his life to eugenic work and served as president of the Eugenics Research Association in 1936 (Black, 2003, 315). The institute ran both a marriage counseling center and the first genetics counseling center. Its director, Clarence P. Oliver, held that "a geneticist should prevail upon some persons to have at least their share of children as well as show a black picture to those with the potentiality of

producing children with undesirable traits" (Paul, 1995, 126). Oliver left in 1946 for at the University of Texas at Austin, where he continued his work in genetic counseling (Dice, 1952, 10). His successor was Sheldon Reed, who presided over Dight's acquisition of Eugenics Record Office materials. Reed took a less directive approach, asserting that "the decision must be a personal one between the husband and wife, and theirs alone" (Paul, 1995, 127). But like Lee Dice, his counterpart at the University of Michigan, Reed firmly believed that, provided with sound genetic information, individuals would make eugenic choices without pressure from experts. In 1952 he wrote, "If our observation is generally correct, that people of normal mentality, who thoroughly understand the genetics of their problems, will behave in the way that seems correct to society as a whole, then an important corollary follows. It could be stated as a principle that the mentally sound will voluntarily carry out a eugenics program which is acceptable to society if counseling in genetics is available to them" (Paul, 1995, 128). Government need not impose eugenics programs on normal people. The ubiquitous pressures of modern life will steer them away from deviance and abnormality in their reproductive decisions.

Dice (1952, 12) went on to list conditions he considered serious enough to warrant deciding not to reproduce and to argue for state funding to establish clinics for the purpose of advising couples and assisting with family planning: "Defective heredity which results in the production of serious handicaps, such as idiocy, blindness, deafness, dwarfism, muscular atrophy, anemia, hemophilia, or the tendency to other serious disease is not only a calamity for the families concerned, but constitutes a serious drain on the resources of the community". The state should fund physician training in genetics and establish free clinics to supply families with good information and good technologies, he argued, and then families will make the right—that is, the eugenic—decision.

Obviously, the authority of the physician or geneticist would carry a lot of weight with any couple who sought reproductive advice, and obviously the type of training the physician or geneticist received and the information available through research funded by corporations and government agencies would set the terms under which any individual or couple would be making these decisions about whether to conceive or carry a pregnancy to term.[11] Prospective parents would have to rely to a great extent on the judgment of those authorities. If the authorities believed the birth of a deaf child or a "dwarf" would be a family tragedy, no doubt many families would come to believe so as well. Eugenicists like Lee Dice certainly knew that. In fact, they were counting on it.

These changes in tactics, which were in part responses to international exposure and condemnation of Hitler's eugenic program, eventually resulted in a generalized expunging of the word *eugenics* from popular discourse, except as a term of condemnation. Eugenicists began to call themselves

population scientists and human geneticists (Kuhl, 1994, 105; Bruinius, 2006, 317). Gradually, the word disappeared even from the organizations founded to further the movement's programs. In 1954, the British *Annals of Eugenics* renamed itself *Annals of Human Genetics*. In 1969, the *Eugenics Quarterly* became the *Journal of Social Biology*. In 1972, the American Eugenics Society changed its name to the Society for the Study of Social Biology. Long-time American Eugenics Society President Frederick Osborn told an interviewer in 1977 that "it became evident that changes of a eugenic nature would be made for reasons other than eugenics, and … tying a eugenic label on them would more often hinder than help their adoption."[12] But, as Osborn implies, the vision of a humanity purged of genetic defect and evolving toward a "higher" state persisted. By the end of the twentieth century, sociologist Dorothy Nelkin and historian Susan Lindee observed,

> Eugenics in contemporary culture is less a state ideology than a set of ideals about a perfected and "healthy" human future. Commonly held beliefs about the powers of the gene and the importance of heredity facilitate eugenic practices even in the absence of direct political control of reproduction, for eugenics is not simply gross coercion of individuals by the state …. Rather, it can be productively understood as a constellation of beliefs about the importance of genetics in shaping human health and behavior, the nature of worthwhile life, the interests of society, and, especially, the meaning of reproductive responsibility. These beliefs—conveyed through the stories told by popular culture—draw on the assumption that our social, political, and economic future will depend on controlling the genetic constitution of the species—the so-called human gene pool (Nelkin and Lindee, 1995, 191).

Whether they are aware of the fact or not, contemporary advocates of human genetic engineering share both the goals and the rhetoric of many of the twentieth century's most ardent avowed eugenicists. Knowingly or not, James Watson echoed Harry Laughlin when he told the London *Times* in 2003, "If you are really stupid, I would call that a disease …. The lower 10 per cent who really have difficulty, even in elementary school, what's the cause of that? A lot of people would like to say, 'Well, poverty, things like that.' It probably isn't. So I'd like to get rid of that, to help the lower 10 per cent" (Bhattacharya, 2003). The means might differ as technology permits, but the goal is the same: to eliminate what Laughlin called "feeblemindedness" or "social inadequacy" and what Watson called "stupidity" from the human gene pool. Likewise, Gregory Pence sounds a great deal like Lee Dice when he declares, "Although disability advocates insist that there is nothing wrong with being deaf, a dwarf, or having Down's syndrome, no reasonable parent would choose to have a child with such a condition when he or she could have a normal child. Indeed, in my opinion, it might be *immoral* to choose to have such a child if one could otherwise have a normal child" (Stock and Campbell, 2000, 112). The idea that "evolution, as it has operated in the past, has essentially stopped for the human species," as

Gregory Stock of UCLA's School of Medicine has declared (Stock and Campbell, 2000, 93), corresponds directly to the views of the eugenicists such as William Partlow and Frederick Osborn, and, as in their writings, it serves as a cornerstone of Stock's and others' calls for technical management of human reproduction. In fact, says University of Washington biologist Leroy Hood, genetic technology is an improvement over natural selection. "We're using exactly the same kinds of techniques used by evolution, but what we're attempting to do, in a thoughtful and rational way, is to facilitate evolution, so it doesn't operate in a blind fashion—most of the changes being neutral or deleterious—but in an optimizing fashion" (Stock and Campbell, 2000, 92). His statement echoes that of eugenicist P. W. Whiting: "Eugenics is the study of those agencies under social control which may improve or impair the racial qualities of humanity either physically or mentally. And in its application it is essentially the intelligent control of human evolution" (Whiting, 1925, 165). The parallels and echoes are striking.

