

ARTICLES

THE IMPACT OF GENETIC ENHANCEMENT ON EQUALITY

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*There apparently is a genuine possibility that genetic and non-genetic mechanisms eventually will be able to significantly enhance human capabilities and traits generally. Examining this prospect from the standpoint of equality considerations is one useful way to inquire into the effects of such enhancement technologies. Because of the nature and limitations of competing ideas of equality, we are inevitably led to investigate a very broad range of issues. This Article considers matters of distribution and withholding of scarce enhancement resources and links different versions of equality to different modes of distribution. It briefly addresses the difficulties of defining "enhancement" and "trait" and links the idea of a "merit attribute" to that of a "resource attractor." The role of disorder-based justifications is related to equality considerations, as is the possibility of the reduction or "objectification" of persons arising from the use of enhancement resources. Risks of intensified and more entrenched forms of social stratification are outlined. The Article also considers whether the notion of merit can survive, and whether the stability of democratic institutions based on a one-person, one-vote standard is threatened by attitude shifts given the new technological prospects. It refers to John Stuart Mill's "plural voting" proposal to illustrate one challenge to equal-vote democracy.*¹

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1. Some of the discussion below closely follows portions of the analysis in Michael H. Shapiro, *The Technology of Perfection: Performance Enhancement and the Control of Attributes*, 65 S. CAL. L. REV. 11 (1991) and Michael H. Shapiro, *Who Merits Merit? Problems in Distributive Justice and Utility Posed by the New Biology*, 48 S. CAL. L. REV. 318 (1974). The discussion of John Stuart Mill's views on plural voting (electors having different numbers of votes de-

I. THE PLAN OF THE PAPER

A work dealing with human genetics, enhancement, and equality can generate any number of black holes of discourse. But there is, for better or worse, a built-in braking mechanism: the immense difficulty of getting a grip on any of these lines of inquiry at all, never mind their chaotic intersections. Of course, superficial accounts, partly because of their distorting simplicity, pose their own problems of complexity. Since exhaustion sets in early under these conditions, I move through the issues fairly quickly.

I begin by outlining the meaning of "enhancement," a task that requires explaining what is being enhanced and how and distinguishing enhancement from other interventions into human functioning. Technological enhancement is partially contrasted with customary avenues of self-improvement (e.g., the path to Carnegie Hall is practice); enhancement generally is (again partially) separated from therapeutic intervention (e.g., steroids versus chemical or surgical repair of injured muscle or bone). The account is not definitive because a definitive account is impossible, and in any case, I do not push far enough even to approach the limits to whatever explanation is possible.

I then introduce a strongly linked pair of ideas: "merit attributes" and "resource attractors." The term "merit attributes" designates human traits and characteristics that underlie our ascriptions of merit to an individual person, her actions, and her character. The second category, "resource attractors", concerns traits that are economically valuable because they are in demand and, thus, draw resources. Although the concepts informing them are not the same, the two sets of characteristics overlap substantially—most merit attributes are resource attractors and vice versa. Ability and experience, for example, count as forms of merit and also draw resources and rewards such as money, employment and educational opportunities, high social status, and public esteem.

Distributional issues immediately come to mind when considering human enhancement, whether it is genetic or nongenetic. This is illustrated by resource-attractive traits such as "having money" and being well-trained.² Distributions of increments in money and education enhance one's claim for still further distributions—of money, education, and other items of value, thereby creating a self-reinforcing, self-perpetuating "feedback" effect. Such distributions, by strengthening the very foundations for distribution, constitute a sort of "stepped-up basis" for acquiring more and more of whatever you wish: the more money you get, the more money you have, and so the more additional money you can get, and so on. Of

pending on their relative competence) relies heavily on summaries in secondary sources in order to permit condensation here. A shorter version of this article is to be published in the *Encyclopedia of Biotechnology*.

2. Being well-trained is also a merit attribute.

course, the more *you* get, the less *others* may get, which puts them at risk for losing what they already have.³

We have trouble enough applying foundational values such as equality, fairness, justice, autonomy, and utility to existing distributional matters. Now we have to consider the possibility of distributions that sharply enhance the strength of basic merit attributes such as intellectual or athletic ability, physical strength, and qualities of mind and emotion that permit sustained and productive effort. These traits greatly affect our chances of acquiring familiar self-reinforcing attributes such as being well-educated, which in turn elevate our claims to wealth and other rewards. Whether the traits are viewed as forms of merit or as commercially and socially valuable resource attractors, all distribution patterns will pose special (though obviously not unprecedented) moral and political/theoretical problems because their "self-reinforcement" can go far beyond those of money and education.

Suppose, for example, that mechanisms for altering the germ line were available to increase merit attributes of one's children. It is likely that, for some time, these resources would be expensive and accessible only to those with substantial income or wealth. Distribution largely through commercial markets might thus greatly reinforce existing borders between income/wealth classes and enlarge the social and political distances between them. If the increments in ability are permanent or difficult to undo, then the increasing social stratification and hardening patterns of political power accumulation may approach irreversibility. The enhanced merit attributes, after all, cannot be directly confiscated or redistributed in any simple sense, although we may try to prevent the enhanced persons from keeping their incremental gains. (Medals have been taken away from athletes believed to have used steroids or other augmenting agents. Taking away financial and social gains would be a rather more difficult matter.) The very resources ordinarily used to shift class lines and to enable individual moves from one class to another (merit attributes and resource-attractive traits) are diluted because non-recipients will suffer a diminution in their *relative* status. Rags-to-riches stories will presumably become less likely.

I next note that investigating these possibilities from an egalitarian perspective requires some account of equality. This is an idea well-known for harboring alternative versions of itself that are at least partly inconsistent with each other.⁴ A simple example is suggested to illustrate the difficulties: competing and complementary aspects of equality are mapped onto the distribution of a hypothetical resource that enhances intellectual capacities. The brief tour of equality is ended with remarks on the tensions within the ideas of

3. See discussion *infra* Section VII.B.6.

4. See, e.g., Gary Goodpaster, *Equality and Free Speech: The Case Against Substantive Equality*, 82 IOWA L. REV. 645, 662-65 (1997).

equality, autonomy, fairness, justice, and utility, and to their conflicts *inter se*. For the sake of completeness, the valuation of equality itself and the dispute over whether equality even has any useful content are also briefly mentioned.

The idea of equality is then applied to a familiar problem produced by our technical powers to sever and rearrange life processes: the fear of "reducing" persons to the status of objects in the eyes of others and perhaps in their own eyes.⁵ If technological enhancement treats persons as mere means by turning them into tools of production and thus objectifying them, then we encounter another quandary raised by equality in a technological context: perhaps the enhanced are diminished rather than elevated.

I then take an anthropological/cognitive-psychology perspective and ask what might be the impact of a practice of technological enhancement on our normative systems and political/theoretical values. Our ideas of equality, such as they are, were developed within a system that presupposes relative stability of traits. We change, but only by degrees. We do not suddenly become smarter, stronger, or faster. Our transformations are gradual and smooth, not discontinuous. And although we differ greatly from one another in our measures of merit traits, we have pursued ideas of political equality based on the commonality of our threshold personhood, which is one of the theoretical underpinnings of equal-vote democratic systems. Interpersonal differences are thus suppressed in various circumstances—e.g., when recognizing the right to vote in general elections. What effect would highly uneven distributions of merit attributes have on these essential planks of Western democracy? One thinks here of John Stuart Mill's proposal for plural voting: the number of votes held by electors is to be proportional to their respective "competence," the main measure of which is to be education.⁶

I end with a short review of some constitutional and other legal issues in distributing enhancement resources, whether on living persons or via the germ line.

Overall, nothing is settled—and, in principle, little *can* be settled—except for this: it seems appropriate, if not obligatory, that we focus on the distribution of certain kinds of resources that significantly alter whatever bases or criteria were used to draw those resources in the first place. Even those not overly concerned by inequalities of various sorts cannot rightly avoid these questions. As I said, technological enhancement resources are not unprecedented in their self-perpetuating-and-enlarging feedback properties; the Matthew Effect is well-known for its special application to wealth, edu-

5. See generally Scott Altman, *(Com)Modifying Experience*, 65 S. CAL. L. REV. 293 (1991) (discussing how medical technologies may result in thinking of people as objects).

6. See JOHN STUART MILL, *CONSIDERATIONS ON REPRESENTATIVE GOVERNMENT* 474-475 (J.D. Robes ed., 1977).

cation, and previous accumulations of resource-drawing power (e.g., scientific researchers who have already received and successfully used grant monies).⁷ And it is well to understand that, genetics being what it is, one's own genetic enhancement raises the probability of seeing "elevated" traits in one's progeny, thus compounding the risk of stratification through later generations.⁸

II. PREFACE: IS THERE A TOPIC WORTH PURSUING HERE?

A. *What is the Unit of Enhancement?*

"Genetic enhancement" is, as abstractions go, not too hard to get an initial grip on, and we can start with three questions. First, genetic enhancement of what? The human race? A particular person? Second, what human characteristics are to be altered and how is this to be done? Finally, what qualifies as enhancing (augmenting, amplifying) a trait, as opposed to repairing a defect?

If we wish to genetically enhance the entire human race or substantial portions of it, we can accomplish this, at least marginally, by programs for mating persons (or otherwise getting their gametes together)⁹ and for inhibiting the reproduction of persons whose disfavored traits are believed to be significantly influenced by genes.¹⁰ Although innovative reproductive technologies and social arrangements may help, they are not necessary; still less necessary are any advanced techniques of molecular genetic manipulation.

If the unit for genetic enhancement is "specific possible persons,"¹¹ then molecular manipulation is required. At present, this

7. See Robert K. Merton, *The Matthew Effect in Science*, 159 SCIENCE 56, 58-59 (1968).

8. See Leonard M. Fleck, *Just Genetics: A Problem Agenda*, in JUSTICE AND THE HUMAN GENOME PROJECT 133, 143 (Timothy F. Murphy & Marc A. Lappe eds., 1994) (noting that "[t]his would create the very definite possibility of a genetically permanent 'master class'").

9. See the discussion of the Nobel sperm bank (the "Repository for Germinal Choice") in Pascal Le Draoulec, *The 139 Children of Dr. Graham*, CALIFORNIA, Sept. 1991, at 46.

10. The nature and degree of genetic and nongenetic influences are sharply contested in a variety of contexts. The answers are quite different when one moves from eye color to susceptibility to cancer to behavioral dispositions. All that need be said here is that, despite the exaggerations and flat inaccuracies of the early eugenicists, the influence of genetics is significant and sometimes decisive. See *infra* note 20 (discussing the significant roles of particular genes in forming complex traits).

11. "Possible persons" are persons whose existence rests on our making a reproductive decision. Cf. DAVID HEYD, GENETHICS: MORAL ISSUES IN THE CREATION OF PEOPLE (1992). For our purposes, "possible persons" and "future persons" need not be precisely distinguished. I am stipulating for present purposes that a "specific" possible person is one whose genetic identity is specific (but manipulable), either because it is an early embryo, or because particular gametes have been selected. There is, of course, the possibility of genetic manipulation of twins before individuation, but the genetic code is still determined.

can be done only by working (on a rather hit-or-miss basis) with early embryos, although work is being done on gametic engineering.¹² Techniques for manipulating germ cells are apparently not sufficiently developed to allow directed trait alteration.¹³

In either case, there are serious issues of practical relevance. Large scale eugenic programs have not gone well historically¹⁴ (except possibly for some genocides—whatever happened to the Neanderthal?), and they may take eons to display any notable results. As for molecular genetic engineering, there are multiple complex problems that make hoping or planning for specific trait enhancements a very uncertain prospect. I briefly outline the difficulties, both conceptual and scientific, and elaborate later.¹⁵

B. *Unpersuasive Reasons Not to Pursue the Topic of Genetic Enhancement of Traits*

1. *"Traits" Is Hard to Define*

First, what we count as a "trait," "attribute," or "characteristic"¹⁶ is *partly* a function of culture, and the characteristics that a given culture (dis)favors may not track genetics any more than being guilty of larceny as opposed to embezzlement marks some clear differences in the culprits' respective genomes.¹⁷

Traits involve wildly different forms of existence. They can re-

12. On early-embryo research, see CARSON STRONG, *ETHICS IN REPRODUCTIVE AND PERINATAL MEDICINE* 122-29 (1997). For a brief reference to genetic modification of mammalian reproductive cells taken from and reinserted in the testes, see MICHAEL J. REISS & ROGER STRAUGHAN, *IMPROVING NATURE? THE SCIENCE AND ETHICS OF GENETIC ENGINEERING* 217 (1996).

13. See Paul R. Billings et al., *Human Germline Gene Modification: A Dissent*, 353 *LANCET* 1873 (1999).

14. See DANIEL J. KEVLES, *IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY* (1985).

15. For a discussion of the constitutional and policy implications of regulating genetic engineering, see generally John B. Attanasio, *The Constitutionality of Regulating Human Genetic Engineering: Where Procreative Liberty and Equal Opportunity Collide*, 53 *U. CHI. L. REV.* 1274 (1986).

16. I use these terms interchangeably, although they are not synonymous in all contexts.

17. This is partly what was at stake in *Skinner v. Oklahoma*, 316 U.S. 535 (1942), where the Court, relying on the equal protection clause, struck down a habitual criminal statute that provided for sterilization of certain repeat offenders guilty of crimes of moral turpitude, including theft offenses, but exempted embezzlers. *Id.* at 541. The distinction is not quite as bereft of reason as one might think, however. For those theft offenses presupposing lawful acquisition of property from others based on trust, one might at least speculate that those entrusted on the average reasonably accomplished and intelligent that lower crime rates correlate with higher intelligence, and that we should, therefore, prefer allowing embezzlers to procreate even if we do not permit certain other kinds of thieves to do so. But this argument is far too weak to sustain a compulsory sterilization program. It is unclear what genetic effects a large-scale program would have over various spans of time.

fer to matters of physical appearance, forms of behavior, habits of thought, patterns of speech, biochemical processes, features of one's genome,¹⁸ and so on. There will rarely be a simple one-to-one correspondence between something we identify as a genomic trait and whatever we consider a presenting trait, whether viewed as physical, behavioral, or mental.

2. *Whatever They Are, the Traits' Genetic Structures Are Too Hard to Identify and Work with; Genes with "Outsize" Effects*

Any complex trait reflects a complex agglomeration of genetic and environmental influences. We may have too many genes to work with, assuming we know any of the responsible genes at all, and it may be difficult to know precisely how to alter them, assuming we could do so at all. Augmentation directed at implementing a specific vision of a specific aptitude enhanced in specific ways may only be a remote possibility.¹⁹

On the other hand, not all genes are equal. Even though there is deep complexity in the construction of a mind and body and in the development of attributes, we may find some genetic influences that have an outsize effect. Such a possibility seems confirmed by reports of genetically enhanced learning ability in mice and genetically altered sexual behavior of flies,²⁰ but it is not clear how far we

18. One might view molecular processes as "traits" also, but this seems inconsistent with common usage. Even referring to "genomic traits" is something of a stretch, although there is nothing illogical about saying that one trait can be a causal factor for another trait.

19. See Jon W. Gordon, *Genetic Enhancement in Humans*, 283 *SCIENCE* 2023-24 (1999).

We clearly do not yet understand how to accomplish controlled genetic modification of even simple phenotypes. Where more complex traits such as intelligence are concerned, we have no idea what to do, and in fact we may never be able to use gene transfer for enhancement of such phenotypes. A useful way to appreciate the daunting task of manipulating intelligence through gene transfer is by considering the fact that a single cerebellar Purkinje cell may possess more synapses than the total number of genes in the human genome. There are tens of millions of Purkinje cells in the cerebellum, and these cells are involved in only one aspect of brain function: motor coordination. The genome only provides a blueprint for formation of the brain; the finer details of assembly and intellectual development are beyond direct genetic control and must perforce be subject to innumerable stochastic and environmental influences.

Id. Gordon also notes that the impact of directed genetic augmentation on evolutionary processes would be minimal. See *id.* at 2024. Nevertheless, the point made here in the text remains: some genes or gene combinations may have sufficiently "disproportionate" effects to make a difference. As for evolution, if one is looking at geologic time, "directed evolution" may make a difference, but this is obviously of little practical import.

20. See Nicholas Wade, *Smarter Mouse is Created in Hope of Helping People*, *N.Y. TIMES*, Sept. 2, 1999, at A1 (pointing out that "Dr. [Eric R.] Kandel [Columbia University] notes that Dr. Tsien was not restoring the learning abil-

ity of old mice but doing something even more interesting: enhancing the natural abilities of young mice"); Thomas H. Maugh II, *Genetic Cousins: Many Scientists Believe That Genes Are Responsible for a Large Portion of Human Behavior, and They Have Turned to the Fruit Fly for Answers*, L.A. TIMES, Feb. 13, 1997, at B2.

Virtually every important gene identified in flies to date has been shown to have a counterpart in humans, and researchers see no reason why genes controlling behavior should be any different One of the most striking successes [in linking genes to behavior] was the recent report that virtually all sexual behavior in male fruit flies is controlled by a single gene, a startling finding that may force at least some naysayers to rethink their objections to genetic control of behavior.

A team of researchers from Stanford and three other universities reported in December [1996] that a series of mutations in one gene in the brain of the fruit fly can produce changes in the spectrum of male sexual behavior, including the ability to recognize females, courting behaviors and the capacity to produce progeny.