Watson, Pence, Stock, and Hood do not use the term "eugenics" for what they advocate (although Watson does not hesitate to acknowledge that he is "going for perfection" (Abraham, 2002, A1)), but some proponents of germline engineering bite the bullet and embrace the term. In *Liberal Eugenics: In Defence of Human Enhancement*, Nicholas Agar writes, "Hitler and *GATTACA* [a science fiction movie] have made eugenics an unpopular idea. However, being unpopular is not the same as being wrong" (Agar, 2004, vii). And John Harris (2000, 95) happily accepts the label: "I don't disagree with people who argue that gene therapy to remove a disability is a form of eugenics, I specifically adopt the Oxford English Dictionary definition of eugenics as 'pertaining … to the production of fine offspring' and say if this is what eugenics is everyone should favour eugenics". Instead of shying away from the word, these writers challenge their readers to consider the questions: What, if anything, is wrong with eugenics? What is wrong with attempting to manage and control human evolutionary development?

IV. LIFE ENTERS HISTORY: A BIOPOLITICAL ANALYSIS

If the current debate is a political struggle rather than an ethical deliberation, as I have argued above, that challenge is best deferred. Instead, it would be more prudent to step back from the fray and the dichotomous choices it tends to offer us and examine the epistemic, material, and historical context in which "eugenics" carries such a powerful charge. Here is where Foucault's genealogical tools and concepts become especially valuable.

Foucault discusses eugenics explicitly in Part IV of *The History of Sexuality, Volume 1*. Eugenics was one of "the two great innovations in the technology of sex of the second half of the nineteenth century," he writes, the other being "the medicine of perversions." The study of heredity and the analyses it

produced placed "sex (sexual relations, venereal diseases, matrimonial alliances, perversions) in a position of 'biological responsibility' with regard to the species …. [I]t appeared to be the source of an entire capital for the species to draw from. Whence the medical—but also political—project for organizing a state management of marriages, births, and life expectancies; sex and its fertility had to be administered" (1978, 118). Meanwhile, the medicine of perversions made it clear that "not only could sex be affected by its own diseases, it could also, if it was not controlled, transmit diseases or create others that would afflict future generations" (1978, 118). The very close alliance between North American and British eugenicists on the one hand and sexologists on the other makes perfect sense when we look at eugenics and sexology as merging technologies in the *dispositif de sexualité*. The *dispositif de sexualité* itself must be situated, however, within the dynamic configuration of force relations that Foucault (1978, 140) names "biopower", which in turn must be situated within the problematic of what he calls "governmentality" (Foucault, 2007, 108).

The definition of "governmentality" varies in Foucault's writings. In a 1984 interview, he defined it very broadly: "I intend this concept of 'governmentality' to cover the whole range of practices that constitute, define, organize, and instrumentalize the strategies that individuals in their freedom can use in dealing with each other" (Foucault, 1997c, 300). Taken in this sense, we would have to say that all societies have had techniques and practices of governmentality, different though they may have been. When he first introduced the word (in his 1978 lecture course), however, he offered a more historically bound definition, restricting the word to a set of procedures, analyses and knowledges, techniques, and institutions that developed in Western Europe after the fifteenth century (see 2007, 108–109). Given the parameters of our historical scope here, either definition will suffice.

In that lecture course—now translated and published under the title *Security, Territory, Population*—Foucault notes a shift in the problematic of large-scale government in the fifteenth and sixteenth centuries. As feudalism declined, market towns appeared, wherein people amassed and goods circulated. This phenomenon created some new governmental concerns. On the one hand, towns were to be encouraged because they provided a sovereign with means to acquire new wealth. On the other hand, masses of townspeople were more apt than scattered serfs to revolt, particularly if food became scarce, and they were also more apt to suffer from plagues and die suddenly in unprofitably large numbers. Towns, then, were sites of danger. For the sovereign to be strong, towns had to thrive, but those towns had to be governed to offset the risks they harbored. So people began to reflect on the practice of government and develop new techniques—which Foucault calls techniques of security—until, by the end of the eighteenth century or the beginning of the nineteenth, a whole new configuration of power relations began to emerge. Though the periodization and terminology are a bit

loose in Foucault's work and need to remain so to prevent their reification, we can call this new configuration of power relations, this new form of governmentality, "biopower."

Biopower actually grows out of two initially separate efforts, Foucault (1978, 140) says: "the subjugation of bodies and the control of populations". Efforts to subjugate bodies—particularly bodies found in relatively large numbers within institutional structures where some type of production was the aim—took the form of disciplinary practices. In *Discipline and Punish* (1975), Foucault tells the story of how early modern disciplinary techniques developed as monastic ascetic practices migrated to the secular domains of the military, the factory, the asylum, the penitentiary, etc. He summarizes that development in the 1978 lecture course: Discipline "analyzes and breaks down … individuals, places, time, movements, actions, and operations. It breaks them down into components such that they can be seen, on the one hand, and modified on the other" (2007, 56). Then it classifies those components in relation to its objectives and establishes "optimal sequences or coordinations" to produce a performative ideal. It next designs a program of training to achieve that ideal in each case. Finally, on the basis of this ideal and program it identifies those individuals who are unsuitable or incapable. "Disciplinary normalization consists first of all in positing a model, an optimal model that is constructed in terms of a certain result, and the operation of disciplinary normalization consists in trying to get people, movements, and actions to conform to this model, the normal being precisely that which can conform to this norm, and the abnormal being that which is incapable of conforming to the norm" (2007, 57).[13]

Discipline becomes, strictly speaking, *normalizing* discipline in the eighteenth century when disciplinarians begin to posit a kind of natural developmental force within the bodies they try to train—that is, when discipline ceases to be understood as an imposition on a body conceived as a machine-like collection of parts and becomes a technique for cultivating the natural resources of the body conceived as a natural developmental trajectory. Foucault (1977, 155) locates an early example of this in the military discipline of J. A. de Guibert: If left alone, the disciplinarian imagines, this natural body would develop in its own direction at its own rate. The job of the normalizing disciplinarian is to harness the energy of that natural developmental force and redirect it, cultivating and intensifying it to the extent possible. Thus, the objective correlate and target of normalizing discipline is the natural, developmental body.

The objective correlate and target of population management, the other component of biopower that Foucault identifies, is "an absolutely new political personage" in the eighteenth century; "this new personage … is the population" (2007, 67). "[T]he population is not the simple sum of individuals inhabiting a territory" (2007, 70) but a kind of being unto itself. Like the developmental body, the population is conceived as a natural phenomenon.

Its naturalness is evident in three ways. First, the population is dependent through the course of its existence—and for the particularities of that course—on a set of variables such as climate, material surroundings, the circulation of wealth, customs, and means of subsistence. This means that a sovereign cannot effectively govern a population simply by issuing commands, any more than a disciplinarian, merely by issuing commands, can train a developmental body. There is an inherent recalcitrance within a population that is a natural, nonvoluntary aspect of its existence. Second, populations encompass disparate groups of people, but there is one thing common to all people, namely, desire. If desire is allowed free play, in time a general interest will emerge which can be attributed not to those disparate people but to the population itself. This general interest is the population's natural inclination or tendency; though produced through the pursuits of individuals, it is not artifice. Third, populations evince constancies that cannot be attributed to individuals and their choices, even collectively. For example, at the end of the seventeenth century, statistical analysis revealed the astonishing fact that birth rates, death rates, and even rates of suicide in given populations were fairly constant from year to year; populations had natural regularities that, qua regularities, could not be attributed to the deliberate decisions of the individuals they comprised. This natural vitality, this "life course," of a population could not be ignored if one aimed to govern effectively. It had to be studied and harnessed.

Foucault maintains that the techniques that evolved for governing market towns—which became modern techniques of security for governing populations—initially differed radically from techniques of normalizing discipline. The idea was not to train and cultivate the population but to protect and secure the processes that constituted it from disruption. The dangers earlier identified as threats to the sovereign through the town (which were also threats to the ongoing vitality of the town itself) had to be controlled. The circulation of goods and people—and eventually, in liberal states, information and ideas—had to be as free and unimpeded as possible so that the town and the various sorts of markets it represented and sustained could remain healthy. The population (as distinct to although not separable from the collection of individuals in a territory) was beginning to take on a life of its own.

As the concept of population emerged—as it was carved, Foucault says, out of a field of reality through the constant interplay of power and its objects (2007, 79)—statistical techniques evolved for keeping track of those constituting processes. As a classic example, Foucault mentions the bureaucratic techniques for managing smallpox. By the eighteenth century, it was widely believed—purely on the basis of empirical evidence absent any theoretical explanation—that introducing a small amount of pus from smallpox lesions (or lesions of similar poxes) into a healthy person's body could protect that person from getting sick with smallpox. Public officials studied this

phenomenon statistically and concluded that indeed inoculation was preventive, so they instituted programs of vaccination, which they then used statistical methods to monitor. They studied the population as a whole, but they also studied subpopulations—age groups, professional groups, etc., what we would now call different demographic groups. For some groups, they noted that the risk of infection was higher than it was for others, and for some populations with the same rates of infection, mortality rates were higher. There was also a calculable risk of sickening and dying from pox induced by vaccination or of the vaccination failing to protect against disease during subsequent exposure. Out of studies such as these came "the idea of a 'normal' morbidity or mortality." Then, total population morbidity and mortality were subdivided to yield rates for subpopulations—specific age groups or certain professional groups or the residents of different locales. "Thus one will have the normal, overall curve, and different curves considered to be normal" for these subpopulations (2007, 62).

Once a set of norms is established, officials look for ways "to reduce the most unfavorable, deviant normalities in relation to the normal, general curve, to bring them in line with this normal, general curve" (2007, 62). So, for example, if it were discovered that residents of one sector were dying at a higher rate than the general norm, attention could be focused on that sector in its differences from others to determine what conditions might be altered to yield a more favorable outcome. Whatever the chosen means, the goal would not be to prevent all deaths in that sector but to "normalize" the sector's norm, to shift its normal curve. This is the case whether what is at issue is morbidity, mortality, births, literacy, crime, or commodities consumption.

This technique of governing bespeaks something entirely different from the old sovereign concern with holding and expanding territory and exploiting its resources as wealth. Now "we see the emergence of a completely different problem that is no longer that of fixing and demarcating the territory, but of allowing circulations to take place, of controlling them, sifting the good and the bad, ensuring that things are always in movement, constantly moving around, continually going from one point to another, but in such a way that the inherent dangers of this circulation are canceled out" (2007, 65). Techniques of security are means for governing a free, natural vitality: a living population. Unlike sovereign power, security fosters rather than prohibits. Moreover, unlike disciplinary techniques (hygienic regimes, dividing practices, medical treatments, etc.), which aim at eradication of disease (crime, illiteracy, etc.) through subjugation of individual bodies, techniques of security do not aim to prevent all death (crime, illiteracy, etc.), only to change the rate at which it occurs. Thus, individual bodies are not their concern, only bodies in their statistical significance.

Mechanisms and institutions based on these two newly emerging but different types of technique—techniques of security governing populations and

techniques of disciplinary normalization governing developing bodies—coalesced in the nineteenth century to form wide networks of new force relations. Foucault characterizes as these collectively as "biopower" because of their tendency to cultivate vital capacities—those of the body as well as those of the population—and redirect and subsume the energy of resistance rather than simply eliminate opposition through lethal violence. The advent of biopower, he proclaims, is "nothing less than the entry of life into history, that is, the entry of phenomena peculiar to the life of the human species into the order of knowledge and power, into the sphere of political techniques" (1978, 141–2).[14]

V. NORMALIZING POPULATIONS: BIOPOWER'S DEPLOYMENT OF SEXUALITY

As life entered history, techniques of government shifted radically because what was to be governed was no longer given sets of entities but malleable trajectories of development—individual, collective, and specific. For nearly a century, however, techniques aimed at individuals and techniques aimed at populations developed in parallel but not in unison. They finally came together, Foucault tells us, not first of all in a theoretical discourse but rather "in the form of concrete arrangements (*agencements concrets*) that would go to make up the great technology of power in the nineteenth century: the deployment of sexuality would be one of them, and one of the most important" (1978, 140). And, as already noted, the two great—and reciprocally reinforcing—innovations in that deployment as the twentieth century drew near were the "medicine of perversions and the programs of eugenics" (1978, 118).