"Showing that a behavior as complex as sexual behavior is controlled by a single gene, at least in flies, raises the obvious possibility that other behaviors will be similarly controlled," said Stanford biologist Bruce Baker The team found that, the more severely the fru [for fruitless] gene was mutated, the more courtship behaviors were lost. In severe mutations, the flies were barely interested in courting, even though they could walk and fly normally The researchers do not know if there is a comparable gene that controls sexual behavior in female fruit flies. In part, that is because female behavior is more subtle and thus more difficult to study.

Earlier this month, however, geneticist Michael McKeown and his colleagues at the Salk Institute for Biological Studies reported the discovery of a gene, called dissatisfaction, that controls some aspects of sexual behavior in male and female fruit flies.

Normal females are quick to respond to courtship behavior. Those with a mutation in dissatisfaction, however, fail to adopt a proper mating position—and may, in fact, assertively reject the male's advances, kicking the male or running away. Males with the mutation attempt to mate with both females and other males. . . . "It's certainly possible there is going to be a human analog to fru," said Steve Wasserman of the University of Texas Southwestern. "What is certain is, if it's there, it won't control behavior, it will merely influence it."

Id. See also *Fly's Life Prolonged by a Human Gene*, N.Y. TIMES, June 3, 1998, at A1; John Travis, *Single Gene Invites Worms to Dinner Party*, 154 SCI. NEWS 167, 167 (1998).

[S]ome strains of the nematode *Caenorhabditis elegans* prefer to munch their microbial meals without companions, while members of other strains swarm into writhing dinner parties. Two San Francisco researchers have now found that the only difference between the solitary and social strains is a small change in a single gene.

The newly identified worm gene resembles several human genes, say [the researchers, Mario de Bono and Cornelia I. Bargmann]. They, however, caution against extrapolating from the feeding habits of worms to complex human behavior.

Still, the human genes similar to the nematode gene are implicated in eating behavior, suggesting that the worm may offer insight

would expect to find human parallels. A bit closer to home, one report suggests discovery of a gene having a greater effect on human general intelligence than other known genes.²¹ Molecular biologists also speak of "master control" genes, and once again, there is a useful example from fruit flies: some believe that a gene called "eyeless" may be "a gene that singlehandedly triggers the formation of an organ or structure."²² But it is far too early to credit these hints as demonstrating the possibilities of genetic enhancement of complex traits. All we can or need do for now is to understand that a hierarchical gene structure suggests the possibility of significant germ line

into more complex animals. "We're now getting at genes that influence natural variation [in behavior]. It was thought for many years that was impossible," notes [another researcher, Marla B. Sokolowski]

[The article briefly outlines how certain genes are received in the brain.]

How such a subtle alteration in a brain cell receptor explains the two strains' distinctive behaviors remains unclear, although it may affect how a worm senses or responds to food or other nematodes. Bargmann notes that the receptor's gene doesn't completely determine worm social behavior. Solitary worms do swarm under certain conditions, she says, and members of social strains will strike out on their own when no food is around.

Id. at 167.

21. See *The First Gene Marker For IQ?*, 280 SCIENCE 681, 681 (1998).

After 5 years of winnowing through genetic data on groups of normal and gifted children, scientists have identified the first marker for a gene that may influence what psychologists call "g," or general intelligence—the essence of what intelligence quotient (IQ) tests measure. It only accounts for a tiny portion of cognitive ability, but the researchers say it's a step toward the goal of tracing the biochemical pathways between genes and learning.

Id. However, this is early work and subject to revision. See *id.*; see also Jeremy Laurence, *Scientists Close to Devising Pills to Boost Memory*, THE TIMES (London), Feb. 12, 1997, available in LEXIS, News Library, Major Newspapers File.

22. See Marcia Barinaga, *Focusing on the Eyeless Gene*, 267 SCIENCE 1766, 1766 (1995).

The protein produced by the *eyeless* gene has all the hallmarks of a transcription factor, a protein that turns genes on or off. It apparently "binds to a distinct set of genes that starts the whole process to make eyes," says Larry Zipursky [of UCLA]. With the help of *eyeless*, Zipursky says, researchers should be able to "piece together the steps" by which eyes are made.

Id. When the gene was turned on by researchers "in parts of flies where it wouldn't normally be active, the flies grow extra eyes . . . on their wings, legs, and antennae." *Id.* The article then quotes Gerald Rubin of the University of California Berkeley: "It is really remarkable that you can take a tissue that would normally make a wing or an antenna and by turning on one [gene], make that into a complex thing like the eye." *Id.* "The ability to induce a complete organ is what appears to make *eyeless* a 'master control gene.'" *Id.* at 1767. More generally, a master gene is one "that controls other genes, particularly when the genes controlled are all expressed characteristically in a particular type of differentiated cell." NORMAN MACLEAN, *DICTIONARY OF GENETICS & CELL BIOLOGY* 239 (1987).

enhancement, even though our most favored attributes derive from the interaction of many genes with many environmental factors.

3. *"Enhancement" Is Hard to Define and to Distinguish from Other Processes*²³

As a cultural matter, if not a moral-theoretical one, our views and practices concerning the justifiability or rationality of altering human traits depend heavily on the context. If someone's "trait" is an open neural tube, surgical intervention may be justified under a disorder model.²⁴ If the trait is short stature and a person is suffering from some recognized height-impairing disorder, administration of human growth hormone may be acceptable to many pediatricians, endocrinologists, and parents, although there remain open issues about the treatment's adverse effects and efficacy.²⁵ If no such disorder is at work, there is less lay and professional enthusiasm for remedial measures.²⁶ In any case, for many observers and practitioners, the difference between licit and illicit attempts at transformation lies in distinguishing disorders, injuries, and the like, on the one hand, and simply making oneself better via technology, on the other.

Standing alone, the term "enhancement," as used in legal and ethical commentary on the applied life sciences, generally concerns technologically facilitated alterations. I thus do not use it to describe culturally and legally accepted processes for improving oneself. The gradual strengthening and bulking of muscle tissue through weight lifting is, as a matter of ordinary language, a form of

23. Again, I use key terms ("enhancement" and "augmentation") interchangeably, even though they are not synonymous. They should be contrasted with terms such as "supplementation," "extension," and "amplification." For example, think of the use of spiked shoes for running, a springier vaulting pole, a spitball, or a cork-filled bat. Where the use of any of these mechanisms is part of the very definition of the sport or game, the characterizations "extension" or "supplementation" do not seem apt, except when changes illicitly go beyond the existing baseline. If cork-filled bats were standard, one would be less likely to talk of extending one's abilities with a bat.

24. By "model" I mean an abstract guide for some task (i.e., description or evaluation of actions or states of affairs). There is no need to be more precise here. As for "disorder model," the term, roughly speaking, designates justifications and explanations for intervention into human life processes for purposes related to treatment, cure, amelioration, management, and prevention of disease and perhaps of injury. The family of terms that include "disorder," "disease," "injury," "trauma," "pathological condition," and the like are clear enough for present purposes, but their imprecision becomes of major importance when we try to distinguish "justifiable treatment" from "tampering with nature."

25. See David B. Allen & Norman C. Fost, *Growth Hormone Therapy for Short Stature: Panacea or Pandora's Box*, 117 J. PEDIATR. 16, 18-19 (1990).

26. See generally Michael H. Shapiro, *The Technology of Perfection: Performance Enhancement and the Control of Attributes*, 65 S. CAL. L. REV. 11 (1991) (examining normative aspects of human enhancement, particularly in the context of sports).

enhancement, but it would be confusing to use it that way here.

Nevertheless, the obvious parallels between technologically improved performance and traditional modes of improvement are as crucial as the differences. We will have to ask what difference the path to improvement makes and whether certain paths defy categorization as "technological" or "natural." Think of how we improve our analytical skills: we receive instruction, we study, we practice. We are inclined to view the improvement as having been "internally" generated. The improvement is not the result of "external" aids such as an "intelligence pill" and does not compromise claims of personal, meritorious achievement. It is part of our cultural baseline and is viewed as an outgrowth of our nature as human persons.

Even this simple example is problematic. To lift weights in a deliberate attempt to increase strength and alter appearance is arguably a kind of technological enterprise. But it remains sharply different in appearance from the imagined effects of chemical performance enhancers (e.g., a magical steroid that allows one to swell up in record time with minimal effort). In real life, however, technology and tradition are concurrent causes of the changed traits. Use of steroids requires serious physical exertion to achieve desired effects, and this seriously complicates moral assessment of their use to enhance performance.

Finally, it should be understood that the conceptual difficulties in the very idea of enhancement are not mere transient confusions that will dissipate (especially when we make ourselves more intelligent). Consider, for example, a criticism of the claim that "when a disease is common, the risk for developing the disorder may be considered the norm, and genetic alleviation of that risk might be regarded as a form of enhancement."²⁷ The critic continues:

This kind of semantic gamesmanship is misleading. The obvious public concern does not relate to improvement of traits for alleviation of deficiencies or reduction of disease risk, but to augmentation of functions that without intervention would be considered entirely normal. To raise the athletic capabilities of a schoolyard basketball player to those of a professional or to confer the talents of Chopin on a typical college music professor is the sort of genetic enhancement that many find troublesome. The experts in the gene transfer field should acknowledge the distinction in order to avoid causing public distrust and undermining the deliberative process.²⁸

This is only partly on point. It seems plausible to say that reducing our predispositions to disease, which are in many cases "normal" (ordinary susceptibilities to colds, for example), is not the sort of augmentation that "steroid panic" brings to mind. The oper-

27. Gordon, *supra* note 19, at 2023.

28. *Id.*

ating justificatory model is still defined in substantial part by the risk of disorder: the governing norm is about reducing pathology.²⁹ If access to means of reducing the incidence of disorder was highly restricted, the small proportion of persons whose germ lines were suitably altered to reduce pathology would be substantially advantaged in being able to make better use of their merit attributes. This is quite troublesome, although existing health care systems raise parallel concerns.

Moreover, insisting that augmentation can be sharply defined and distinguished from other processes related to reducing disorder inflates the normative value of the disorder model. The question is "what difference does it make if someone is advantaged over others by virtue of avoiding impairments rather than by enhancing his 'natural' talent baseline?" (The comparison of augmentation with amelioration of disorders and injuries will be revisited later.)³⁰

Finally, limiting the concept of augmentation to functions that without intervention would be considered entirely normal is hardly problem-free. "Disease" and "disorder" are, to be sure, not simply artifacts of culture. One can imagine societies in which the onset of a fatal cancer would be viewed as a favorable sign from the gods, who are about to elevate the victim into their pantheon. For the rest of us, however, it remains a dreaded disease. But not all diseases are easily defined as such. The very concept of normal may itself, in various contexts, be relative, as has long been understood. That relativity becomes manifest when technological alteration is possible. Now, unenhanced intelligence at or near the average is considered "entirely normal". Will that perception change when technological intervention is known to be available?

Despite the doubts about whether we can eventually *do* genetic augmentation, whatever its form, there is ample reason to pursue questions about the possible effects of genetic enhancement. These questions represent thought experiments that highlight moral/conceptual issues concerning basic values. Moreover, some degree of nontrivial, directed enhancement may well become possible, and it is not too soon to address those issues in advance of their arrival.

I will therefore proceed on this "as if" basis. Although I am fully aware that some readers, especially those who skip text passages that set out assumptions, will think this is all too credulous, I make no effort even to outline the scientific/technological prospects for augmenting human traits.

29. *See id.*

30. *See discussion infra* Section IV.A.

III. ENHANCING RESOURCE-ATTRACTIVE TRAITS: A FIRST LOOK AT EQUALITY PROBLEMS

Later, I will describe some of the well-known difficulties in working with the concept of equality and apply them to matters of genetic enhancement.³¹ It is useful, however, to have something concrete already on the table to which we can apply our abstractions.

A. *Resource-Attractors, Merit Attributes,³² and Desert*

Some human attributes are more important for some purposes than are other attributes. "Importance" derives from familiar variables: the need to take strong measures to survive in a mindless environment that cares nothing for us and the need to make one's way in a group or culture, which is itself a near-necessity for survival. One might think the former attributes are simply matters of biology while the latter are culturally relative, but this is too simple. For our purposes, however, our world determines which traits are favored: those that mark greater chances for surviving, mating, procreating, and so on. These traits are likely to form the major bases for assignment of rewards, both material and nonmaterial (e.g., food and drink, shelter, clothing, admiration, praise, social and economic status, etc.). Obvious examples are the varieties of intelligence, physical aptitudes and skills, personality characteristics, and appearance. The characteristic need not be important for survival, procreation or flourishing in a state of nature. A given group may believe that the astrological conditions prevailing at one's birth constitute one's central asset or liability. (Technological alteration of this status might prove difficult.) The ability to strike a small, round, fast-moving object with a stick is not equally significant in all cultures, but is highly wealth-attractive in several. But I will not investigate the normative foundations or cultural provenance of merit and desert judgments.³³

31. See discussion *infra* Section VII.

32. "Resource-attractor" and "merit attribute" are not quite extensionally equivalent, but the two sets of traits have a very substantial overlap. Obviously, they emphasize different but closely linked aspects of human traits. The former describes a form of economic power; the latter bears evaluative components—including moral appraisal—as well as descriptive ones suggesting interpersonal comparisons.

33. See generally GEORGE SHER, DESERT (1987) (discussing the dimensions of desert). One difficulty with the notion of merit bears mention because it suggests the internal tensions within it. Imagine a political system with a monarch or dictator in which it is understood that power passes from that leader to one of his or her children or designates. Does the "heir" have "merit?" Is the princess morally praiseworthy simply because she will become queen? This may depend on presuppositions within the system. If the Deity lies behind the succession, perhaps the anointed possess merit simply in having been selected.

B. Varying the Measure of Resource-Attractors and Merit Attributes

Whatever one's palette of traits at any given time, it provides both the explanation and possibly the moral foundation for much of the person's social, economic and personal situation. They are, in part, distributional criteria of sorts. Suppose, however, that we could enhance these criteria through technological alteration. Those already in a position to draw substantial resources and rewards may sharply augment their resource-attractive traits, possibly in a self-accelerating process that brings ever more resources to the person bearing the enhanced traits. To put it metaphorically, that person's very merit is increased, which amplifies her claim for more of everything, including even more merit.

The resulting possibilities of greater and more inflexible social stratification are obvious, as discussed later.³⁴ (An existing parallel is the distribution of educational resources, both basic and advanced.) To be sure, not everyone will view all social stratification along particular lines to be an evil; there is stratification and there is stratification, and much of it, given the world as it is, seems inevitable. But the risks to equality values are plainly there, and they require investigation.

IV. PATTERNS FROM THE PAST: CURES AND AUGMENTATIONS

A. Treating Disorders/Injuries Versus Enhancing Nature

If disorder or trauma has been successfully treated or even cured, we would not ordinarily view the restorative/curative process or its outcome as "augmentation." Inappropriate enhancement is a worry only when the intervention "exceeds" the framework of disease or injury and moves the patient past an earlier baseline, or past some imagined normal level for one who was never normal in the first place. Enhancement does more than "nullify" or "cancel out" the disorder. It replaces it with a state that is not "natural" for the subject being altered. The term "natural" of course has to be used, if at all, with extreme caution. Think, for example, of someone who has been afflicted with some physical or mental disorder from birth and has thus never known another state. For her, amelioration or cure may well be viewed as enhancement—yet the intervention seems fairly unproblematic because of its "location" within a disorder model for justifying intervention.

Still, enhancement versus therapy remains an important distinction for equality analysis, to which I turn shortly. The use of a treatment model weakens complaints that inequalities are being created or worsened by distribution of "elite-creating resources." Orthopedists have often been heard to say, for example, that a re-

34. See discussion *infra* Section VII.B.6.

paired fracture could leave the patient better off than before. To invoke an example I have used before, recall pitcher Tommy John's surgical repair (enhancement?). The result, said Pete Rose, was to give him Sandy Koufax's arm.³⁵ And as we saw, using human growth hormone for treatment of short stature caused by pituitary disease seems more acceptable than using it to increase the height of short persons not afflicted with a growth-impairing disorder.³⁶ The latter is true technological enhancement rather than treatment. It may be more defensible in some eyes because extremely short stature is an affirmative handicap, although "handicap" and simple "distress at being below the median" may sometimes be hard to distinguish.

Another example that illustrates the entanglement of treatment with augmentation is use of stimulants to treat depression. The stimulant effect masks the mood disorder, but does not simply restore the patient to his *status quo ante*; it may leave him with mood and alertness enhanced beyond his baseline, and perhaps with cognition distorted as well.³⁷

For our purposes, what are the relevant differences between disorder/trauma models and enhancement/augmentation models? Disorder models, by definition and theory, are both authorizing and limiting tools—they define and demarcate the goal as the nullification, cancellation, arrest, or symptomatic improvement of disease and injury. The end of that process marks a stopping point beyond which further treatment is not authorized and may be affirmatively inhibited (unless justified by a plausible prophylactic purpose). In principle, however, augmentation knows no such "objective" limits. One augments up to the limits of one's technology, desires, and needs.

The two models also differ sharply (in theory) in their bearing on our present standards of normality and nature and on our notions of what constitutes a *fair advantage* of one person over another. They thus heavily influence how we rate each other's accomplishments and continuing efforts to forge ahead of the pack. To augment through technology may seem, paradoxically, to attenuate one's claims of praiseworthy accomplishment. It is to "cheat" by invoking "external" or "artificial" aids. These apparently warring models thus require more attention here because of their obvious bearing on equality analysis.

35. See Jim Murray, *They Rebuilt Her Knees, She Rebuilt Her Game*, L.A. TIMES, Mar. 5, 1991, at C1 ("I know Tommy had to have a new arm-but did they have to give him Koufax's?").

36. See Allen & Fost, *supra* note 25, at 18-19.

37. See Herman Denber, *The Pharmacologic Treatment of Depression*, 33 AM. J. PSYCHOTHERAPY 96, 97 (1979).

B. Illicit Transformations, Identity, and the Paradox of Perfectionism

All societies place high value on certain traits, though there is wide cross-cultural variation as to which traits are designated the most valuable. Take intelligence and physical strength/motor skills as examples. Assuming the culture under study harbors some notions of permissible or obligatory self-improvement (whether in spearing animals or solving equations), these traits will be the principal targets of traditionally accepted improvement efforts such as training and practice. (Perhaps there are cultures in which seeking "magical" augmentation is applauded, but I leave this to the script-writers.) On the other hand, technological tampering with these traits may be viewed with far more disdain and alarm than altering other traits. (Again, this may vary among cultures.) Thus, the very targets for "natural" improvement are precisely those whose "artificial"/"non-natural"/"identity-compromising"/"externally induced" augmentation is the most questionable.

Any perceived threat to the integrity and continuation of identity is a threat to values of merit and desert. These criteria, at least on some views of equality, permit judgments that persons are being treated equally (or not being treated unequally) despite the fact that they are receiving different benefits and burdens. If they differ in measures of personal merit and desert, then it may be permissible or even required to treat them differently. But if we cannot say who really won the race, the "real" Roger Runner or the augmented one, our assignments of reward are in doubt. Even if there is no compromise of identity, our evaluation system may become seriously askew. People may still debate whether Ben Johnson was rightly relieved of a gold medal in the 1988 Olympics, or whether there should be an asterisk next to Mark McGuire's mark of seventy home runs in the 1998 season.³⁸ The upshot is an internally conflicted ethic. We want to improve ourselves, but literally "exceeding ourselves" is another matter. We do not endorse self-improvement by any means; the ideal of personal progress limits the permissible modes of improvement. Indeed, if impermissible means are used, the result may not even *count* as "improvement"; the very status of a merit attribute as a merit attribute is impaired when it is refashioned technologically. Traditional techniques for self-improvement are, on the other hand, not only not disdained, *but are required by ideals of perfectionism and progress.*

So, self-betterment in *unacceptable* ways not only does not "perfect" us, but actually lessens us. In these circumstances, more is less. Or so one might argue.

38. See Norm Frauenheim, *IOC Needn't Double as Andro Police*, ARIZ. REPUBLIC, Sept. 16, 1998, at C2.

V. DEMAND FOR ENHANCEMENT: NOTES ON ECONOMIC ANALYSIS

There is no way to know precisely what the demand will be for enhancement resources,³⁹ but some speculations seem reasonable, at least on certain assumptions. The relevant variables in determining demand include the nature of the enhancement; its anticipated benefits and costs (however defined); the actions of gatekeepers (physicians, given the likely medical risks of using such resources?); and the nature of cultural and interpersonal pressures (which also involve benefits and costs). Whether technological enhancement is generally favored or disfavored will obviously affect its level of use. Different forms of technological enhancement may of course fare quite differently in the market. Think of the varying strength of demand for steroids by athletes, for plastic/cosmetic surgery by professional entertainers and by others, and for the use of psychotropic medications to revise aspects of one's mental functioning not necessarily associated with a disorder (e.g., using anti-anxiety agents for nervousness).⁴⁰

In any case, in a real-world distribution system, whatever its structure, many persons will receive fewer (if any) augmentation resources than they want or think they need. They are likely to see this as particularly inegalitarian, unfair, and unjust because of an intuitive understanding that any distribution of these resources to any given person will have a "self-aggrandizing" effect by ratcheting up the strength of that person's future claims.

There are many other connected questions concerning demand and distribution that require the perspectives of economic analysis, as well as those of moral and political theory and of the social and behavioral sciences generally. For example, diminishing returns on increments in resource-attractive traits may set in fairly late in the

39. For commentary on possible patterns of demand under different human cloning regimes, see Eric A. Posner & Richard A. Posner, *The Demand for Human Cloning*, 27 Hofstra L. Rev. 579 (1999). The authors also discuss the demand for genetic engineering. See *id.* at 601-08.

40. See Robert Langreth, *Drugs: Depression Pill May Help Treat the Acutely Shy*, WALL ST. J., May 3, 1999, at B1.

[S]ome doctors warn that patients may clamor for Paxil to treat everyday bouts of shyness. "We don't want this to be something people use for simple stage fright," says Jack Gorman [Columbia University]. "One concern is that a lot of businessmen want to get an edge and think they'll make better speeches."

Paxil's new incarnation is thus likely to reignite the debate over using prescription drugs aimed at the seriously ill to treat people with milder complaints about their psyche and body.

Id. The author then refers to prior parallel discussions of Prozac. Cf. Nancy Ann Jeffrey, *Some HMOs Balk at Covering Xenical, New Hoffman-La Roche Obesity Drug*, WALL ST. J., May 3, 1999, at A3 (observing that "some insurers consider [obesity drugs] 'lifestyle-enhancing drugs'"). Still, extreme phobias and serious obesity are arguably within a plausible disorder-therapy model for justifying use of these technological agents.

game compared to other commodities (you may not want more peanuts, but you can always stand to be smarter), and this is a decided challenge to economic equilibrium. The mutual interacting effects of escalated merit attributes also largely unknown. Which of them potentiate or reinforce which others? Can increments in one attribute serve as a substitute for others? Some of these questions can be pursued by mathematical techniques that capture the feedback mechanism at work here, but that is far beyond the scope of this article.

VI. COMPETING VERSIONS OF (IN)EQUALITY

A. *A Thought Experiment Not So Far Removed from Reality*⁴¹

It seems increasingly likely, though not imminent, that we will develop mechanisms such as drugs or somatic gene therapy that can noticeably enhance mental abilities.⁴² This is quite a mouthful, both as a matter of prediction and as a threshold matter of definition. What a particular mental ability is and how it is to be distinguished from other cognitive and emotional aptitudes is much discussed in various branches of psychology. I will simply assume that, despite cultural diversity and conceptual and empirical difficulties, there are mental aptitudes and predispositions that can be identified, at least roughly measured, and ultimately linked to identifiable neurochemical processes and neurological structures, many of which are heavily affected by genetic variables.⁴³

Consider, then, some potential distributional systems for the enhancement mechanism. The distributees can range over individuals, groups, corporations, and institutions. The underlying distributional scheme can involve central direction via government or decentralized systems involving markets, kinship and other relations. There will, of course, be many empirical variables concerning the technology's absolute and relative effectiveness and how it can be measured, and the nature and incidence of adverse effects and how they can be controlled. But models of increasing sophistication can specify relevant variations. The immediate goal here is to illustrate differences in what is "equalized". We are, at bottom, trying to interpret the abstraction " $X = Y$ "—where " $=$ " is not restricted to

41. See generally DOUGLAS RAE ET AL., *EQUALITIES* (1981) (discussing alternative versions of equality; these varying but linked concepts can be mapped onto the thought experiment in the text); LARRY S. TEMKIN, *INEQUALITY* (1993) (discussing amongst other things the question "When is one situation worse than another regarding inequality?").

42. Cf. REISS & STRAUGHAN, *supra* note 12, at 211-12 (discussing intelligence and behavioral traits).

43. For investigations into cognitive science and psychometrics, see, for example, ROBERT J. STERNBERG, *BEYOND IQ: A TRIARCHIC THEORY OF HUMAN INTELLIGENCE* (1985).

mathematical equalities, which are, in a sense, assertions of identity. The various forms of equalizing are far from fully discrete, and are linked to each other in complex ways.

1. *Markets—Distribution Based on Ability to Pay*

If one has the ability to pay, and the commodity is not illicit, one can purchase it or at least make a bid. Markets thus implement a sort of equality of opportunity based upon financial resources. Of course, disparities in the holdings of such resources and in the resulting distribution of commodities are often seen as the epitome of inequality.

What is equalized here is the *ratio* across persons of effective dose to economic power: *dose/financial resources* (or economic power).

“Economic power” and “ability to pay” are ambiguous phrases. Most persons cannot pay large sums of money all at once. They instead secure credit or find some other method of financing their purchases. One rightly wonders whether some enhancement resources might be financed through health insurance mechanisms, particularly when the purported enhancement can be linked to, if not placed squarely within, disorder/trauma models.⁴⁴

Next, think of distribution in accordance with a centrally directed plan, such as one of the following.

2. *Providing Equal Doses to All Persons, Even if Differentially Effective or Harmful*

This is a simple, if hamfisted, sort of equality. It ignores differential effectiveness and risk, and of course entirely bypasses questions of need, merit, and utility. The ratio of dose to threshold status as a person is, of course, the same for everyone.

3. *Distribution According to Need (Medical and Nonmedical)*

Here, the dose/need ratio is equalized. Of course, we have no clear idea of what “need” could mean here; it is, after all, a seriously disputed concept. Some would limit the idea of need to “medical need” as defined within a disorder/trauma model. Only the demented, persons with Downs syndrome or some other disorder-based form of low intelligence, or the severely brain-injured would receive a portion. On this view, those who are unafflicted, though relatively burdened by being near or below the median, do not “need” the commodity; being a statistical outlier does not necessarily mean that one is suffering from a recognized disorder, defect, injury, etc. On the other hand, anyone having difficulty in attaining a specific goal

44. See MAXWELL J. MEHLMAN & JEFFREY R. BOTKIN, ACCESS TO THE GENOME: THE CHALLENGE TO EQUALITY 62-85 (1998) (examining insurance’s role in providing access to genetic technology).

can claim need. Albert Einstein might have said he "needed" enhancement to make progress on a unified field theory. If need is not restricted by the limitations of a disorder or even a "handicap" model,⁴⁵ then we are pretty much at sea. Many supposed needs rest on unstated and hazy interpersonal comparisons and on disputed measurements, however the need is defined.

Still, persons with significantly lesser native endowments than most others are seriously disadvantaged and arguably in "need" of "redress". Here, one thinks of John Rawls' difference principle, which seems to suggest that distribution of resource-attractors should be based, in part, on equalizing the dose/need ratio.⁴⁶

One might even imagine arguments that the Americans with Disabilities Act⁴⁷ should be read to apply to persons disadvantaged by the growing "merit gap" between them and others, or perhaps even to possible persons who, without germ line augmentation made available to their parents-to-be, would find it very difficult to make their way in the new world. The enlarged gaps would be said to constitute "disabilities," thus triggering protections for equal opportunities to employment. Parallel arguments might be applied to legislation governing state obligations to provide adequate, individually tailored educations for all students. Those who are rapidly being outdistanced would lay claim to trait-enhancing resources. Compare this scenario to claimed rights of access to stimulant drugs on behalf of students with some form of attention deficit disorder.⁴⁸ And for those institutionalized because of mental impairment, a right to "treatment" might also be presented as a claim of access to enhancers.⁴⁹ (I am taking no position on any of these issues.)

45. See Allen & Fost, *supra* note 25, at 20. Note their analysis of "disease, handicap, and potential." See *id.* at 18-19.

46. See *infra* note 67 and accompanying text.

47. Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101-12213 (1994 & Supp. II 1996). The Supreme Court has recently decided several cases under the Act. See, e.g., Sutton v. United Airlines, Inc., 119 S. Ct. 2139 (1999) (holding that airline pilots needing corrective glasses were not disabled within the ADA's meaning because their uncorrected vision did not substantially limit any major life activity), *cert. granted*, 119 S. Ct. 790 (1999). It is likely, however, that counsel arguing in a more "high-tech" enhancement context would urge that the widening abilities gap did limit some major life activities because widespread enhancement has altered the very nature of "major life activities" by escalating their difficulty. This still does not seem very persuasive.

48. Cf. Valerie J. v. Derry Coop. Sch. Dist., 771 F. Supp. 483, 488 (D.N.H. 1991) (observing that "[u]fortunately the school district insisted that the parents consent to medication as a necessary component of [their son's] IEP [Individualized Education Program, under 20 U.S.C. § 1401(1)(19) and New Hampshire Law]"). The court held that "Casey J.'s right to a free appropriate public education could not be premised on the condition that he be medicated without his parents' consent." *Valerie J.*, 771 F. Supp. at 490. Compensatory education was granted for a specified period. See *id.* at 491.

49. On right to treatment issues in quite different contexts, see generally Roy G. Spece, Jr., *Preserving the Right to Treatment: A Critical Assessment and*

4. *Distribution Based on "Social Utility"*

This equalized ratio is *dose/social utility*. What is useful to any society at a given time is of course partly a function of culture, which may be stable or unstable in different respects. The social utility of a given distribution pattern, for example, might be inversely or directly related to relative intelligence, without regard to whether disorder underlies low-end abilities. Distribution to persons at the low end of the bell curve may decrease the demand for certain social services and thus protect public monies. As for the other end of the curve, the social benefits of enhancing the abilities of, say, already-talented encryption experts might aid national defense (think what might have happened if the English "Enigma" program in World War II had not been able to break the German code),⁵⁰ or of biomedical scientists struggling for insights on how to control or avert deadly disorders, or of physicists/cosmologists working on Grand Unification and Theories of Everything. Indeed, at least in specific contexts, one would expect government to be tempted to enact requirements that certain workforce groups use enhancement resources in order to maximize the expected increment in social benefits of enhancement technologies. Whether this would survive claims of infringement of fundamental liberty interests in personal/bodily/mentational integrity I leave aside, except to say that compulsory consumption would in general not fit well within the present constitutional framework. (Enforcement of such a system would pose rather formidable problems.)⁵¹

The dose/social utility ratio may, in particular situations, be closely related to dose/merit judgments, which I discuss next. Personal evaluations based on native ability and acquired skills (both are forms of merit) may take the form of predictions of good works.

5. *Distribution in Proportion to Pre-existing Merit*

Here, the ratio equalized is dose/merit. Merit can roughly be divided into "native" or "endowed" merit and "acquired" merit. (This is quite an oversimplification, but I leave the matter at that.) The

Constructive Development of Constitutional Right to Treatment Theories, 20 ARIZ. L. REV. 1 (1978). See also L.C. by *Zimring v. Olmstead*, 138 F.3d 893, 902 (11th Cir. 1998)(holding that, under the ADA, "where . . . a disabled individual's treating professionals find that a community-based placement is appropriate for that individual, the ADA imposes a duty to provide treatment in a community setting—the most integrated setting appropriate to that patient's needs"), cert. granted *sub nom.* *Olmstead v. L.C.*, 119 S. Ct. 617, amended by *sub nom.* *Olmstead v. L.C.*, 119 S. Ct. 633 (1998).

50. See Pat Shellenbarger, *Keepers of Ultimate War Secret Reminisce*, NEW ORLEANS TIMES-PICAYUNE, May 30, 1999, at A2.

51. See the brief discussion of this in Shapiro, *supra* note 26, at 48-51. Enforcement would raise major legal and policy questions about monitoring use of the augmenting mechanisms, government and non-government liabilities for adverse effects or flawed enhancements, religious objections, and so on.

former would include various sorts of "natural" intelligence (independent of environmental factors),⁵² physical aptitudes, and capacity for sustained effort. Acquired merit is founded on accomplishment, defined within a given culture.⁵³ On the view that intelligence and certain other traits are merit attributes, the answer to "Who merits (more) merit?" is: those who *already* are highly meritorious. This sharply contrasts with a view of equality that sees natural variation in aptitudes as something to be overcome rather than presupposed as a *proper* basis for distributing life's rewards.

6. *Distribution to Effect Equality of Outcomes of Particular Sorts (e.g., All Will Have Equal Intelligences of One Sort or Another or Equal General Intelligence)*

What absolute level of ability this will involve depends on the available technology, the social distribution system, the society's values and perceived needs, and individual preferences. Perhaps the plan will require administering "negative doses" to some to reduce the aptitudes.⁵⁴ Assuming the desired uniform level of ability is *X*, the ratio equalized is the absolute value of *dose / distance from*.

7. *Distribution in Proportion to Intensity of Personal Preference for Enhancement*

Any explanation of one's desire for enhancement will do: financial success, winning trophy spouses, and so on. Once again, the varying bases for distribution overlap. If preferences are sufficiently "intense," for example, one may begin talking of "needs" to scratch a maddening itch. Moreover, in some contexts, wanting something very intensely is considered a merit attribute. For example, we sometimes say that Jane succeeded at something, defeating all opponents, because she just desired it more than the others. Moreover, there are clear cases in which persons are said to prefer things they do not need. (Think of the latest requests made by your children.)

8. *Lotteries*

Using lotteries as distributional mechanisms might be viewed as "punting"—an effort to bypass the enormous difficulties in applying ideas of equality, fairness, justice, and utility. These analytical problems drive some to believe that the moral/conceptual indeterminacies in dealing with them *in principle* cannot be resolved, any more than we can get the decimal version of one-third to quit its

52. See *id.* at 56-57.

53. See *id.*

54. See KURT VONNEGUT, JR., *Harrison Bergeron*, in WELCOME TO THE MONKEY HOUSE 7, 7-13 (1950) (offering a fictional account of impairing persons with superior natural endowments).

endless iterations. On the other hand, the customary model for rationally distributing at least some scarce resources is often trait-linked, and departures from this standard may seem arbitrary. When this sort of trait-linked "substantive rationality" fails us, more general rational considerations drive us to devise some form of "procedural rationality" such as a first-come, first-served system for organ transplantation, or a randomization scheme.⁵⁵ (Perhaps this is a form of being "unprincipled on principle.")⁵⁶ Several commentators have in particular considered the use of lotteries to distribute scarce lifesaving (or other) resources.⁵⁷

Lotteries serve certain visions of equality and rationality, and seem flatly to contravene other. It is difficult to tolerate the idea that important resources will to "without reason" to some as opposed to others, regardless of interpersonal variations in—what? That's the problem that drove us to think of lotteries in the first place. It would be instructive to compare lotteries for lifesaving resources, experimental therapies, and enhancement resources (would such lotteries be equally (in)egalitarian and (ir)rational?), but I leave further investigation of lotteries for enhancement resources for another time.