The eugenics movement came into being at the point where the management of populations took on some of the elements of normalizing discipline—where, we might say, populations as such became subjects not only of security techniques but also of disciplinary practices. With the birth of eugenics, the goal of population management was no longer simply to facilitate a population's natural life course and protect its vital processes from disruption but to increase its capacities through intense cultivation.

It began with the fear that modern medicine and charitable practices were inhibiting the effects of natural selection. The population (and, depending on the theorist, this might be the entirety of the human species or a particular nation or a racially defined subgroup such as the "Nordics") was therefore becoming weaker. In other words, the normal curve for "fitness" in the current generation was inferior to the normal curve for "fitness" in previous generations. Steps had to be taken to "normalize" the inferior curve, to make the current population as "fit" as its normal predecessors. Few eugenicists advocated killing weak people in pre-pubescence to mimic the action of natural selection, but they did advocate the next best thing: eliminating them

from the breeding population so that the next generation would not carry their genes.

Thus described, eugenics is classic population management on Foucault's terms, a set of interventions aimed at "normalizing" an undesired "normality." But of course, eugenics has always been much more than a mere corrective. Eugenicists did not want to bring the normal curve of the least successful subpopulations in line with the general norm; they wanted to create a new general norm, in part by altering or "enhancing" the norm of the most successful subpopulations. They wanted to respecify human normality. The goal was to increase populations' existing abilities and create new ones through projects of cultivation and directed development. In other words, they sought to apply the principles of developmental discipline to select populations, to subjugate populations as their predecessors and contemporaries had subjugated bodies. Eugenics was not only population management; eugenics was biopower.

In biopolitical processes, normalcy is not to be discovered or restored; instead, as George Annas observed in regard to enhancement proposals, "normalcy will be invented" (Annas, 1989, 21). Like their eugenic predecessors, contemporary proponents of genetic enhancement explicitly reject the existing general standards of human normalcy. According to John Harris, "enhancements are not plausibly defined relative to normalcy, to normal species functioning, nor to species-typical functioning …" (Harris, 2007, 36). University of California-Irvine School of Biological Sciences professor Michael Rose asserts, "You have to reject this concept of normal. You have to take what evolution does and look at it askance, exploit what it does well, and provide what it does not provide" (Stock and Campbell, 2000, 93). Like eugenicists throughout the twentieth century, genetic engineering's advocates want to change human normalcy itself.

In the early eugenics movement, management of sexuality was seen as the key to management of all aspects of human development, including the evolution of populations; who could have sex with whom was a fundamental issue, therefore, which meant that in the pursuit of a better human future a great deal of sexual oppression was inevitable. Twenty-first-century eugenicists like to distinguish themselves from that movement by emphasizing their much more liberal attitude toward individuals' sexual practices; the fact that new reproductive technologies will enable same-sex couples to produce children genetically related to both partners is often touted as evidence of the radically nonauthoritarian stance that modern genetic engineers take to sexuality.[15] But, although this may be a welcome change for those whose sexuality has been most painfully oppressed, it is a technical change only, not a change of principle. Had nonsexual technologies of reproduction existed in the early twentieth century, early eugenicists no doubt would have seized upon them and might well have abandoned sexually oppressive policies as a result. They were very capable of changing tactics when new obstacles or opportunities

presented themselves: witness the rapidity with which most of them let go of racial classification when use of it became ineffective in achieving their managerial goals, and, after World War II, their willingness to find means to influence reproductive decisions without direct use of the policing mechanisms of the state. Glayde Whitney's delight with the possibilities of genetic engineering technologies for the new millennium no doubt would have been shared by virtually all of his predecessors. James Watson certainly shares it. "It seems to me the question we're going to have to face is, what is going to be the least unpleasant? Using abortion to get rid of nasty genes from families? Or developing germ-line procedures with which, using Mario Capecchi's techniques, you can go in and get rid of a bad gene," he asks. "And … if we could make better human beings by knowing how to add genes, why shouldn't we do it? Who is telling us not to do it? I mean, it just seems obvious now" (Stock and Campbell, 2000, 79). Watson gleefully predicts that someday, through germ-line engineering, we will be able to "turn slow learners into whiz kids," prevent smokers from getting lung cancer, and make our offspring resistant to HIV (Abraham, 2002). Thus, perhaps eventually, germ-line engineering could make eugenic management of sexual conduct unnecessary without sacrificing any of the eugenic vision.

VI. THE TECHNOLOGY, THE VISION, AND THE QUESTION

Early eugenic technologies were extremely crude by today's standards—vasectomy, salpingectomy, life-long incarceration in single-sex facilities for those deemed "socially inadequate," threats thereof for those who were "adequate" but likely to stray from the path of heterosexual monogamy, tight regulation of birth control information, and various strategies for limiting white middle class women's life options to marriage and motherhood. Consequently, the results were mixed and, at least when measured by democratic values, at times lamentable. The movement was severely criticized for its errors and excesses, both technological and social, in pursuit of its goals. But in a world where biopower predominates, the goals themselves were never seriously critiqued, much less rejected. "Eugenic principles are part of our largely unexamined and often unspoken ideology—preconceptions the society instills in us about who should and should not inhabit the world," feminist biologist Ruth Hubbard declares (Hubbard, 1986, 240), which is why John Harris can plausibly assert that: "Whatever people say, no one, I believe, actually thinks that there is anything in principle wrong with the enhancement of human beings" (Harris, 2007, 8). In fact, to question the basic goals of eugenics is to question the basis of the contemporary industrialized world's social organization. In a biopolitical society, where cultivation and intensification of vital forces in both individuals and populations are imperative, eugenics must go forward as technology permits.

Of course, contra Harris, there are *many* people who *do* think there is something wrong with genetic enhancement. Some people reject the theory of evolution altogether in favor of the idea that a deity created human beings exactly as we are now, which makes any attempt to "enhance" our genomes fundamentally hubristic. Others, like Harvard political theorist Michael Sandel, say genetic enhancement—which he equates with purchasing upgrades for embryos as one might for a computer—will corrupt important values; he predicts it will lead to erosion of the ideal of unconditional parental love, diminution in appreciation of athletic and artistic accomplishment, arrogance rather than humility and gratitude in the face of our own or our children's talents, and loss of compassion for those who suffer (Sandel, 2007, 96). In other words, even if enhancing the human genome is not sinful in itself, the spiritual consequences of success are dire.