None of these distributional paths can be entirely ruled out, whether on grounds of equality, fairness, justice, utility, or anything else, without some theoretical account of these values. If our main concern is equality, or fairness-as-equality or justice-as-equality, then the theory must explain why equalizing one ratio or another ratio produces or impairs true equality, or at least a theoretically

55. See generally Michael H. Shapiro, *Is Bioethics Broke?: On the Idea of Ethics and Law "Catching Up" with Technology*, 75 IND. L.J. (forthcoming 1999); Michael H. Shapiro, *On the Possibility of "Progress" in Securing and Distributing Organs: Of Markets, Lotteries, and Rational Moral Standards* (forthcoming in volume collecting papers delivered at a symposium on organ transplantation, Hebrew University, Faculty of Law, Jerusalem, Israel, Mar. 16, 1999).

56. Alexander M. Bickel, *The Supreme Court 1960 Term*, 75 HARV. L. REV. 40, 76 (1961).

57. See, e.g., BARBARA GOODWIN, *JUSTICE BY LOTTERY* (1992). See also George J. Annas, *Allocation of Artificial Hearts in the Year 2002: Minerva v. National Health Agency*, 3 AM. J. LAW & MED. 59 (1977) (analyzing a hypothetical scheme for distributing artificial hearts). And see the materials on lotteries in MICHAEL H. SHAPIRO & ROY G. SPECE, JR., *BIOETHICS AND LAW: CASES, MATERIALS, AND PROBLEMS* 834-849 (1981 & Supp. 1991). Some experimental medical therapies have been distributed by lottery. See Tamar Lewin, *Experimental Drug Is Prize in a Highly Unusual Lottery*, N.Y. TIMES, Jan. 7, 1994, at A1 (publishing one patient's suggestion that "it might have been fairer if people who've had the disease longer, and are in worse shape, got it first"). A physician said that "patients were generally very supportive of the idea. Some of the doctors were less so, because they thought they should be able to choose which patients to put before which others." *Id.* See also Michael Waldholz, *Unit of Roche Sets Up Lottery for AIDS Drug: Enough for 2,280 Patients Will Be Given Out Free Under Pact with FDA*, WALL ST. J., June 21, 1995, at A5.

preferable form of equality. If a satisfactory equality theory is unavailable, values other than equality must be invoked.

B. Equality Wars: Competing and Concurring Versions of (In)Equality; Remedies for Inequality; Equality, Enhancement, and Respect for Persons

1. In General: Equality of Whom or What and with Respect to What?

What do we mean when we say that $X = Y$? Recall that this expression is just a symbolic rendition of claims made in ordinary language. It does not entail the rigor of mathematics or formal logic. An obvious example would be: "We are equal. I am equal to you and (necessarily) you are equal to me. Therefore, we should have the same number of votes in general elections."

But an example does not provide a general explanation of what the symbol "=" means in our legal/moral/social context, nor of the domain over which X and Y range. There is a large field of such domains from which to choose. X and Y might designate persons; groups; corporate or political entities; the opportunities or prospects held by persons, groups, etc; means for taking advantage of opportunities to achieve one's goals; specific outcomes (wealth, victories, prizes, etc.); social or moral status; political power; equal rights as persons, without regard to differing traits⁵⁸; traits characterizing different persons; overall ("net") merit or social worth despite differing traits; ideas, conceptual systems and philosophies held by different persons, groups, etc.; and so on.

Each possibility leads to still further branches of conceptual analysis, each of which implicates different and possibly conflicting political and moral theories. Despite links and intersections, these varying assertions of equality may entail *radically* different visions. Asserting that non-interference rights should be equal across persons and groups (e.g., free speech, free exercise of religion) differs sharply from asserting that means/opportunities/actual prospects for vindicating these rights in effective communicative or religious actions should be equal across persons.⁵⁹ Non-interference rights of certain sorts are specially protected under the United States Constitution, but affirmative ("welfare") rights generally are not so protected.⁶⁰ Take a simple example: the government may not bar you from expressing your views on national television, assuming you

58. See STEPHEN DARWALL, *PHILOSOPHICAL ETHICS* 189 (1998) (describing the view that "[a]ll persons have value *themselves* quite apart from the merit of anything they achieve or accomplish People matter in themselves.").

59. See generally RAE ET AL., *supra* note 41, at 65-71 (discussing equality of means and of prospect as aspects of equality of opportunity).

60. See Mark A. Graber, *The Clintonification of American Law: Abortion, Welfare, and Liberal Constitutional Theory*, 58 OHIO ST. L.J. 731, 743 (1997).

have successfully negotiated an invitation or agreement to make an appearance. But the government need not provide you the where-withal to purchase air time. To shift contexts slightly, in some sense of "equality," any non-seriously-disabled person's chances of being ranked the world's best male or female tennis player are as good as anyone else's, assuming no legal or other blockades. But, from a practical perspective, such a flat assertion of equality would be thought absurd when applied to most persons.

One can raise parallel questions by asking about the meaning of the equality operator "=". Is it part of an assertion of fact ("Arnold's strength is equal to Sylvester's"), and if so of what sort? Is it a moral or political/theoretical claim about equal rights or entitlements, and, if so, which ones? Does it reflect the ideal of the threshold equality of persons as persons without regard to their differences—and, if so, what does *that* mean? Even if the claim is a bit of hortatory rhetoric about how people *should* be treated, what explains the use of "equality" language?

The relationship between "identity" and "equality" bears brief mention. An ascription of equality is not an assertion of "identity" of persons or groups. That would be absurd. But there is *some* sense of identity being ascribed when one uses "=". Perhaps it is an identity of threshold personhood or of rights and entitlements. Thus, if John and Mary are equal in their threshold personhood, they are identical in this regard, though they are not identical in any global sense. (It even seems inaccurate to say that they may have identical preferences, although the claim may be a useful literary ascription.) The sense of "identity" involved here is thus a function of descriptive and normative characterizations of the similarities and differences in question.

I next note the complex relationship between equality and the idea of personhood. If we say persons are equal because they are all equally persons, we are invoking a particular vision of moral and political equality, which may or may not be consistent with other propositions to which we adhere. For example, it is not formally inconsistent to claim equality-in-respect-of-personhood, but also to concede that, depending on context, undifferentiated personhood is not the only appropriate level of abstraction. For many purposes, we deal with the *inequalities* of persons as characterized by particular (dis)favoured traits. Formal inconsistency may indeed arise, but in particular cases and under specific versions of personhood. On most accounts of personhood, for example, it would indeed be inconsistent to assert equality-of-persons-because-all-are-equally-persons, and then to endorse the view that persons below a certain level of intelligence are to be enslaved to persons above that level.

As a matter of both theory and policy, then, the material question is, "equality of what in respect to what?" If we say that the political power of person X or group X "equals" that of person Y or group Y, we may mean they have equal votes or that they represent

roughly equal numbers of voters each having one vote, or that they have equal power to influence government policies (itself a somewhat obscure claim).

These examples reinforce the point made earlier about levels of abstraction and, more generally, about morally and politically relevant (in)equalities. How do we select the variables to equalize? *Should* we aspire to equality of votes per person in general elections? Why not favor the Millian proposal to assign votes in direct proportion to ability, as reflected by educational level?⁶¹ What is the theory of relevance that explains and justifies designating things that are, or are meant to be, equal?

Here, an obvious next question is: can we answer the previous questions by dealing with equality alone, or is it necessary to invoke justice, fairness, etc.? Or are these all about equality too (at least in major part)? Or is equality just about justice and fairness? Which values are reducible⁶² to which? Is equality "empty," as some would have it?⁶³ If it is indeed empty, it is impossible to talk of equality in an enhancement context without dealing with what we ordinarily view as "other" (if not the only) basic values. In fact, even if equality is not empty, there are nevertheless many contexts in which a purported equality issue cannot even be analyzed, much less settled, without moving to what appear to be considerations other than equality. I return to this point a bit later.⁶⁴ I turn now to several other aspects of equality analysis before returning to its applications to human enhancement.

2. *Equality and the Special Status of Merit Attributes*

Judgments of merit are touted by some as a fundamental ground for ascribing equality or inequality among persons and groups and for acting on these characterizations. The governing moral intuition (though perhaps not in all cultures) is that people are to be judged on their relative merits and not on "arbitrary" personal characteristics (e.g., skin color) or kinship or other interpersonal relationships.⁶⁵ (I avoid any attempt at determining which at-

61. See *infra* Section VII.B.10.a (discussing John Stuart Mill's plural voting proposal).

62. Large segments of moral theory and conceptual analysis are involved in investigating the idea of reduction. To oversimplify considerably, an assertion of reduction here roughly amounts to saying that *P* is "nothing but" *Q* (justice is nothing but fairness, equality is nothing but . . . , biology is nothing but physics). For a discussion of different forms of reduction, see Michael H. Shapiro, *I Want a Girl (Boy) Just Like the Girl (Boy) That Married Dear Old Dad (Mom): Cloning Lives*, S. CAL. INTERDISC. L.J. (forthcoming 1999).

63. See *infra* note 85 and accompanying text.

64. See discussion *infra* Section VII.B.6.

65. See James L. Mcalister, *A Pigment of the Imagination: Looking at Affirmative Action Through Justice Scalia's Color-Blind Rule*, 77 MARQ. L. REV. 327, 355 (1994) (regarding the notion of "advancement through individual merit").

tributes are "merit attributes" and which are arbitrary. Of course, merit attributes can be seen as arbitrary in another sense.)⁶⁶ It may be, however, that in certain cultural settings the notion of merit, if that is what it is, may indeed rest on such factors, including kinship or other relations. Even girth may amount to a merit attribute (or at least a resource attractor) when one is casting for the role of a large person. And, as mentioned earlier, all personal attributes, including intelligence and ability to exert effort, can be characterized as arbitrary in some sense.⁶⁷

These are standard difficulties in merit analysis. The point to take is that merit judgments necessarily serve both as grounds for ascribing equality as well as for recognizing or creating inequality. Comparative merit ratings generate unequal outcomes with respect to actual distribution of life's rewards.⁶⁸

Moreover, as we saw, distributions that strengthen one's meas-

66. See discussion *infra* Section VII.A.3.

67. See, for example, JOHN RAWLS, A THEORY OF JUSTICE 103-04 (1971).

There is a natural inclination to object that those better situated deserve their greater advantages whether or not they are to the benefit of others. At this point it is necessary to be clear about the notion of desert. It is perfectly true that given a just system of cooperation as a scheme of public rules and the expectations set up by it, those who, with the prospect of improving their condition, have done what the system announces that it will reward are entitled to their advantages. In this sense the more fortunate have a claim to their better situation; their claims are legitimate expectations established by social institutions, and the community is obligated to meet them

Perhaps some will think that the person with greater natural endowments deserves those assets and the superior character that made their development possible. Because he is more worthy in this sense, he deserves the greater advantages that he could achieve with them. This view, however, is surely incorrect. It seems to be one of the fixed points of our considered judgments that no one deserves his place in the distribution of native endowments, any more than one deserves one's initial starting place in society. The assertion that a man deserves the superior character that enables him to make the effort to cultivate his abilities is equally problematic; for his character depends in large part upon fortunate family and social circumstances for which he can claim no credit. The notion of desert seems not to apply to these cases. Thus the more advantaged representative man cannot say that he deserves and therefore has a right to a scheme of cooperation in which he is permitted to acquire benefits in ways that do not contribute to the welfare of others. There is no basis for his making this claim. From the standpoint of common sense, then, the difference principle appears to be acceptable both to the more advantaged and to the less advantaged individual.

Id. Elsewhere, he states: "The intuitive idea [of his difference principle] is that the social order is not to establish and secure the more attractive prospects of those better off unless doing so is to the advantage of those less fortunate." *Id.* at 75. See also his parallel remarks, *id.* at 100-103.

68. See Marjorie E. Kornhauser, *Equality, Liberty, and a Fair Income Tax*, 23 FORDHAM URB. L.J. 607, 641 (1996).

ures of merit (e.g., education, intellectual abilities, physical strength) may enlarge and reify existing inequalities. But, once again, it is one thing to talk of creating greater inequalities and quite another to talk of true increases in merit. As suggested in the discussion of the "paradox of perfectionism," it is not clear that one's claim to larger rewards would be recognized as true *merit* claims where one's attributes were, at least in part, technologically (i.e., "artificially") enhanced.

3. *Questions About the Valuation of Equality*

Issues concerning the valuation of equality are linked to the emptiness problem in certain ways.⁶⁹ Larry S. Temkin asks: "Is equality really desirable? And what kind of equality should we seek—that is, insofar as we are egalitarians, should we want equality of opportunity, primary goods, need satisfaction, welfare, or what? . . . When is one situation *worse* than another regarding inequality?"⁷⁰

The question of what "equality" means is not the same as the question whether it is "desirable" or "valuable." (I do not suggest the latter terms are synonymous.) To be sure, one would think the desirability question could not be answered without some specification of the meaning question—and perhaps vice versa. The conceptual complexity of equality melds issues of meaning and desirability. Indeed, important aspects of interpretation theory speak of "pouring meaning" into abstractions. Such assignments of meaning involve value analysis, or at least value-linked investigation, as when courts attempt to discern empirically what values a community holds.⁷¹

To ask whether equality is valuable, however, is an odd question, however plausible it seems to raise it. The problem goes to the

69. See discussion *infra* Section VI.B.6.

70. TEMKIN, *supra* note 41, at 3.

71. Cf. Richard H. Fallon, Jr., *A Constructivist Coherence Theory of Constitutional Interpretation*, 100 HARV. L. REV. 1189, 1193 (1987).

The various kinds of constitutional argument are substantially inter-related and interdependent. Reciprocal influences among them make it possible most of the time to achieve constructivist coherence. The role of value arguments is especially important in this respect. I shall be particularly concerned with showing how value arguments infuse and inform the arguments that are advanced within other categories.

Id. But courts may present at least some of their "value arguments" as empirical arguments, perhaps by framing them as an examination of "tradition" or "public policy." In *Thor v. Superior Court*, 855 P.2d 375, 382-83 (Cal. 1993), for example, the California Supreme Court investigated the bioethics literature to determine what societal values were concerning the exercise of autonomy in refusing lifesaving care, and concluded that autonomy extended at least to severely disabled prisoners who resisted artificial nutrition and hydration. See also *Bowers v. Hardwick*, 478 U.S. 186, 195 (1986) (holding that there is no liberty interest held by gay persons to engage in sodomy; the Court seemed to rely on an analysis of tradition).

core of moral analysis: how can one value basic values when these basic values represent the very terms in which value is defined and assessed? Trying to get out of this seems to take us into infinite regress.

But the valuing of values is not entirely meaningless or infinitely regressive or otherwise paradoxical. We characteristically rank-order our values and assess them with respect to each other. How this is done occupies a major portion of moral theory.

4. *Rectifying Inequalities*

Suppose we reach some rough consensus as to what we mean by "equality" as applied in various circumstances. Does such a consensus about equality necessarily embrace notions of proper rectification of inequalities? It depends. The meaning assigned to "(in)equality," cultural ideals, and the particulars of given situations of inequality are among the relevant variables. There may be significant differences on how to rectify, ameliorate, or prevent what all concede to be inequalities, and on how to generate equality from some threshold. To mention some classic issues in equality/rectification theory: if *A*'s cache of goods is *v* but *B* has more, holding *w*, is *A* intrinsically worse off when *B* acquires still more, but *A* continues to hold *v*?⁷² From an equality standpoint, is it better to achieve equality by raising *A*'s holdings from some outside source of wealth, or by transferring some of *B*'s holdings to *A*? Should we worry more about inequality between certain groups than inequality within those groups?⁷³

Paradoxes abound here. The very process of rectifying inequalities is likely to implicate procedures that *themselves* may violate particular conceptions of equality—perhaps even the same ones that drove the recognition of inequality in the first place. Consider the standard objections to transfer payments intended to even out inequalities of income and wealth. Financing such transfers through taxation is viewed by some as unjust and unfair and as *itself* a violation of equality standards. Such redistributions impair the right to reap the benefits of one's natural gifts as honed by skills acquired through effort. They entail, for example, that some persons can keep more of what they earn than others. Generating equality with respect to one thing may require inequality with respect to something else.

72. See Temkin's distinction between a "person-affecting" version of equality (which "would condemn inequality only insofar as it adversely affects people") and an "impersonal" one (which "would condemn inequality even if there was no one for whom it was worse"), TEMKIN, *supra* note 41, at 11. See also *id.* at 246, where he contrasts "extended humanitarianism" with equality, stating that the latter is not about equality: "Extended humanitarianism is concerned with how people fare, but *not* with how they fare relative to each other."