Others fear the economic and social consequences, especially the creation of, as Mitchell and Hooks put it, two distinct and unequal classes: the mentally and physically upgraded versus the rest of us—or, at least, those who have had the privilege until now of bearing the label of "normal." As *New York Times* columnist David Brooks observed regarding currently available reproductive technologies, "At this very moment thousands of people are surfing the Web looking for genetic material so their children will be nothing like me" (Brooks, 2007). Perhaps those future people, who unlike normal members of our generation will have *good reason* to consider themselves better than their parents, will treat us as poorly as we have treated the classes of people we have judged to be inferior to ourselves.

Advocates of enhancement rightly point out that introducing new kinds of difference into our society will not create unjust discrimination; such discrimination is a product of intolerance, not difference. Furthermore, contra Sandel, our society at present does not place much value on unenhanced athletic and artistic accomplishment (witness the widespread use of performance-enhancing drugs in professional sports and the low incomes of artists of all kinds), nor does it routinely evince gratitude for talents or even unconditional love for ordinary children. If our spiritual values are threatened with erosion, factors other than genetic engineering are the cause.

But successful genetic enhancement is not what many critics fear; rather, they dread the price that will be paid for the possibility of success through the process of discovery. Science and technology advance through experiment, trial and error. When trials and errors involve computer models, fruit flies, or mice, most people are willing to accept some negative side-effects. But at some point genetic enhancements techniques will have to be tried—before they are perfected—on human embryos who may become human fetuses inside the bodies of human women and then human babies deserving of all the care and bearing all the rights of any other human being.

To understand why these facts create such concern, some knowledge of current technology is indispensable. Geneticist Mario Cappechi describes the

most promising method of gene transfer, preimplantation embryonic genetic modification:

> In vitro fertilization using sperm and eggs donated by each set of parents would be used to generate one-cell embryos. In culture, the embryo would be permitted to progress to the four-cell stage. The embryo would then be separated into four cells: three of these cells would be frozen for later use. These are procedures routinely carried out in IVF clinics. Each of these four cells, frozen or unfrozen, would have an identical set of genes and would be capable of generating a normal child. The fourth cell would be allowed to divide in culture until a million cells were generated, taking approximately twenty cell divisions to achieve this number. Different embryonic cell types would then be present within this cell population, but this diversity should not affect the procedure. One million cells is an ample population size to permit the use of technologies, such as gene targeting, to introduce the desired genetic alteration into a subset of these cells. The subset of cells containing the desired genetic alteration would be isolated from the remaining cell population and carefully characterized to ensure that the genetic modification was accurate. At this point, the nucleus of one of the mother's oocytes would be removed and replaced with a nucleus from the expanded pool of cells containing the prescribed genetic modification. In this cytoplasmic environment, the modified nucleus would receive instructions to commence making an embryo. The cells would be allowed to divide in culture once or twice, and then the embryo would be surgically transferred to the mother's womb to allow pregnancy to continue. A child produced in this way would contain the genetic modification, introduced in cell culture, in all of his or her cells, including the germ cells (Stock and Campbell, 2000, 35–7).

This is a technically complex, multistage process. Consequently, within it there are many opportunities for failure. At present, *in vitro* fertilization without any attempt at genetic alteration results in a successful pregnancy in less than 25% of attempts. Given the odds of losing any individual embryo, genetic engineers would likely generate several altered embryos—clones, to ensure that the desired modification was present in all of them—and either implant multiple embryos initially or freeze some for a potential second attempt. Still, even with several spare clones for repeated attempts, the desired outcome, a healthy genetically altered human being, would not be assured.

Preimplantation embryonic genetic modification (PGM) has been used to engineer domesticated food animals in efforts to produce more muscle mass for consumption. In some experiments, pigs with altered genomes were born, but the new genes did not actually bring about muscle gain. In a cattle experiment, "[w]hen gene transfer was accomplished, the transgenic calf initially exhibited muscle hypertrophy, but muscle degeneration and wasting soon followed. Unable to stand, the debilitated animal was killed" (Gordon, 1999, 2023). According to geneticist French Anderson, 95%–99.9% of all engineered animal embryos are damaged (Stock and Campbell, 2000, 46). In addition, "[b]ecause most methods produce animals with different levels of foreign gene expression, further breeding is required to produce animals with stable

and properly functioning foreign genes" (Dresser, 2004, 197–8), a process not likely to be acceptable to parents who pay for and expect genetic modification in their own children or to genetically modified individuals who might not want to "breed" exclusively with predesignated partners for two or three generations. "In sum, it is difficult to reconcile the optimism regarding human PGM with the state of the science. At the same time, the rosy predictions about PGM support the need for an adequate oversight system to prevent premature human applications" (Dresser, 2004, 198).[16] Clearly, the technology is not risk free and may generate many unpredictable consequences.

Enhancement enthusiasts like to couch the ethical question entirely in terms of whether it is right or wrong to genetically enhance people once the techniques are safe and affordable, not whether it is right or wrong to devote resources to developing enhancement technology or to risk people's health and lives in genetic experiments. But asking whether it is right or wrong to alter a person's genome to lengthen her lifespan or increase her intelligence is, at present, like asking whether it is right or wrong to colonize Mars. We can imagine such a thing, but it would be technically very difficult, expensive, and hazardous. Should we ever colonize Mars? Should we begin preparations to colonize Mars in the next fiscal year? Ethically speaking, these are two entirely different questions. The shift to the "ever" question regarding genetic enhancement is a politically adroit means of masking the concrete ethical questions about what we—scientists and citizens—might or might not do with our resources and our bodies right now. And, despite several years of allegedly ethical debate, those questions remain.

VII. DREAMS, VALUES, AND CHOICES

As we deliberate over these ethical questions, we might reasonably demand not only honest assessments of risks and accurate accounts of who will benefit financially at every step but also clear statements of the vision to which we are being exhorted to dedicate ourselves and our progeny. What are the motive forces and the managerial *telos* of this proposed evolutionary project?

In the last century, many eugenic projects were motivated by white supremacy and fears of racial impurity and decline. The dream was that someday the savages and throwbacks would go extinct so that the more intelligent and evolved races would move forward unencumbered to take intellectual and technological possession of the globe. Today, replacing the old eugenics movement's underlying hope for racial and national purification and material advance, we hear the recurring themes of individual gain and personal immortality. The world of the future will be ever more fast-paced, complex, and populated, and it would surely be wrong to deny our children the tools they need to compete against others successfully—advantages like disease resistance, back-up organs, intelligence upgrades, memory augmentation,

switches to turn off the genes that make us age. "Parents are expected to give their children the best possible opportunities in life," says biophysicist and Spectrum Medical Sciences CEO Burke Zimmerman (Stock and Campbell, 2000, 125). In genetic enhancement discourse, post-World War II consumerism and middle class family values always prevail over environmental concerns, civic-minded self-restraint, and alternative family value systems wherein building a child's character might be far more important than purchasing opportunities for his or her future professional or financial success. Is that what we want?

And of course all these alterations—these vulnerability reductions—will tend to increase longevity, leading John Harris to call personal immortality the "Holy Grail" of genetic enhancement (Harris, 2007, 59). James Watson speculates "that hang-gliding accidents might one day be the leading cause of death" (Abraham, 2002). And Michael Rose describes, based on his experiments with fruit flies, a future in which Americans of all ages will have the mortality rate of present-day 10- to 15-year-olds, a rate that would allow most of us (Americans, at least) to live to be about 1,200 years old and some of us (those who refuse to hang-glide perhaps) to reach the age of 2,000 (Stock and Campbell, 2000, 49). Perhaps evolution, which of course involves death, could be managed out of existence altogether someday. Is that what we want?

Dreams of life everlasting are nothing new. Nor are prescriptions for realizing such dreams; many cultures have promoted practices designed to win immortality for those who dedicate themselves and their resources to the pursuit. Immorality through genetic modification is merely biopower's version of that very ancient dream. Despite the claims of today's biopolitical dreamers, however, the question is not whether their fantasies are morally right or wrong. Rather, the question is a much more immediate and mundane one, that of whether we will in fact comply with attempts to make their dream reality.

The question is whether we ourselves will or will not embrace those values and visions and all that they entail, whether we will commit resources to this project rather than to others, whether we will accept the inevitable errors and attendant suffering the process of discovery and implementation will bring, whether we will prepare for the environmental and social consequences of an affluent population's intensified capacities and greatly prolonged life. These are questions not just about what we will do but about who we will be, what sort of lives we will lead and will allow those around us to lead, and what those lives will mean. These are truly ethical questions, questions of *ethos*.

In the midst of these questions, Foucault does not tell us that we should or should not campaign to ban genetic engineering, that we should or should not offer our gametes for experimentation, and that we should or should not clone ourselves. Foucault does not tell us what to do. He will only remind

us that all dilemmas—in fact, all problematizations—are historical, contingent, structured by power relations and that, therefore, the tools of genealogy can be useful as we seek insight into the options put before us. If through such analysis we find the values and political valences underlying the debates over genetic enhancement distasteful or unsettling, we can resist their imperatives and develop new questions and options for action. For what Foucault does tell us, again and again, is that the current configuration of knowledge and power is not inevitable; it can change, and we can change it. Ethics is a transformative practice of freedom. In fact, creative ethical process may be far richer with transformative possibility than any genetic modification that any of us has yet imagined.

NOTES

1. Lee Silver prefaces his book with this declaration: "Throughout, I will explore the ethical arguments that have been raised against the use of this technology. In most instances, I will attribute opposition to conscious or subconscious fears of treading in 'God's domain'. Indeed, I will argue that nearly all of the objections raised by bioethicists and others ring hollow with one exception not often considered. The power of reprogenetics is so great that if left to the market, those families and groups *not* able to afford it could become severely disadvantaged" (Silver, 1998, 13).

2. For background on both Wickliffe Draper and the Pioneer Fund, see Tucker (2002) and Lombardo (2002). Broadcast journalist Peter Jennings explored the Pioneer Fund and its relationship to production of the controversial book *The Bell Curve* in a 1994 airing of "ABC World News Tonight." A partial transcript of the show entitled "The Bell Curve and the Pioneer Fund" can be found at http://www.hardford-hwp.com/archives/45/049.html.

3. John Harris' attack on Leon Kass in Chapter 8 of his 2007 book is a case in point. I disagree with Kass' position myself, but ridicule is not the tactic of a philosopher engaging an interlocutor in genuine ethical deliberation.

4. Many writers have noted that it is difficult to draw a firm distinction between genetic therapy and genetic enhancement. One reason is technological; if genetic alterations are performed on embryos, it is difficult to prevent them from affecting the germ cells and thus being passed to the next generation. In fact, even in somatic cell therapy in adult men, some tests have indicated that foreign DNA is present in the seminal fluid (Dresser, 2004, 201). But the main reason is conceptual. Suppose, for example, that we "treat" mild cases of mental retardation by inserting DNA that would elevate the IQ. Is this therapy or enhancement? A great deal depends on how we define the words *enhancement* and *normal*. Lee Silver contends, "In every instance, genetic engineering will be used to add something to a child's genome that didn't exist in the genomes of either of its parents. Thus, in every case, genetic engineering will be genetic enhancement" (Silver, 1998, 268).

5. For a transcript of a discussion about eugenics including Crick, Lederberg, and others, see Wolstenholme (1963, 274–98). For some of Tatum's remarks, see Tatum (1966). Dobzhansky served on the board of directors of the American Eugenics Society in the 1950s (Paul, 1998, 142) and wrote an introduction to Frederick Osborn's (1968) book, where he lamented the bad name that eugenics had acquired. "Yet eugenics has a sound core," he stated. "The real problem which mankind will not be able to evade indefinitely is where the evolutionary process is taking man, and where man himself wishes to go. Mr. Osborn has for several decades been the clear-sighted leader of the eugenical movement in America, who strove to make the substance of eugenics scientific and its name respectable again" (Osborn, 1968, vi).

6. Among them was well-known physician W. Duncan McKim. In his 1900 book *Heredity and Human Progress*, McKim proposed death by carbonic acid gas for defectives, including moral defectives. See McKim (1900, 193). His book received a generally favorable review in the November 1, 1900, edition of *The Nation* (pages 349–50).

7. California's law, under which officials authorized the sterilization of over 30,000 Americans, was written with Laughlin's draft as a model, which in turn served as a model for the German law put into

effect in 1933 under the Nazis. In 1936, Hitler bestowed a medal of honor on Laughlin for his eugenics work.