73. See *id.* at 285.

Scarcity of resources mandates limits to rectification of inequalities, and the limits may vary greatly across types of and causes for inequalities. Norman Daniels, for example, argues that "medicine has the role of making people *normal* competitors, not *equal* competitors; this role fits . . . with the standard model for thinking about equality of opportunity."⁷⁴ But, as Nils Holtug suggests, justificatory models other than those based on disorder may suggest equality-promoting enhancement maneuvers, though they may be overridden by more pressing considerations.⁷⁵ Here, one can focus on models based on justice as fairness, on equality as equality of opportunity (in some senses), on autonomy, or on general utility. Daniels also explores and concedes the limits of disorder models:

[S]uppose an inexpensive treatment became available for improving cognitive abilities in childhood; administering it would greatly enhance the results of education, close the gap between poor but "normal" students and others, and contribute greatly to social productivity. We might then have compelling reasons to seek enhancement in this way, even if they differ from our standard justification for the importance of health care. Of course, we already have excellent reasons for putting more resources into education, yet we do not, despite the fact that our failure to do so results in misdeveloped talents and skills along race and class lines.⁷⁶

But he does not go as far as answering "yes" to his question "does any condition that creates an inequality in opportunity for welfare or advantage among individuals give rise to claims on others?"⁷⁷ If we think so, why so? Are the relatively disadvantaged "handicapped?" One might even foresee the familiar "medical ne-

74. Norman Daniels, *The Genome Project, Individual Differences, and Just Health Care*, in JUSTICE AND THE HUMAN GENOME PROJECT 110, 122 (Timothy F. Murphy & Marc A. Lappe eds., 1994). Daniels also discusses possible obligations

to provide medical care whenever people decide to eliminate conditions that put them at some disadvantage. The notion of disadvantage is meant to be objective, including some forms of suffering as well as the competitive disadvantages that result from the lack of capabilities, such as marketable talents or skills. . . . If we adopt such a radical view . . . we may have to assign medicine a much greater role as a social equalizer than we now assign it.

Id. at 122. See also *infra* Section VII.B.2 (discussing the blunting of some equality-based complaints against distribution of certain services by characterizing them as justified by disorder, trauma, and the like).

75. Holtug argues that "there is always a reason to compensate people who have been disadvantaged in the genetic lottery, but this reason can be outweighed by more urgent reasons to compensate people who have suffered greater disadvantages." Nils Holtug, *Does Justice Require Genetic Enhancements?*, 25 J. MED. ETHICS 137, 143 (1999).

76. Daniels, *supra* note 74, at 127.

77. *Id.* at 120.

cessity" predicate for insurance and for many treatment decisions expanding, albeit awkwardly, to embrace part of a handicap model.⁷⁸ Here, to oversimplify a bit, wants and aspirations become (medical) needs.⁷⁹

5. *More About Valuing Equality*

Is there a presumption that at least some existing inequalities (which ones?) should be rectified (how?) before other values are promoted? Is equality lexically prior to other values? (If so, there is no presumption that can be overcome; the priority holds in the face of non-egalitarian considerations. I doubt, however, that many would hold this view across the board.) Consider Rawls' statement of "the principle that undeserved inequalities call for redress"⁸⁰ and his argument that, therefore,

these inequalities are somehow to be compensated for. Thus, the principle holds that in order to treat all persons equally, to provide genuine equality of opportunity, society must give more attention to those with fewer native assets and to those born into the less favorable social positions. The idea is to redress the bias of contingencies in the direction of equality. In pursuit of this principle, greater resources might be spent on the education of the less intelligent rather than the more intelligent, at least over a certain time of life, say the earlier years of school.⁸¹

78. Daniels, however, rightly observes that "the treatment versus enhancement distinction does have a moral justification, at least relative to a *standard* way of thinking about equality of opportunity." *Id.* at 121. Consider the "medical necessity" issues involved in insurance coverage for plastic surgery, especially pediatric plastic surgery. See Plastic Surgery Information Service, *More than Half of Plastic Surgeons Surveyed Report Insurance Coverage Denial for Patients with Childhood Deformities, Disfigurement, and Congenital Defects* (visited June 21, 1999) <<http://www.plasticsurgery.org/mediactr/insur.htm>>. See also Retirement Income Security Act, 29 U.S.C.S. § 1185b (Supp. 1999) (requiring group health plans and health insurance issuers providing coverage for them to cover reconstructive surgery following mastectomies, assuming they cover mastectomies at all). Recall the discussion of the Americans with Disabilities Act, *supra* note 47 and accompanying text.

79. See Fleck, *supra* note 8, at 144 (arguing that "[i]ndividuals may want to access that superior opportunity range [afforded by enhancement technologies], but they do not need to access that range, in the sense of need that would generate claims of justice"). But note the equality and justice as fairness arguments at various points in the text, describing arguments that may cut the other way.

80. RAWLS, *supra* note 67, at 100-101.

81. *Id.* at 100-01. He adds later that

although the difference principle is not the same as that of redress, it does achieve some of the intent of the latter principle. It transforms the aims of the basic structure so that the total scheme of institutions no longer emphasizes social efficiency and technocratic values. We see then that the difference principle represents, in effect, an agreement

I am not invoking this passage in full defense of the difference principle; I am simply taking it as a normative structure that we might apply to the distribution of merit attributes, for whatever illumination this brings. Obviously, the difference principle raises serious issues of fairness, autonomy and equality that point in varying directions.⁸² Redistribution and other forms of redress generally entail interference with the autonomy of some (sometimes even that of the distributees), and is arguably unfair under a principle that persons are morally entitled to make use of and retain the benefits of their native talents and of their incremental technologically enhanced talents—including their behavioral dispositions to put those talents to use. As we saw, the better off are not being allowed to trade fully on what they have, but the worse off are, and more. And this is not inconsistent with holding that no one deserves her place in nature.⁸³ The fact that we do not deserve our aptitudes does not

to regard the distribution of natural talents as a common asset and to share in the benefits of this distribution whatever it turns out to be. Those who have been favored by nature, whoever they are, may gain from their good fortune only on terms that improve the situation of those who have lost out. The naturally advantaged are not to gain merely because they are more gifted, but only to cover the costs of training and education and for using their endowments in ways that help the less fortunate as well. No one deserves his greater natural capacity nor merits a more favorable starting place in society. But it does not follow that one should eliminate these distinctions. There is another way to deal with them. The basic structure can be arranged so that these contingencies work for the good of the least fortunate. Thus we are led to the difference principle if we wish to set up the social system so that no one gains or loses from his arbitrary place in the distribution of natural assets or his initial position in society without giving or receiving compensating advantages in return.

Id. at 101-02. Rawls provides his more general and rigorous account of the difference principle elsewhere, *id.* at 75-80. *See also* Holtug, *supra* note 75.

82. *See, e.g.*, ROBERT PAUL WOLFF, UNDERSTANDING RAWLS: A RECONSTRUCTION AND CRITIQUE OF A THEORY OF JUSTICE 202 (1977) (criticizing Rawls for not being more concerned with "the institutional arrangements by means of which the redistribution is to be carried out," and commenting on the status of those who redistribute as "the most powerful persons in the society").

Equality and liberty are here set against each other. How would the redistributees fare against those who have already acquired substantial increments in their merit attributes?

83. There have been many commentaries on and critiques of the difference principle. *See, e.g.*, ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA 183-231 (1974); MICHAEL J. SANDEL, LIBERALISM AND THE LIMITS OF JUSTICE 72-95 (1998) (discussing "Meritocracy Versus the Difference Principle," Rawls's discussion of "Common Assets," "The Basis of Desert," and also interweaving Robert Nozick's critique of the difference principle); WOLFF, *supra* note 82. *See also* NOZICK, *supra*, at 150-53 (presenting his entitlement theory, which sharply contrasts with Rawls's); *id.* at 224-31 (continuing the argument and responding to Rawls's notion of "collective assets"). Note also Nozick's remark that "[i]t needn't be that the foundations underlying desert are themselves deserved, *all the way down.*" *Id.* at 225.

yield the inference that we cannot keep what we gain from using them.

6. *More on "Is Equality 'Empty?'"*

It is hard to see how indeterminacies or conflicts *within* the idea of equality can be fully settled by further analysis of equality. There seems to be no overarching notion of equality to appeal to in all contested cases. The tensions may be irresolvable⁸⁴ (although this does not foreclose the possibility of consensus).

This is the central idea behind the claim that equality is, at least in various critical cases, a vacuous concept.⁸⁵ The emptiness claim is, roughly, that the egalitarian maxim "treat persons (dis)similarly situated in (dis)similar ways" cannot be followed without a substantive account of (dis)similarity that cannot itself depend on equality. On this view, we require a normative theory to tell us what difference a distinction does—and ought to—make. Equality alone does not tell us what to "lump" as relevantly similar nor what to "split" as relevantly different.

The point is easily illustrated by *Police Department v. Mosley*.⁸⁶ The United States Supreme Court decided that a city violated the Fourteenth Amendment's Equal Protection Clause by banning picketing near public schools but excepting labor picketing from that ban.⁸⁷ It is hard to make sense of this equality analysis without understanding a basic point. The differential treatment of different communicative acts violates the Equal Protection Clause because, and only because, that differential treatment rests on the differing content of such communications. This is (at least in certain contexts)⁸⁸ presumptively unconstitutional. It remains unclear why the Court insisted on imposing an equal protection structure in *Mosley* as opposed to any other case involving content-based regulation. Perhaps the Court was inspired by the particular openness of the contrast drawn between different subject matters, communicators, and (possibly) points of view. The viewpoint expressed also suggested an equality perspective: the picketer contended that the school "practices black discrimination."

84. Cf. TEMKIN, *supra* note 41, at 286 (noting that "the ultimate views underlying [various statistical measures of inequality] seem fundamentally opposed").

85. Compare Peter Westen, *The Empty Idea of Equality*, 95 HARV. L. REV. 537 (1982) (empty), with Kent Greenawalt, *How Empty is the Idea of Equality?*, 83 COLUM. L. REV. 1167 (not so empty).

86. 408 U.S. 92 (1972).

87. *Id.* at 100-02.

88. The qualification arises primarily because of differences among forums (e.g., traditional, limited, and nonpublic) and because of the somewhat *sui generis* sphere of media regulation. Note also that the content-regulation in *Mosley* has a "speaker identity" aspect as well as its obvious subject matter aspect.

C. *Equality and Other Values: Conflicts and Connections*

It is regularly asserted that equality, justice, fairness, liberty, and other values often conflict. Although one might urge that these values, rightly understood, do not genuinely "conflict," this position can be ignored for present purposes and we can focus on whatever tensions we perceive. We have, after all, no comprehensive theory to adjust the tensions, and we are surely not hallucinating when we see them. The claim that there are really no ultimate conflicts or dilemmas does not presently seem provable or disprovable.⁸⁹

The nature of any given conflict depends heavily on the versions of equality and other values under review.⁹⁰ Affirmative action in certain forms is a standard example; distributing benefits on the basis of racial, ethnic, or gender criteria entails reduced opportunities for anyone without the required attributes. Moreover, in various contexts it imposes personal associations on reluctant persons. These processes and outcomes conflict with certain views of equality and of fairness, justice, autonomy, and possibly utility.⁹¹ (Here, some would argue that equality is irrelevant because the entire problem is captured fully by some or all of the latter values.) On this view, promoting equality of final result (however "result" is defined) is inconsistent with promoting equality of opportunity; equality of result displaces the freedom to pursue one's bent and gather the rewards of using one's abilities and replaces it with an egalitarian blockade against it.⁹²

89. On some of the controversies concerning the existence of moral dilemmas, see generally Alan Donagan, *Moral Dilemmas, Genuine and Spurious: A Comparative Anatomy*, 104 *ETHICS* 7 (1993).

90. These different versions cannot be sorted out here. Standard works to consult include ISAIAH BERLIN, *FOUR ESSAYS ON LIBERTY* (1969); RAE ET AL., *supra* note 41; RAWLS, *supra* note 67; and Sir Isaiah Berlin, *Two Concepts of Liberty*, in *POLITICAL PHILOSOPHY* 141 (Anthony Quinton ed., 1967). See also GERALD DWORKIN, *THE THEORY AND PRACTICE OF AUTONOMY* (1988).

91. There are level-of-category problems here. Not everyone would place these values on the same plane of moral reality or discourse.

92. Robert A. Dahl urges that "democracy maximizes the opportunities for self-determination." ROBERT A. DAHL, *DEMOCRACY AND ITS CRITICS* 89 (1989). See also *id.* at 311 (referring to the idea that democracy is justified by the values of freedom and human development, among others).

D. Distributional Equality Generally; Distribution that Transforms the Distributees; Distributional and Nondistributional Equalities

1. *Distribution and Personal Transformation*⁹³

Distributional equality is about who gets what and why under any given system for distributing scarce resources. It concerns matters both *ex ante* (e.g., who gets the “merit-enhancing” commodity) and *ex post* (e.g., who gets what new rewards (including still “more merit”) after the distribution and (at least in part) as a result of it).

This *ex ante/ex post* distinction is particularly important given the possible transformative effects of the distribution. Augmentation of merit attributes and resource attractors may alter conditions by disproportionately enlarging the distributees’ power to draw resources. (Although our main focus addresses the enhanced as against the non-enhanced, there obviously may be other serious equality problems within the separate sets of enhanced and non-enhanced persons.)

Some will say that any distribution of anything transforms the recipient (and perhaps the source also), and that there is no sharp distinction between the transformative effects of education or training, on the one hand, and of technologically augmented intellectual or physical functions, on the other.⁹⁴ This is obviously true, but of limited relevance. To worry over the transformative effects of technological augmentation does not require us to deny the massive effects of years of education and training. What is required in addition to assessing outcomes is close analysis of the differing paths toward transformation. Is a substantial increase in intelligence more massive, global, or identity-altering than is twenty or more years of education, or of being raised in the wild by wolves?

2. *Equality and Reduction, Mere Use of Persons, and Objectification: Some (Largely) Nondistributional Problems*

For our purposes, we have a distributional issue when someone is to receive or be denied or lose something that someone else does not receive or is denied or does not lose. But some ways of dealing with persons do not, on the surface, deal with distribution. They affect equality in a different way, though distributional issues may be involved.

Suppose we believe that pursuing human enhancement reflects and generates excessive concern with specific traits and their meas-

93. I am using “transformation” loosely here. It does not necessarily contemplate change of identity, but it does involve nontrivial alterations. Since the augmentation of traits may occur along any of several continua, it is hard to be exact. See Shapiro, *supra* note 26, at 45-46 (discussing the nature and dimensions of trait change).

94. See *id.* at 36.

ures, and thus “reduces” persons to the (often commercial) value of these traits. Even without an extended analysis of the related ideas of reduction, mere use of persons as means, and objectification,⁹⁵ one might nevertheless urge that any of these processes “devalues” persons, leaving them with lesser status than others. (The criteria for valuation and assignment of status need not be specified here.) A person who is objectified, reduced, and subject to mere use has suffered an egalitarian loss, at least as against her tormentors. But this aspect of enhancement’s effects on equality is left to later remarks on objectification and commodification.⁹⁶

VII. ENHANCEMENT AND ITS IMPACT ON (IN)EQUALITY;
DISTRIBUTION OF ENHANCEMENT RESOURCES; REGULATORY OPTIONS

A. *Nondistribution Options: Non-allocation at the Macro Level; Restrictions on Manufacture, Distribution, and Use; Black Markets; Paternalism and Community Self-Protection*

1. *In General*

There are lots of things we think should not be distributed widely, if at all. We may fear physical or mental/emotional injury, certain forms of pleasure we think illicit, or punishment from a higher realm. We can try to avoid allocating resources to the creation of such evils. To the extent this fails, we can enact prohibitions or lesser regulations, but this may result in unregulated black markets. (The War on Drugs comes to mind.)

Whatever conclusions are drawn concerning the desirability of the commodity’s use, the selection of regulatory mechanisms to implement them remains open.⁹⁷ Extensive empirical inquiries might be required before exercising the various moral, legal and policy options. I do not deal with such empirical questions, nor do I argue extensively about paternalism or community-self-definition and protection. However, several arguments frequently offered to justify nondistribution bear on equality issues and so require attention.

95. These related ideas are discussed more extensively in a forthcoming article on human cloning, referred to in note 62. See also Michael H. Shapiro, *Illicit Reasons and Means for Reproduction: On Excessive Choice and Categorical and Technological Imperatives*, 47 HAST. L.J. 1081, 1180-1199 (1996).

96. See discussion *infra* Section VII.B.3.b.

97. For an extended discussion of a variety of regulatory/enforcement mechanisms in restricting enhancement, see generally Maxwell J. Mehlman, *The Law of Above Averages: Leveling the New Genetic Enhancement Playing Field*, IOWA L. REV. (forthcoming).

2. *Nondistribution to Protect Nonconsumers: The Perceived Probability of Greater Personal Inequalities as a "Coercive" Factor; Technological Change and its Demands for Skill as Increasing Pressures to Enhance*

People often do things they disprefer in the sense that they prefer different circumstances under which they would not be moved to do so; their doing so reflects a reluctant "preference" under adverse conditions. When they exercise these "straitened preferences" (i.e., preferring, under the circumstances, to do what they disprefer), it is often because they fear that others will gain on or outdistance them. A reading-averse child may more readily accept instruction when advised that "all the other children are learning to read and you'll be left behind, not to mention they'll laugh at you." (Anecdotal evidence suggests this doesn't always work.)

Similarly, the risk of being outdone by one's athletic competitors provides a powerful incentive to use steroids and other supposed athletic enhancers—an incentive often characterized as "coercive" peer pressure. I doubt that "coercion" is used accurately in this context, but the wide use of this characterization suggests that *something* is amiss in the choice situations in question. Perhaps a more neutral description ("unwanted (undue?) pressure") would be more serviceable than the more morally conclusory "coercion," which often serves as an argument-stop.⁹⁸

But this recharacterization suggests still more problems. Many athletes and students prefer not to practice or study hard, but few speak of coercion in these contexts, despite the competitive pressures. The overall propriety of their self-improvement enterprises seems to foreclose use of pejoratives such as "coercion" or "undue influence." Compare, say, weight training, diet, and coaching, on the one hand, with steroids or human growth hormone, on the other or extended study including all-nighters as against memory-enhancers. The pressure to do the former in each pair is widely considered permissible, desirable, or even obligatory under some circumstances (though all-nighters are generally linked to negligent delays); it is otherwise with the latter.