8. In 1914, Harry Laughlin addressed the First National Conference on Race Betterment in Battle Creek, Michigan. The title of his talk was "Calculations on the Working Out of a Proposed Program of Sterilization," a text that was in fact the final section of the American Breeders' Association Report on "The Best Practical Means of Cutting Off Defective Germ-Plasm in the American Population." "The proportion of the population which it is sought to cut off," Laughlin told his audience, "is the lowest ten percent of the human stock who are so meagerly endowed by Nature that their perpetuation would constitute a social menace" (Bruinius, 2006, 212).

9. Paul (1995, 123). In Paul (1998, Chapter 8), he discusses the complexity of Reed's position on genetic counseling. He believed those who sought counseling were generally of higher intellectual quality than average, so despite physical disabilities he often encouraged reproduction, even though he realized that in some respects the long-term results would be "dysgenic." Reed preferred to run the risk of a physically disabled child rather than the risk of removing eugenically valuable talents and intelligence from the gene pool. The field of genetic counseling has changed over the years. In 1971, Sarah Lawrence graduated its first class of students with master's degrees in genetic counseling; these students were neither geneticists nor physicians. From that point forward, the majority of genetics counselors have been female and received training in client-centered therapy. See Paul (1998, 147–8) and Paul (2002, 96). However, whether this difference in training really translates into a nondirective approach has been seriously questioned. See, for example, Patterson and Satz (2002).

10. For a lengthier account of this set of events as well as other information about the twentieth-century eugenics movement, see McWhorter (2009, Chapters 5 and 6).

11. By 1972, many eugenicists considered abortion of defective fetuses a "therapeutic" option open to physicians, even though individual women did not yet have the right to obtain an abortion for reasons of their own, except in the state of New York.

12. This latter statement is quoted in Paul (1995, 125). Paul (1998) quotes a statement Osborn made in a 1968 interview: "birth control and abortion are turning out to be great eugenic advances of our time. If they had been advanced for eugenic reasons, it would have retarded or stopped their acceptance" (142). Apparently, these name changes were deliberate efforts to disguise what Osborn and others saw as important eugenic work.

13. The abnormal—or the "residue" as Foucault calls it in *Psychiatric Power* (2006, 53)—is the justification for the extension and creation of new disciplinary institutions and practices. For example, "[s]ince there are the feeble-minded, that is to say, individuals inaccessible to school discipline, schools for the feeble-minded will be created, and then schools for those who are inaccessible to schools for the feeble-minded" (2006, 54).

14. Foucault tells us in *The Order of Things* that prior to the nineteenth century "life itself did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by *natural history*" (Foucault, 1970, 128). Natural historians had studied the physical structure of these beings, their visible "characters." But at the turn of the nineteenth century, for the scientists who began to call themselves biologists, the object of study was, simply, life. Life was essentially a temporal process, unlike the characters so carefully delineated by natural historians. Life was dynamic; life was development. The study of life was the study of change through time expressed as the shifting manifestations of organisms in their milieus. Without this concept, there could have been neither a developmental body nor a population. Population became a fundamental category in biological theory in the nineteenth century once it was seen as the solution to the problem of how the milieu acts on the organism. "To think about the relationships between the milieu and the organism, Lamarck resorted to something like the idea of the organism being acted on directly and shaped by the milieu. Cuvier resorted to what appear to be more mythological things—like catastrophes, God's creative acts, and so on—but which actually organized the field of rationality much more carefully." But then came Darwin. "Darwin found that population was the medium between the milieu and the organism, with all the specific effects of population: mutations, eliminations, and so forth" (2007, 78). The concept of population—foundational for nineteenth-century techniques of government—also gave biology its modern shape. Population and the concept of life-as-development that undergirds it swept across and restructured dozens of other fields of knowledge through the nineteenth century. Foucault demonstrates their importance in political economy and philology; we also see them in philosophy, history, anthropology, and psychiatry. Thus, it is no exaggeration to say that the most fundamental patterns of our thinking today are products of the emergence of biopower.

15. For example, Lee Silver's *Remaking Eden* opens with a description of two happy lesbians cradling their newborn child. See Silver (1998, 2). The promise that same-sex couples can produce children genetically related to both of them is ubiquitous in the literature. There are already children who have genetic material from two women (as well as at least one man). In May 2001, New Jersey's Institute for Reproductive Medicine at Barnabas Medical Center acknowledged that at least two children, by then a year old, had been born as a result of techniques that combined the DNA of three adults. The leader of the scientific team, Jacques Cohen, denied that these children were genetically altered, asserting that use of mitochondrial DNA from a second female did not constitute genetic engineering (or, presumably, triple parentage). But scientists in Australia and elsewhere condemned the work. For a few more details, see Sams (2001) and Romei (2001).

16. Some moves to create guidelines have already been made. In 2006, the National Institutes of Health awarded Case Western's School of Law $773,000 to develop guidelines for the use of human subjects in genetic enhancement research. Their grant application reads in part: "In the absence of guidelines that explicitly address the special issues of enhancement research, subjects could be exposed to risks that would be acceptable in the case of therapeutic research but unacceptable in the case of enhancement research. Moreover, the absence of explicit enhancement research policy is likely to drive this type of research into the realm of 'underground' illicit or off-label use and self-experimentation, which could cause serious harm to research subjects and to society" (See Maxwell J. Mehlman, 2006, NIH Grant Number 1R01HG003879-01). This NIH-funded project is a sign that human experimentation may well go forward in the near future, the poor record in experiments with domesticated animals and our scant knowledge of the interactivity of multiple genes in the human genome notwithstanding.

REFERENCES

Abraham, C. 2002. *Gene pioneer urges wakening to dream of human perfection.* Toronto Globe and Mail (October 26): Science Section, A1.

Agar, N. 2004. *Liberal eugenics: In defence of human enhancement.* Oxford: Blackwell Publishing.

Annas, G. 1989. At law: Who's afraid of the human genome? *The Hastings Center Report* 19, no. 4 (July–August):19–21.

Bhattacharya, S. 2003. Stupidity should be cured, says DNA discoverer. *NewScience.com News Service* 18: no. 13 (28 February).

Black, E. 2003. *War against the weak: Eugenics and America's campaign to create a master race.* New York: Four Walls and Eight Windows Press.

Brooks, D. 2007. The national pastime. *The New York Times* (June 15): Op-Ed online.

Bruinius, H. 2006. *Better for all the world: The secret history of forced sterilization and America's quest for racial purity.* New York: Knopf.

Dice, L. R. 1952. Hereditary clinics: Their value for public service and for research. *American Journal of Genetics* 4:1–13.

Dresser, R. 2004. Genetic modification of preimplantation embryos: Toward adequate human research policies. *The Milbank Quarterly* 82:195–214.

Ellis, H. 1926. *The problem of race re-generation.* New York: Privately Printed by Douglas C. McMurtrie. This pamphlet was originally printed in 1911 as the first of "New Tracts for the Times," published for the National Council for Public Morals by Cassell and Co., Ltd., London.

Foucault, M. 1970. *The order of things.* New York: Vintage Books.

———. 1977. *Discipline and punish: The birth of the prison.* Trans. Alan Sheridan. New York: Vintage Books.

———. 1978. *The history of sexuality, volume 1: An introduction.* Trans. Robert Hurley. New York: Vintage Books.

———. 1997a. An interview by Stephen Riggins. In *Ethics, subjectivity, and truth: The Essential works of Foucault, 1954–1984* (pp. 121–33), ed. Paul Rabinow. New York: The New Press.

———. 1997b. Candidacy presentation: Collège de France, 1969. In *Ethics, subjectivity, and truth: The essential works of Foucault, 1954–1984* (pp. 5–10), ed. Paul Rabinow. New York: The New Press.

———. 1997c. The ethics of the concern for self as a practice of freedom. In *Ethics, subjectivity, and truth: The essential works of Foucault, 1954–1984* (pp. 281–301), ed. P. Rabinow. New York: The New Press.

———. 2006. *Psychiatric power: Lectures at the Collège de France, 1973–1974*. Trans. Graham Burchell. New York: Palgrave.

———. 2007. *Security, territory, population: Lectures at the Collège de France, 1977–1978*. Trans. Graham Burchell. New York: Palgrave.

Garland, A. E. 2001. Is a new eugenics afoot? *Science* 294:59–61.

Gordon, J. W. 1999. Genetic enhancement in humans. *Science* 283:2023–4.

Harris, J. 2000. Is there a coherent social conception of disability? *Journal of Medical Ethics* 26:95–100.

———. 2007. *Enhancing evolution: The ethical case for making better people*. Princeton, NJ: Princeton University Press.

Hubbard, R. 1986. Eugenics and prenatal testing. *International Journal of Health Sciences* 16:227–42.

Kerr, A., S. Cunningham-Burley, and A. Amos. 1998. Eugenics and the new genetics in Britain: Examining contemporary professionals' accounts. *Science, Technology, and Human Values* 32:175–98.

Kuhl, S. 1994. *The Nazi connection: Eugenics, American racism, and German national socialism*. New York: Oxford University Press.

Ladd-Taylor, M. 2001. Eugenics, sterilization and modern marriage in the USA: The strange career of Paul Popenoe. *Gender and History* 13:298–327.

Laughlin, H. 1922. Model eugenical sterilization law. *Eugenical sterilization in the United States, a report of the Psychopathic Laboratory of the Municipal Court of Chicago* (pp. 446–52, 454–61). Chicago: Municipal Court of Chicago.

Lombardo, P. A. 2002. 'The American Breed': Nazi eugenics and the origins of the pioneer fund. *Albany Law Review* 65:743–830.

McKim, W. D. 1900. *Heredity and human progress*. New York: G.P. Putnam and Sons.

McWhorter, L. 2009. *Racism and sexual oppression in Anglo-America: A genealogy*. Bloomington, IN: Indiana University Press.

Mitchell, C. B., and C. C. Hooks. 2006. *State-sponsored liberal eugenics has just begun*, Available: http://www.thehumanfuture.org/commentaries.

Nelkin, D., and M. S. Lindee. 1995. *The DNA mystique: The gene as a cultural icon*. New York: W.H. Freeman and Company.

Osborn, F. 1968. *The future of human heredity: An introduction to eugenics in modern society*. New York: Weywright & Talley.

Partlow, W. D. 1936. A debt the world owes medical science. *Journal of Medical Association of the State of Alabama* 6:6–12.

Patterson, A., and M. Satz. 2002. Genetic counseling and the disabled: Feminism examines the stance of those who stand at the gate. *Hypatia* 17:118–142.

Paul, D. 1995. *Controlling human heredity: 1865 to the present*. Atlantic Highlands, NJ: Humanities Press.

———. 1998. *The politics of heredity: Essays on eugenics, biomedicine, and the nature-nurture debate*. Albany, NY: SUNY Press.

———. 2002. From reproductive responsibility to reproductive autonomy. In *Mutating concepts, evolving disciplines: Genetics, medicine, and society* (pp. 87–105), eds L. S. Parker, and R. A. Ankeny. Dordrecht: Kluwer Academic Publishers.

Punnett, R. C. 1917. Eliminating feeblemindedness. *Journal of Heredity* 8:464–5.

Romei, S. 2001. With donor, baby makes four. *The Weekend Australian (May 12): Features*, p. 19.

Sams, C. 2001. US designer babies have three parents. *The Sun Herald (Sydney, Australia) (May 6, late ed.): News*. p. 7.

Sandel, M. 2007. *The case against perfection: Ethics in the age of genetic engineering*. Cambridge, MA: Harvard University Press.

Silver, L. 1998. *Remaking eden: How genetic engineering and cloning will transform the American family*. New York: HarperCollins.

Stock, G., and J. Campbell, eds. 2000. *Engineering the human germline: An exploration of the science and ethics of altering the genes we pass to our children*. New York: Oxford University Press.

Tatum, E. L. 1966. The possibility of manipulating genetic change. In *Genetics and the future of man: A discussion at the Nobel Conference* (pp. 49–62), ed. John D. Rolansky. New York: Appleton-Century-Crofts.

Tucker, W. H. 2002. *The funding of scientific racism: Wickliffe Draper and the Pioneer Fund*. Urbana, IL: University of Illinois Press.

Whiting, P. W. 1925. Selection, the only way of eugenics. *The Birth Control Review* 9:165–7.

Whitney, G. 1999. Reproduction technology for a new eugenics. *The Mankind Quarterly* XL:179–92.

Wolstenholme, G. ed. 1963. *Man and his future: A Ciba Foundation Volume*. Boston, MA: Little, Brown and Company.