Still, the pressures favoring enhancement, whether of living persons or via the germ line, are likely to grow. While the matter is not free of doubt, there is empirical evidence of a technology-driven increase in the demand for "human capital" in the form of investment in education and training.⁹⁹ As we saw, one can even imagine

98. For a rigorous study of the idea of coercion and its cognates, see generally ALAN WERTHEIMER, *COERCION* (1987).

99. On human capital and technologically-induced increase in its demands, see Jacob Mincer, *Human Capital: A Review, in LABOR ECONOMICS AND INDUSTRIAL RELATIONS* 109 (Clark Kerr & Paul D. Staudohar eds., 1994). Mincer observes that

government-enforced use of enhancement technologies, whether on living persons (crack that code or we'll lose the war) or on possible persons (we have to improve the human race in order to save it).

3. *Paternalistic Nondistribution: Protecting Persons and Groups Against Physiological or Psychological Harm; Autonomy versus Autonomy*

Current enhancement techniques bear risks of adverse effects, although their nature, incidence, and seriousness are in dispute, as is the very efficacy of the techniques. One asserted justification for nondistribution may thus be pure paternalism (a term I leave undefined here). I will not review these medical adversities; I am simply outlining general considerations for nondistribution.

Another justification for blocking distribution illustrates internal tensions within the idea of autonomy. We just saw that we might promote autonomy by reducing "coercive incentives" to use disfavored commodities such as steroids. By cutting off choice, however, this maneuver impairs the autonomy of those who are willing or eager to use them and who assume the risks of doing so.

4. *Nondistribution to Reinforce Equality Values and to Avoid Devaluation of Life and of Effort; Ambiguities of Identity Revisited*

a. *The Lombardi effect (winning isn't everything; it's the only*

[a] natural corollary of the dramatic changes in the skill structure of wages in the 1970s and 1980s is the substantial growth in wage (and income) inequality, especially in the latter period. The widening inequality is viewed by some—perhaps many—observers as an ominous reflection of a deteriorating economy and society.

Id. at 133. Mincer indicates that there is some empirical support for the hypothesis "that a more rapid pace of technological change in a[n identified] sector generates a greater demand for education and training of the sectorial work force." *Id.* at 130. See also GARY S. BECKER, HUMAN CAPITAL: A THEORETICAL AND EMPIRICAL ANALYSIS, WITH SPECIAL REFERENCE TO EDUCATION 251 (3d ed. 1993) (referring to "the fact that at least three-fifths of earnings are attributable either to investment in human capital or to differential ability"). This association between human capital and differential abilities reinforces the point in the text about the cycling upward of abilities and education and of ultimate earnings and wealth. Note also the reference to the "increasing incentive to invest in human capital as the amount of human capital increases," and the observation that "[w]artime destructions of physical and human capital have different consequence because human capital is knowledge embodied in people. When too much knowledge is destroyed, an economy loses the foundation fern further accumulations of knowledge—whether embodied in people or disembodied in technologies—which is the essence of economic growth," in Gary S. Becker et al., *Human Capital, Fertility, and Economic Growth* 323, 347 in BECKER, *supra*. Again, this suggests the "Matthew Effect" (those who have get more; those who do not lose what they have). See discussion *infra* Section VII.B.6; see also Burton A. Weisbrod, *Education and Investment in Human Capital*, 70 J. POL. ECON. 106, 108 (Supp. Oct. 1962).

thing). Whatever risks attend use of current enhancement techniques, ineffective regulation may compound them by preventing or discouraging safety controls such as physician guidance. What is the social impact of enhancement practices that are widely perceived to be very risky? (If the practice is banned, getting caught and sanctioned is also perceived as a risk.) We learn from observing social institutions and practices, and the "lesson" learned from observing (or thinking we are observing), say, steroid use by athletes is that mere athletic victory is worth serious bodily or mental harm. (Of course, serious questions are begged by characterizing athletic victory as "mere.") A 1984 poll of uncertain rigor reported that Olympic athletes would accept death at an early age in exchange for guarantees of the Gold.¹⁰⁰

Perhaps this supposed preference reflects a reduction of human value to the narrow function of athletic performance in the eyes of the competitor or of others. Such devaluation obviously bears on equality, as we have already seen: reduced, devalued persons are (as one might argue) in some sense less worthy than those who have not been reduced or devalued. (There is a chicken-egg ambiguity here: those selected for devaluation are arguably already devalued. Whatever else is done to them compounds the initial recognition or assignment of low value.) The "reduced" (the objectified, the merely used, the devalued) are thus unequal to full-valued persons (assuming there are any). On this view, it may be the enhanced who require protection from the unenhanced; they are the ones whose human value has been merged into a single trait or narrow range of traits, whether it be to certain forms of intelligence, athletic ability, or even appearance. This takes us directly to the next problem.

b. The troublesome link between enhancement, value reduction, and positive valuation. Value reduction arising from narrowly focusing on a person's specific traits or accomplishments is intricately linked to valuing persons positively. We value persons not only because of their threshold personhood but because of the traits that distinguish them from each other. How does this differ from "reducing" them to their traits? If our assessments of other persons rest on their differential traits, is not the contrast between reduction and positive valuation nonsense? Suppose an athlete says that "winning is the only thing and is worth my life." Does this reflect (in his own eyes or the eyes of others) reduction and lesser status, or, quite the contrary, supervaluation and greater status, or some combination of the two?

Much depends on cultural baselines: the U.S., for example, is

100. This was at the 1984 Los Angeles Olympics. Fifty-five percent of the athletes polled said that they "would take a drug that could kill [them] five years later if it enabled them to win a gold medal." Bjorn Edlund, *Ambition, Profit and National Pride Drive Athletes to Drugs*, REUTERS LIBR. REP., Sept. 27, 1988, available in LEXIS, News Library, Wires File.

not about to ban football or boxing because they entail a risk of severe permanent injuries. But *incremental* risks beyond a traditional baseline (however it developed) may be rejected because they reflect inappropriate tradeoffs; all risks are justified if winning is everything or the only thing, and perhaps the value of life is debased in the eyes of observers and in one's own eyes. (This argument would not directly apply to zero-risk, effective enhancers, or "magic bullets.")

As to risks undertaken for intellectual enhancement (consider a dangerous and possibly fatal drug that greatly enhances memory), the answer is unclear. One can imagine scenarios in which this is accepted, encouraged, or even required, but it is hard to say how realistic such prospects are.¹⁰¹ Intellectual functions involve pursuits and goals that seem less trivial than winning a game or athletic competition. (This is, of course, not a universal perception.) Still, as we saw, artificial enhancement may not be viewed as legitimate, meritorious enhancement at all. From this standpoint, the more revered the attribute, the greater its debasement through technological alteration and the more devalued the enhanced person. (And, to recall an earlier point, the less justifiable it is to risk serious harm from the enhancement process.)

c. Preventing the social devaluation of effort. This goal embraces both paternalistic and non-paternalistic reasons for disallowing distribution of elite-creating resources. One possible impression conveyed by an open practice of trait enhancement is that the enhanced are getting a free ride. The image is that of one who bypasses training, hard work, and listening to a coach's rantings, and instead simply downs a pill or receives an infusion of biological vectors transporting genes that enhance athletic or intellectual powers. This is of course highly inaccurate; no such enhancers are available. But it may be perceived otherwise.

So what? What flows from devaluation of a community norm favoring effort, diligence, and hard work? Although we would remain equal in our opportunities to try hard at various tasks, if effort itself is devalued, so are the equal opportunities to exert effort. Our merit assessments and our judgments concerning (in)equalities among competitors would then be altered or distorted or simply confused, at least in certain critical areas. For example, why should some students, relying on their own (possibly limited) gifts as aided by heroic effort, be disadvantaged in college-entrance examinations as against "unnaturally" able persons who did nothing more than consume an artificial enhancing agent?

101. See generally FRANK HERBERT, *DUNE* (1965) (presenting a tale of rival feudal houses far in the future that rely upon resident "mentats" ("wizards" of a sort) who amplify their pre-existing exceptional intelligence with an addicting drug called "spice").

The point, as one might argue, is that enhancement entails getting too much bang for the buck and is thus a form of "cheating." Striving and exertion are devalued, and community norms are attenuated. Abstract aptitudes are valued over hard work and *trying*. Of course, the sanctity of prevailing norms is hardly beyond question, and the claim that merit evaluations are "distorted" (the adjective is quite pejorative) presupposes some preferred baseline from which to measure "distortion." But communities have some presumptive moral and legal rights to preserve the major features of their normative systems.¹⁰² In a more extended work, one might investigate the mix of paternalistic and non-paternalistic rationales for such preservation (including "community" or "majority self-paternalism").

Devaluation of effort might also (paradoxically?) arise from enhancing the very capacity/inclination to make efforts. Some may view this enhanced diligence as external to one's character. As the product of an outside supplement, it would bear no merit.¹⁰³ There are, to be sure, fair questions about whether the consequences of devaluing human effort are all bad, but I do not pursue this.

d. More on threats to identity; effects on equality judgments. One major aspect of equality concerns the fairness of returns on effort and of rewards for one's native endowments— judgments requiring interpersonal comparisons of separate, identified individuals. To the extent that human enhancement "distorts" judgments of merit and desert underlying the distribution of rewards, it will confuse or even render meaningless some equality judgments. In extreme cases (not yet at hand, given the weakness of existing enhancers), puzzlement about identity may affect equality judgments: just who or what is equal to whom or what on the basis of whose or what's performance? Who won the fight? Should an enhanced Mentat transplanted from a Dune world be permitted to win the Nobel Prize? Only if all other candidates had similar enhancement opportunities? Shall we compare persons only on the basis of estimated endowments before enhancement? Or is this history irrelevant?¹⁰⁴ Of course, unequal access to technological enhancement processes

102. See generally Stephen A. Gardbaum, *Why the Liberal State Can Promote Moral Ideals After All*, 104 HARV. L. REV. 1350 (1991) (dismissing liberal arguments that the state is morally obligated to remain neutral in arguments concerning morality as "incomplete"). See also Jonathan Schonshek, *Deconstructing Community Self-Paternalism*, 10 LAW & PHILOS. 29 (1991).

103. Some view steroids as heavily affecting one's capacity or motivation to train harder. See Edward J. Keenan, *Anabolism and Androgenic Steroids*, in DRUGS, ATHLETES, AND PHYSICAL PERFORMANCE 91, 96 (John A. Thomas ed., 1988) ("In athletes, androgens are believed by some to enhance the motivation to train and thereby to lead to better physical development.").

104. Although one can talk of equality among "shape-shifting" entities, whether with respect to their transformative abilities or the abilities as transformed, this seems awkward.

will affect the extent of these problems.

These questions are not (quite) as wild as they might seem. One can well imagine a major institution of higher learning debating whether its admissions criteria should exclude augmented persons as not "truly meritorious" unless their abilities *ex ante* would have secured their admission. Perhaps the enhancees should be praised and rewarded for valuing ability so highly that they upgraded themselves, perhaps at considerable expense or even risk. Or perhaps they might be segregated from other applicants and compete among themselves by taking more difficult admissions tests. Indeed, as suggested later, the enhanced may find themselves victimized in various ways, ranging from blocking or taking away certain acquisitions or rewards.¹⁰⁵

Although a person's identity problems (whether in her own eyes or the eyes of others) may be exaggerated, major trait changes clearly bear on personal identity. A sudden escalation of intelligence from average to extraordinary is far different from positing an enhancement enabling one to gain a step in a footrace.¹⁰⁶ The latter may be more than enough to win the gold, but, permitted or not, identity remains intact.

Identity problems may also vary sharply when one moves from enhancement of existing individuals to those who are enhanced genomically by work on their early embryos or the gametes from which they formed. The former can be further divided into those enhanced *in utero*, as children, or as adults. The possibility of vast differences in self-view and general development is obvious. Our individual sense of self-identity and self-worth may depend heavily on our knowledge of the nature and timing of the enhancement and the reasons for it. Knowing that one's genome has been altered will not necessarily have the same impact as knowing that one's current physiological system has been altered, without effect on the germ line. But what would this impact be?

e. An equality argument against the preceding nondistribution arguments. Those who wish to consume enhancement have an equality argument of sorts against nondistribution: they are denied equality of opportunity for self-improvement and are left in an inferior status as against their superiors, whose own "natural" endowments are (they argue) no less "arbitrary" than artificially raised levels of merit/resource-attractive traits. The main virtue of presenting this argument, however, is to illustrate at least some localized emptiness in the idea of equality. This argument from equality seems to be a stretch precisely because of our doubts about the

105. See generally Mehlman, *supra* note 97 (discussing the possibility of depriving the enhanced of certain benefits). See discussion *infra* Section VII.B.5.

106. Cf. DANIEL KEYES, *FLOWERS FOR ALGERNON* (1966) (presenting a character with impaired intelligence who suddenly becomes brilliant).

moral propriety of technological enhancement. That issue, in turn, may cycle us back to equality, but only in part. Not all arguments for or against technological enhancement are equality-based. But, since equality is the prime target for inquiry here, I turn to the next stage of analysis.

B. The Equality Impacts of Technological Enhancement

1. In General: "Units" and Targets of Equality; Domains of Equality; Enhancement that Changes the Bases for Distributing Benefits and Burdens

We have already seen that it is no simple matter to describe the "equality impacts" of distributions of anything, never mind enhancement resources. Although matters of fact are obviously crucial, much depends on what notions or aspects of equality are in use, on what "units" or entities are being compared as (potential) distributees (e.g., existing or future persons,¹⁰⁷ families, groups, etc.), or as targets for "equalizing" (income, wealth, social status, legal and political rights, opportunities of many sorts, and so on).

We need also to emphasize a distinction central to our topic: distribution of the resources needed for enhancement as opposed to distribution of all other commodities/rewards. The reason for the emphasis is, as we saw, that enhancement resources *change the game* of distribution by altering the merit/resource attractive bases for making distributive claims.¹⁰⁸ As we saw, there is an important reservation about this distinction. Although it is meant to identify future mechanisms of augmentation, it does not fully distinguish them from many other commodities. Educational resources, wealth and income are themselves foundations for ever-increasing claims for more of the same (education, wealth, and income) or anything else we seek to acquire. There is, then, a hazy and extensive overlap between enhancing and non-enhancing commodities,

But the fact that there are precedents of sorts to the task of as-

107. The concepts and terminology concerning the creation (production?, manufacture?) of persons are beset with important difficulties. Whatever the context, the problem concerns altering the human genome gametes or embryos so that any resulting person will have traits that differ from those that would have been present without the alteration. One of the classic matters for analysis is the "non-identity problem:" because the child created has no alternative existence, whatever difficulties she experiences cannot constitute a harm, nor can her very life be a harm to her, unless the conditions are incompatible with a life worth living, from her viewpoint. See Amy L. Wax, *The Two-Parent Family in the Liberal State: The Case for Selective Subsidies*, 1 MICH. J. RACE & L. 491, 530-31 (1996) (discussing the "non-identity problem"). For extended discussions of some of the conceptual and normative problems of creating persons, see, for example, HEYD, *supra* note 11; DEREK PARFIT, REASONS AND PERSONS 351-79 (1984); Dan W. Brock, *The Non-Identity Problem and Genetic Harms—The Case of Wrongful Handicaps*, 9 BIOETHICS 269 (1995).

108. See discussion *supra* Section VI.D.

sessing enhancement resources hardly washes out the basic point: some distributions have a larger "feedback" component than others with respect to strengthening future claims for distribution.

2. *Disorder + Treatment Models: The Blunting of Equality Objections to Enhancement; Treatment Viewed as Restoring Equality Rather than Warping It Through Enhancement*¹⁰⁹

If one's capacity for some enterprise has been impaired by disease or injury, treatment may restore or even improve it. It may also *create* capacities for persons congenitally disordered (whether for genetic or nongenetic reasons), thus raising them to a "normality baseline" that they might have attained in the absence of their condition. (The baseline might also be defined by the community's statistical average or median.)

Compared with technological enhancement outside any disorder/pathology model, such treatment is less likely to be viewed as an "equality-suspect" form of augmentation, assuming the disorder and treatment are well-recognized as such. The contrary seems far likelier: medical intervention based on disorder or injury would be seen as promoting equality by reinstating or enlarging equality of opportunity previously distorted by disease or trauma. As suggested earlier,¹¹⁰ such characterizations may aid a case for insurability. However, the widespread demand for general enhancement resources without foundation within a disorder/trauma model would greatly increase the price of insurance, leaving enhancement beyond the financial abilities of many, perhaps most persons. There would thus be powerful incentives to cabin expansion of the concepts of disorder and injury.

Forms of enhancement not grounded on disorder, however, are likely to be seen as *impairing* equality by distorting our evaluations of natural endowments and of the gains from utilizing them. Perhaps the more appropriate description is that the concept of equality is not simply impaired—it is annulled and simply "drops out." In any event, "equality problems" of either sort are part of what underlies insisting on the preservation of the contrast between enhancement and treatment. Norman Daniels suggests as much in observing that

[Health care services] restore people to the range of capabilities they *could be expected to have had* without disease or disability, given their allotment of talents and skills. Our *standard model* for thinking about equality of opportunity . . . depends on *taking as a given the fact that talents and skills and other capabilities are not distributed equally among people*.¹¹¹

But the perception or the reality of equality impairment is not a

109. See *supra* notes 764-75 and accompanying text.

110. See *supra* note 44 and accompanying text.

111. Daniels, *supra* note 74, at 123-24.

conceptually necessary concomitant of enhancement outside a treatment-for-disorder context. If enhancement is open and acknowledged, its mechanisms widely available (low cost, no legal barriers, adequate and affordable medical supervision), and its effects substantially similar across persons, then it would seem relatively benign for equality assessments. There may be *other* problems concerning identity and “ultimate merit,” but equality concerns would be greatly dampened under these (unlikely?) conditions. If what Daniels calls the “standard model” (taking the distribution of abilities as given) is rejected, then, as he points out, “the distinction between treatment and enhancement has no point, at least where enhancement is aimed at equalizing capabilities.”¹¹²

3. *Enhancement and Interpersonal Comparisons of Merit, Desert, and Equality; Entrenchment of (New or Old) Elite Groups; Suppression versus Highlighting of Inerpersonal Differences; Racial, Ethnic and Gender Dimensions of Enhancement*

a. *In general.* Adverse physiological effects aside, concerns about human enhancement often begin with problems of making interpersonal comparisons. Probing these concerns requires that we map different concepts of equality onto different circumstances.

Think first of the distinction between affecting living persons' traits and those of possible persons via germ line changes. Persons genetically altered before birth may now have capacities for memory, reasoning, or athletic endeavors notably superior to the unenhanced traits they otherwise would have had. Their physical appearance and stature may also be different and more resource-attractive.

We thus must estimate the effects of such enhancements on various aspects of equality: “social equality,” “political equality,” equality of opportunity (broken down into matters of means, prospect, and so on),¹¹³ group equality, and the roles of merit and need in making equality judgments. These are very broad categories of equality, often used in scholarly and general discourse, and they are

112. *Id.* at 124. The distinction is thus, from that viewpoint, as “arbitrary” as the interpersonal differences of the genetic lottery. *See id.* at 124-25 (suggesting that knowledge derived from the Human Genome Project “might make the distinction between disease (including genetic disease) and the normal distribution of capabilities seem more arbitrary”).

113. *See* RAE ET AL., *supra* note 41, at 64-81 (discussing different meanings of “equality” and “equality of opportunity,” e.g., prospect-regarding and means-regarding forms of equality of opportunity). In this work, “equality of opportunity” clearly means at the least the absence of outside interference, e.g., regulatory/prohibitive laws and their embedded criteria (“no Klingons need apply”). *See id.* Equality of prospect concerns similarity in abilities to accomplish one's goals. *See id.* at 65-71. Equality of means deals with whether the parties in fact have the wherewithal to do so. *See id.*

useful starting points, although they can carry us only so far.

Social equality depends partly on the various frameworks for "person-perception"¹¹⁴ that we use to judge each other and ourselves. Perhaps the genetically enhanced would see themselves and be seen by others, including their "peers" and "lessers", as "superior" in any of several senses: possessing greater intrinsic merit (despite the "artificialness" of the enhancement) and hence greater desert (at least for specific rewards); being more useful to society and, therefore, more worthy in both moral and nonmoral senses; and belonging to an elite group holding substantial political power, with merit and desert dropping out of the picture as no longer meaningful. This elite group might be the successor to an established powerful group—or the upgraded version of a group already in place. Or, it might represent a new kind of elite, not based on wealth or power, but on genetic or other forms of augmentation.¹¹⁵

Another possibility concerns the formation of blocs defined by the particular nature of the enhancement. People characteristically sort themselves into groups roughly linked to the strength of particular traits. Thus, the more intelligent, the more physically fit, and the more nerdy often assemble into collections of greater or lesser strength. Enhancement of these traits might well solidify these groups and strengthen their political and economic power. People of course also sort themselves by their similar interests, which may or may not be closely linked to their native traits; by kinship; by place of residence; and so on. A focus on personal attributes is very far from being an exclusive basis for social aggregations. But the assumption is that merit attributes are sharply enhanced and both the process and the outcomes are highly distinctive. Enhancement may thus reinforce whatever existing inclinations people have to associate with persons "intrinsically" similar to them in personal characteristics.

More generally, if distribution of expensive enhancement resources followed a market or pre-existing merit path, existing socio-economic distances, whether based on particular resource-attractive traits or on wealth and income, would be enlarged and less bridgeable. No great foresight is needed to see the resulting risks of reinforcing adverse views about various racial, ethnic and gender characteristics. The creation of entrenched elites may be hard to reverse, as we saw, because of the self-reinforcing nature of *distributions of the very grounds for distribution generally*.¹¹⁶

114. DAVID J. SCHNEIDER ET AL., PERSON PERCEPTION 166-69, 267-69 (2d ed. 1979).

115. GATTACA (Sony Pictures Entertainment 1997) (depicting sharp gulfs in status and opportunity between the genetically altered (the "valid") and the unenhanced (the "invalids")).

116. Cf. HEYD, *supra* note 11, at 169.

[M]uch of the repulsion regarding genetic engineering arises out of concern about the abuse of power by a particular group of people in

b. *Threats to equal respect for everyone's common personhood: enhancement as intensifying concern for the strength of specific traits, leading to reductionism and interpersonal devaluation.* Equality judgments of certain sorts may involve suppression of concern or belief about the extent of interpersonal differences. Perhaps the reason technological enhancement seems more unsettling than customary hard work is that it challenges this suppression of "trait-awareness" by calling attention to the enhancing agent's target traits. Why such enhancement is more salient than long-term, gradual improvement is an issue for cognitive psychology, particularly as it bears on person-perception. Intuitively, one would think that sharp, rapid, technologically-induced changes in human traits would be pretty attention-getting, but this might decline over time.

In any event, technological enhancement challenges the suspension of concern for and beliefs about interpersonal differences that underlie a variety of institutions. One might say, rather loosely, that fundamental liberty interests are held by persons generally, not persons of certain sorts. (I forego the temptation to provide counter-examples.) We say much the same about access to "basic" commodities such as food, shelter, and medical care.

But, with technological enhancement in hand, the commonalities that abstractly mark us as equal persons may be overshadowed by a more intense concern for differences among persons in the measure of their attributes. Splitting will dominate lumping. Our perceived moral value as persons generally may be (partially) displaced by our increased economic and social value as bearers of certain traits in increased measures. To *plan* a person's traits suggests that those traits, as augmented, reflect his primary (if not only) value or utility. This reductive outcome is affiliated with the ideas of mere use of persons (in violation of the second formulation of Immanuel Kant's Categorical Imperative),¹¹⁷ objectification, and cognate concepts.¹¹⁸ Perhaps objectified persons may be viewed as

society, who might come to hold the key to the creation of the future generation, thus monopolizing all *genetically* power in the present generation. This concern is more of a redistributive nature. In the formation of future people's identity we should not only be humble in relation to natural (or supernatural) forces but also in relation to other actual individuals interested in forging the identity of their offspring.

Id. By "genethics," Heyd means "the field concerned with the morality of creating people, that is, decisions regarding their existence, number, and identity." *Id.* at xii.

117. See THOMAS E. HILL, JR., DIGNITY AND PRACTICAL REASON IN KANT'S MORAL THEORY 38-39 (1992) (describing "the second formulation of the Categorical Imperative").

118. It is unclear which of these notions are synonymous, or criteria for the others, or "bottom line" conclusions. For present purposes, they can be taken as quite similar, if not fully substitutable. For discussion of the links between these concepts, see Shapiro, *supra* note 62.

equal *inter se*, but we ordinarily do not talk of equality among objects. Persons, however, are rarely fully objectified¹¹⁹ (the cruelest forms of slavery come close to this negative paradigm) so equality does not simply “drop out.” As between the (partially) objectified and the non-objectified, of course, the former are the lesser.

As we saw, however, a reductive process may involve addressing the same traits we use to positively value persons, rather than devalue them. We do not see persons as abstractions, but as entities with specific characteristics.¹²⁰ Inappropriate reduction and positive moral evaluation thus involve intertwined, not-fully-distinct processes. The point to note here is the possibility that a visible practice of technological enhancement will erase whatever distinction there is between positive and negative moral evaluation because we will no longer recognize a moral qualitative difference between treatment and augmentation. Everyone—and no one—will be “reduced.”

4. *Forms of Regulation; Markets and Procedures; Equality's Internal Tensions Again*

a. *Natural differences; market models and efficiency.* The obvious natural and acquired differences among persons form the primary basis for rational ascriptions of inequality in various settings. What is it about differences that make for inequalities? How do we even recognize “differences?” Not all variations are perceived as differences, never mind as bases for inequality judgments. Some may think any given difference, however perceived, defined or measured, is morally neutral and cannot make for inequality in a value-laden sense.

Nevertheless, there is a threshold issue about the moral status of any differences and how these divergences among persons should be dealt with. They might be taken as given and their distributional and other effects left to the workings of decentralized markets, kinship structures, or assorted private arrangements. Or, communities might try to “improve” things, viewing some interpersonal variations as “natural wrongs” or “injustices.”¹²¹

Efforts to displace the market or other distributive systems would, of course, take us into a different phase of moral, legal, and

119. On “incomplete commodification,” see Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849, 1933-36 (1987). See also MARGARET JANE RADIN, *CONTESTED COMMODITIES* 102-114 (1996). On this and related objectification analyses, see Shapiro, *supra* note 95, at 1180-99.

120. See generally HANS JONAS, *Against the Stream: Comments on the Definition and Rededication of Death*, in *PHILOSOPHICAL ESSAYS: FROM ANCIENT CREED TO TECHNOLOGICAL MAN* 132, 161 (1974) (warning against the use of cloning and genetic engineering to create human “freaks”).

121. TEMKIN, *supra* note 41, at 13-14. “I think some who reject the notion of natural injustices would nonetheless agree that it *would* be morally objectionable to disregard such occurrences *if* we could alleviate them.” *Id.* at 14.

policy analysis. We would have to identify "substantive" criteria for distributing resources and establish procedures to verify that the *criteria* have been satisfied. Distributing enhancement resources would require us to select and investigate standards such as one's native endowments, one's good works and prospects for more, and so on.

Of course, any choice of distributive regime, whether market, non-market, or mixed, necessarily involves contested moral issues. The "genetic supermarket"¹²² may be "efficient" in some sense, but it does not bypass foundational problems. In discussions of efficiency, it is sometimes forgotten that generic efficiency deals with assessing different paths to a given set of goals. For societies and individuals, these goals range far beyond matters of income and wealth. They deal with issues of community identity and norms, with individual character development and virtue, and more. Incremental gains and losses in reaching these goals are dealt with in ways that structurally resemble the pursuit of pure economic efficiency: we wish to maximize or optimize the realization of the full set of goals.¹²³ This resemblance holds despite the impossibility of full quantification. Our success in reaching noneconomic goals is orderable, and the goals themselves can be rank-ordered. It is thus perfectly appropriate, and often clarifying, to speak of efficiently promoting virtue or perfection. An efficiency standard, at bottom, is a rationality constraint on how we pursue our goals and cannot, standing alone, tell us whether to prefer an unregulated market or central direction or anything in between. And an efficiency standard cannot, in general, tell us which goals to prefer. (Goals are "inefficient" only with respect to other goals.) In particular, whatever its value in economic theory and policy, it cannot tell us whether to implement, modify, or prevent or abolish an enhancement supermarket, genetic or otherwise.

Nevertheless, the sort of efficiency associated with markets forms an important lens for investigating any distributive system. In particular, it may be useful to comment on some of the normative presuppositions of market-directed allocation and distribution systems. The simplest models involve perfect competition where all persons have fixed preferences and characteristics. As the models become more realistic, they incorporate the possibilities of variations in preferences and at least long-term changes in personal characteristics (as in modeling investment in "human capital" such as education).¹²⁴ Presumably, they can also work with assumptions that

122. See the remarks on genetic "supermarket[s]" in NOZICK, *supra* note 83, at 315 & n.*.

123. See Michael H. Shapiro, *Regulation as Language: Communicating Values by Altering the Contingencies of Choice*, 55 U. PITT. L. REV. 681, 686-87, 765-69 (1994).

124. See *supra* note 99 on human capital.

resource-attractive traits can change rapidly. But here one must raise foundational questions about the normative presuppositions of markets. It is one thing to rest with the outcomes of the natural lottery. But "reflexive" technologies (those that alter the traits of their creators) are likely to be distributed in accordance with those outcomes, which result in wide variations in economic and political power. This changes the normative terrain considerably. As H.L.A. Hart observed long ago, "huge structures of our thought" rest on assumptions that traits do not drastically and quickly change.¹²⁵

b. *Janus-faced equality.* Technological enhancement resources provide at least some opportunity to level out nature's hierarchical roughness. It also creates the possibility, perhaps even the high likelihood, of compounding it.¹²⁶ If leveling is viewed as a community moral obligation dictated by egalitarian (and perhaps other) values, then banning enhancement, when used to *promote* equality, would violate the equality standard by inhibiting rectification of at least some inequalities. The presumptive obligation to try to rectify inequality is a corollary of most visions of political and social equality.

But this "corollary" may nevertheless be fairly weak, particularly when confronted with different visions of equality and with standards other than equality. Thus, equality-driven moves toward rectification would require some degree of centralized direction of the creation and distribution of enhancement resources. Enabling the have-lesses to move closer to the have-mores might thus *itself* violate some aspects of equality (and of fairness, justice, and autonomy) through coercive redistribution. A particular take on equality may mandate that each person be allowed to reap the benefits of her native endowments as realized through her acquired skills, and that redistribution is not only unfair, unjust, and illiberal, but inequalitarian: some persons have less wealth taken from them simply because they have lesser endowments and skills. Equality concerns thus look both ways.

Of course, no distributive plan for enhancement resources would be likely to completely straighten out the bell-shaped curve of the distribution of human native intelligence, size, attractiveness, and so on. And few would think such a result desirable, morally or otherwise, whatever the processes used to achieve the result. Yet the

125. H.L.A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 622 (1958). See also the comments of CHARLES R. BEITZ, *POLITICAL EQUALITY: AN ESSAY IN DEMOCRATIC THEORY* 35 (1989), on J.S. Mill's plural voting system, pointing out that it "would reinforce existing inequalities in the distribution of property, or, at least diminish the prospects of desirable egalitarian reform."

126. See Michael H. Shapiro, *Who Merits Merit? Distributive Justice and Utility Posed by the New Biology*, 48 S. CAL. L. REV. 318 (1974); see also Attanasio, *supra* note 15, at 1306-09.

fact that few persons are “radical egalitarians”¹²⁷ does not mean most persons would be unconcerned about the distribution of performance-enhancement goods and services.

5. An Opposing Equality Vector: The Reduction or Devaluation of the Technologically Enhanced

a. Can merit itself (as opposed to the underlying merit attributes) be artificially enhanced? Those with technologically augmented characteristics will not necessarily be viewed as having gained “more merit.” I do not extensively consider whether this rejection of the possibility of incremental merit is morally and conceptually sound; I am just trying to describe potential outcomes. This negative merit judgment is likeliest when living persons are augmented by medical/surgical means, including somatic cell gene therapy. But the same negative judgment may also apply, perhaps with lesser force, to persons genomically altered either by work on their early embryos or by alteration of their gametes prior to ovum fertilization. Genomic changes might seem, both to the subject and to others, more “internalized” and “identity”-connected than somatic changes, and the rewards they draw more defensible. Indeed, for those altered as adults, any gains may be perceived as unearned benefits. (The same may apply to those altered *in utero* or as infants or children, but this is even harder to predict.) Although there might be greater inequality of traits, this would not necessarily yield a perception of greater differences in merit or desert.

Why would “enhancement of traits” not be taken as “enhancement of merit?” Because we would not count the result of technological change as a morally relevant improvement. But this answer largely repeats the question. Why is the augmentation not “morally relevant”—at least not in non-utilitarian terms? Because of some or all of the possibilities mentioned earlier: concerns about identity, “free rides” and lack of effort, the role of external influences not attributable to our endowed makeup, and departures from one’s natural, ordained self. Indeed, given these concerns, the enhanced might be viewed as partial artifacts of *lesser* merit than the non-enhanced. The inequalities of distribution deriving from these nonmeritorious

127. I use this term loosely to refer to those arguing for as precisely equal outcomes as is practically possible (in income, wealth, social status, etc.), possibly including degree of satisfaction or happiness. In light of recent developments in biological technology, they may wish to consider whether cloning should be vigorously pursued on a wide scale in order to approach equality more closely. However, even commentators who describe themselves as “extreme” are not necessarily “radical.” See, e.g., TEMKIN, *supra* note 41, at 15 (“[O]n the view adopted in this book—the ‘extreme’ view of the impartial teleological egalitarian—one should care about natural, as well as social, inequalities.”); cf. MARIA H. MORALES, PERFECT EQUALITY 21-25 (1996) (discussing John Stuart Mill’s account of “perfect equality,” a term closely linked to gender equality).

enhancements, then, would not be justified by what are perceived as true differences in personal worth. Moreover, artificially enhanced talents would not be seen as lessening or devaluing the natural talents or acquired skills of others; the elevated traits simply would not count. Of course, what "counts" as "morally relevant" depends on the reigning ethical theories, and all enhancements would be relevant within the framework of some theories, most notably utilitarianism or other consequentialist frameworks. When dealing with ascriptions of merit, virtue, character, and so on, the dominant moral perspective is not utilitarianism, although it is part of a complete moral analysis.

The oddity, as we saw, is that the very traits we value the most are those that we want to shield from sudden, identity-threatening "discontinuous" technological enhancement, as opposed to the gradual improvement associated with traditional methods. This "perfectionist paradox"¹²⁸ is perhaps not so odd, however. Customary ways of self-improvement do not grate on us as much because they seem less clearly linked to the problems just recited concerning compromise of identity, the debasement of effort, and so on.

b. Can the very idea of merit survive in a world of technological enhancement? I suggested above that the perceived incremental moral value of "artificial merit" might be limited or nil. Only our native attributes, in the raw or as improved by standard efforts, could underlie ascriptions of merit. Of course, as we saw,¹²⁹ the moral value of these standard forms of merit can also be questioned. If we do not deserve the assemblage of traits we each received "From Above," what meaning does "merit" have?

Still, we have ingrained notions about merit, whatever their source, that are reflected in everyday action and discourse. These notions are consistent with strong reservations about ascribing enhanced merit to persons with artificial gains in merit attributes. If so, does this reinforce the moral status of preexisting merit? Or does the prospect of a practice of genetic enhancement lead us to question the very idea of merit in *any* sense? This is our next question.

If merit attributes are enhanced, what is the proper role of preexisting measures of native or acquired merit? Does the concept of merit become diluted—or even empty, dropping out of our concerns altogether? Even if we retain it, it may be difficult to determine who used what enhancers to what effect in trying to elevate pre-existing trait-values, whatever they were. And why would anyone care about this personal history anyway?

Suppose next (what is extremely unlikely) that there is an abundant supply of effective and safe enhancement resources and

128. See discussion *supra* Section IV.B.

129. See *supra* note 33 and accompanying text.

that everyone has more or less free access to them. What roles would merit or even equality itself serve? Merit and equality appraisals presuppose the possibility of morally relevant differentiations, but there are none, or so it might be argued. The perceived increments in our traits has spillover effects. We are led to compare the moral irrelevance of self-enhancement with the moral arbitrariness of the genetic lottery and of the situations into which we are born.

So, because of the “masking” of prior merit levels through enhancement and the perception of the moral irrelevance of either native or technologically enhanced merit, both individual merit appraisals and merit appraisals generally might have little or no moral content.

Thus, in the context of technological alteration, “Who merits (more) merit?”¹³⁰ nearly becomes a double nonsense question. Not only can we not increase our merit artificially, merit itself is gone as a relevant moral category because, first, the measures of our merit attributes are freely adjustable and so their original status is a historical irrelevance and, second, we have learned that the supposed moral foundations or even “natural” merit are nullities.

But this state of affairs—the nearly free availability of effective and safe enhancers—is too unlikely to serve as anything other than a polar-case thought experiment. We will probably never see a world in which our traits are fully and inexpensively malleable.¹³¹ In any event, as we saw, merit judgments could still survive in that world by being based on antecedent native endowments, which would remain our best index of personal “worth;” for all we know, they might not only not drop out but actually become still more important. But only these pure, native, preexisting measures of merit honed by traditional forms of effort would constitute merit in a world of trait enhancement. After all, we do not presently discount natural endowments even when they are elevated by education, training, and so on. We often admit students to higher level educational institutions not only because of merit acquired through prior study and training, but because of our estimate of their “inherent” abilities. We trust neither acquired improvements (via education and training) nor native raw ability standing alone. Which domain of merit is emphasized depends on the context.

Of course, we will continue to wonder what sense there is in relying on “historical” or “genetic” merit when our merit attributes can be significantly enhanced. Whatever the circumstances in an enhancement world, our notions of merit and desert are not sufficiently well worked out to be able to answer this with full assurance, nor is there any prospect that they ever will be. Moreover, the “dis-

130. See discussion *infra* Section VII.B.6.

131. See Hart, *supra* note 125, at 622 (stating that “huge structures of our thought” rest on assumptions that traits do not sharply and suddenly change).

tance" between a world of technological enhancement world and our own raises problems of practical nontranslatability and incommensurability between differing normative systems. This gap should not end speculation or drive us to moral relativism, but it suggests serious limits on our ability to evaluate radically altered circumstances.

6. *Inequalities Compounded; The "Matthew Effect" and Terminal Social Stratification: The Problem of "Who Merits Merit?"*

The rich get richer, the poor get poorer, and the smart get . . . smarter? Why not? The already well-educated qualify far more easily for still more education than do the less-educated. To invoke a Biblical epigraph I have used before, "For unto every one that hath shall be given, and he shall have abundance: But from him that hath not shall be taken away even that which he hath."

Distribution of scarce resources is of course a classic topic in economics, ethics, political theory, public policy, and everyday politics. (Some might argue that it is the only topic, assuming a broad understanding of "scarce resources.") But the distribution of enhancement resources, as suggested, raises some special issues. Enhancement almost inevitably targets standard merit attributes, and these attributes are all wealth-attracting resources (whether successfully used in individual cases or not). They form the foundations for obtaining life's necessities, luxuries, and rewards generally. They deal with matters of thought, however categorized (cognition; affect; etc.), and with physical aptitudes and skills, physical stature, and appearance. They are the traits we value most highly, in both moral and economic senses, though there may be sharp cultural variation concerning which traits these might be. Indeed, some "traits" are revealed or hidden almost exclusively because of cultural and related variables: the ability to spit long and accurately into a small receptacle is not universally valued.

A question mentioned earlier can now no longer be deferred: who merits merit? Suppose that the thing to be distributed is not money or ordinary commodities but the resources for enhancing a merit criterion for distribution, such as intelligence. This, of course, is a loose description. We saw that artificial enhancement may not be viewed as a merit enhancement, so, an enhanced merit attribute does not necessarily mark enhanced merit.

But sometimes the benefits of speaking loosely, or at least metaphorically, outweigh the disadvantages. All merit attributes are potentially successful resource-attractors. The result is an apparent increase in the recipient's power to attract still more resources in an accelerating cycle. To talk of "merit" highlights the problem: an increase in merit in turn increases one's merit claims for more merit, or for anything else, continuing indefinitely.

Whether we talk of “merit” or “resource-attractors,” the distribution alters the very ground on which the initial distribution is made, generating a multiplier effect. Under these conditions, Thomas Jefferson’s “natural aristocracy” of “virtue and talents” is replaced by an artificial aristocracy of technologically improved abilities.¹³² Viewed either as literal merit increases or as de facto increases in one’s powers to attract resources, the result is greater ability to command wealth and other resources generally. Business is business. Intelligence counts for scientific research, whatever the genesis of the intelligence level. Physical stature counts for football, however acquired. Attractive faces and bodies draw attention and money, whether or not we talk about merit.

As we saw, the outcome of various distribution patterns might be the ratcheting-up of social, economic, and political stratification, and of the hierarchical structure of community life generally. This is a particularly likely outcome if distribution is based largely on decentralized mechanisms, such as markets, kinship, or old-boy/girl networks. To ask whether and how the market should be installed or dislodged as a primary distributive mechanism for anything requires a return to the earlier threshold question about the very meaning of “equality” as applied to distribution: is it properly based on natural or acquired merit, effort, need, social utility, considerations of fairness or justice, ideas of opportunity and prospects, ideas of outcome, the presence of a pathological condition requiring treatment, and so on?

7. Enhancement and Interpersonal Desert: Time-Scales and Social Stability

a. Enhancement of living persons. What we are used to is the gradual growth of merit earned by effort, resulting in gently escalating desert. People train, study, sweat, grunt, paint, and scribble. After some significant stretch of time, they go off armed with degrees, certificates, and black belts. Although our judgments of merit and desert may be complex and contested, there is nothing novel about the equality problems accompanying this continuously but slowly shifting “merit field.” It is part of our baseline and perhaps part of nature.

Suppose, however, we use faster-acting enhancement resources. The reasons for resorting to technological enhancement are to shorten the time for strengthening one’s attributes and thus to raise one’s current maximum; to reduce the burden of effort needed to do so; and to gain whatever added returns the enhancement processes make possible. The psychological, social, and political effects of such technological “quick-fixes” are, of course, speculative and, until re-

132. Letter from Thomas Jefferson to John Adams (Oct. 28, 1813), in *THE ADAMS-JEFFERSON LETTERS* 388 (Lester J. Cappon ed., 1988).

cently, relegated to certain literary realms.¹³³ But there is nothing inherently wrong with speculation. Indeed, how else could we have developed technologies in the first place? Anyway, like it or not, I am not stopping here just because we cannot predict the future, so here are some more speculations.

One outcome of technological enhancement might be linked egalitarian and psychological impacts. A sudden change in individual capacities is likely to present a major challenge to the transformed persons, to those close to or associated with them, and to society generally. Our lifestyle and lifeplan choices depend heavily on plausible assumptions about our personal attributes (both assets and deficiencies) and their general stability (a stability consistent with their gradual elevation or deterioration).

Suppose, then, someone of modest talents and accomplishments undergoes a major spike in certain aptitudes. Would she quickly come to think that she *deserves* more of life's rewards because her talents have sharply increased? How would she accomplish this? By demanding more of what she wants because, as she claims, she has suddenly become more meritorious?

We have difficulty enough adjusting even to drawn-out social changes, such as increases or decreases in the size of certain population groups (e.g., the very young, the very old, ethnic minorities, the deserving and undeserving poor, and so on). It is not clear how society would or could respond to abrupt changes in the "merit" bases for securing educational and other resources. The newly intelligent or memorious¹³⁴ cannot simply walk onto the grounds of their preferred universities demanding entry and possibly the rejection or displacement of their new inferiors. Perhaps various forms of political and social instability will result from the self-awareness of new powers and the general knowledge that some are receiving enhancement resources while others are not.

Rapid, unexpected changes in the fabric of life are of course to be expected, although some never adequately adjust to them. (A few people remain allergic to rock and roll, even after nearly half a century.) A somewhat distant historical analogy would be the "instantaneous" emancipation of large numbers of slaves or indentured servants who had been denied education and any opportunities to develop the skills needed to survive and flourish as free persons. The comparatively rapid (if incomplete) change in the status of women in the U.S. and elsewhere is another, perhaps equally dis-

133. See generally POUL ANDERSON, *BRAIN WAVE* (1954) (telling a tale in which the Earth suddenly passes out of a region of space containing an intelligence-impairing field, resulting in universal substantial increments in human intelligence).

134. Yes, there is such a word. See JORGE LUIS BORGES, *FICCIONES* 107 (1962). For the obsessive, see 9 *THE OXFORD ENGLISH DICTIONARY* 596 (2d ed. 1989) (noting, however, that it is obsolete).

tant, analogy. What happens when a woman schooled to think her pre-ordained life path is restricted to motherhood and housekeeping is suddenly told that she can, and perhaps must, set new goals and pursue them?¹³⁵

Virtually all aspects of equality would be challenged by such enhancement: how we view each other's merit, worth or desert; our social status and political power; the compounding of problems of intergroup inequality where enhancement tracks race, ethnicity or gender; and, more abstractly, our perceptions of the conflicts between different forms of equality. In particular, the battle between equality of opportunity and equality of outcome may be intensified by the (limited) availability of enhancement resources that greatly enlarge one's prospects and by growing interpersonal gaps.

These difficulties are rather more serious than dealing with social shifts that are expectable and perhaps even desirable. The technological prospects hurl foundational issues at us that challenge our grounds for judging and even describing each other. Such rapid changes would be hard to assimilate into existing frameworks for personal evaluation. Sudden, major alterations in attributes, particularly merit attributes that help define one's identity, are not associated with ordinary persons. Western culture links "shape-shifting" to mythological para-human creatures.¹³⁶

We thus have a two-stage egalitarian problem: deciding who is to receive "merit-enhancing" resources and determining what collective or individual responses to make when faced with the escalating demands of the newly enhanced. These *nouveau smart* do not suddenly enter the fabled set of fully qualified Rocket Scientists. (I am not assuming the possibility of memory or skills transfer.) And even when they do achieve that status, their enhanced abilities will not necessarily be accepted as enhanced merit, as we saw. Nevertheless, they have become members of the set of persons now (arguably) entitled to further education, training, and, assuming success in these endeavors, appropriate forms of employment and their attendant rewards, including income, social status, and political power. (We cannot yet say whether it will make any difference whether they frame their claims by relying on merit and desert or economic utility.)

b. Germ-line enhancement. Questions parallel to those just raised concerning alteration of living persons arise with persons

135. See COLETTE DOWLING, *THE CINDERELLA COMPLEX: WOMEN'S HIDDEN FEAR OF INDEPENDENCE* 143-44 (1981) (discussing problems women might encounter in adjusting to and acting on their sudden liberation).

136. It may be otherwise in other cultures. See, e.g., *Sacred Offices and Orders*, in 26 *THE NEW ENCYCLOPEDIA BRITANNICA* 1014, 1020 (15th ed. 1997) (describing combat between shamans in form of animals); cf. *Proteus*, in 9 *THE NEW ENCYCLOPEDIA BRITANNICA*, *id.* at 741 (relating the myth of Proteus, the shape-shifting, all-knowing old man of the sea).

whose genomes have been altered, or, possibly, whose traits were revised during fetal development or early childhood, even if this did not affect the germ line. All of these persons are likely, in different ways, to see themselves as identified with traits they have always had, at least within the span of their memories. The traits would be "wired in" early by whatever means and become a given, intrinsic part of their self-views. Those enhanced as adults or as older children, however, will be able to compare their attributes "before and after" enhancement.

Given the historically limited access to elite educational facilities and desirable employment, it is unclear how our institutions can quickly adjust, even over one or two generations, to a sharp escalation of merit claims to these resources. Moreover, certain forms of labor may become even more disfavored than they are now among more educated groups (e.g., "blue collar" work, cleaning/sanitation, and various low-skilled personal-service functions). Perhaps the shortage of supply would raise wages for employment of low esteem, which would draw many applicants willing to trade (temporary?) embarrassment for an enlarged income. Of course, their services would then be too expensive for many consumers, particularly the still-unenhanced.

c. Both groups in the long run. The questions just raised also apply to long-run considerations, and here matters become still more unpredictable. How could we forecast shifts in attitudes and beliefs about interpersonal valuations? If inhabitants of the present world and those of a future world of technological enhancement could communicate, they may well have difficulty having useful conversations with each other on the issues traced here and perhaps on many other issues as well.

Still, we are not entirely at sea, and can make at least minimal projections. One would think that, with escalating demand for the (possibly) superior commodities produced through stronger merit attributes, investment would gradually yield institutional responses such as more educational facilities, more complex mental and physical competitions, and new technologies enabling disfavored lines of work to be done more by machines and less by persons (e.g., via robotics). This would generate greater incentives and pressures for still further personal enhancement, new stages of institutional response, and so on.

Recall also that one effect of the greater salience and measures of merit attributes might be to amplify the social, economic and political importance of the enhanced traits. Any enhancement efforts would be likely to reflect major investments of resources of all kinds, both financial and emotional, and people want returns on their investments. That requires continued attention to particular traits and trait changes, and thus to many aspects of interpersonal differentiation.

One theoretical possibility should be kept in mind for analytical purposes, however unlikely it may be: there might be little *relative* interpersonal change because of broad access to similarly effective and safe enhancement agents. But this would also represent a major source of pressure for social and economic changes. Nearly everyone will be more able, more insistent on appropriate rewards for ability, and more concerned about the responsive formation of new institutions to satisfy their new levels of talent.

8. *The Equality of Groups and Blocks: More on Social Stability*

Few will question the observation that groups and communities play major roles in one's social and political life, and partly as a result, in the formation of one's sense of identity and self-regard. Interpersonal equality issues are thus conceptually linked to intergroup (and intragroup) equality. In turn, both realms of equality are affected by reigning views on merit and desert.

Humanity has apparently always sorted itself into groups, and these groups are often founded on perceived differences in the strengths of merit traits and resulting differences in accomplishments. (This is hardly the only basis for social sorting, but it may count for a lot in various contexts.) Indeed, in a distributional system based entirely on the purest notions of merit, with the arbitrariness of prejudice, stereotyping, corruption, fraud, and coercion largely absent, one would be able to infer that resulting differences in attainments, rewards, and stature are based entirely on differences in abilities or other merit or wealth-attracting resources. Perhaps this just replaces one set of "arbitrary" criteria (old-boy/girl networks, kinship preferences, etc.) with another (genetic and environmental lotteries), but the issue does not require our attention here. In any case, this is a somewhat alarming point: if all human differences in performance unerringly correlate to native and acquired abilities, without distortion by favoritism or bribery, then we deserve our place in the hierarchy, however lowly or elevated it is. There would no longer be any convenient excuses for lack of success. Our status would unambiguously bespeak our greater or lesser endowments and skills.

This familiar point has been addressed in several well-known (and controversial) works.¹³⁷ We would lose our excuses for failure (e.g., "it's just politics that did you in"). Our relative status would rest "on the merits." Perhaps a remote example is a group such as

137. See R.J. HERRNSTEIN, *I.Q. IN THE MERITOCRACY* (1973); RICHARD J. HERRNSTEIN & CHARLES MURRAY, *THE BELL CURVE* xxi-xxiii (1994); GORDON LEACH, *THE BIOCRA TS* 221-23 (Rev. Pelican ed. 1972); *A Cooler Look at the IQ Controversy*, 267 *SCIENCE* 779, 779 (Richard Stone ed., 1995) (arguing that the U.S. is becoming more stratified by IQ); cf. MICHAEL YOUNG, *THE RISE OF THE MERITOCRACY* (Transaction Publishers 1994).

MENSA, whose membership is said to be chosen on the basis of pure ability rather than interests or accomplishment.¹³⁸ The result might be an extension of the distances, and a raising of the borders, between existing groups, or the creation of new entrenched groups.

Recall now the point raised earlier that persons who invest heavily in trait enhancement will demand adequate returns on their investment. The sluggishness of social and political responses to the claims of persons with newly enhanced attributes may contribute heavily to various forms of social instability. This is likely to be compounded by perceived inequities in the distributive mechanisms for technology.

Still, we cannot know now whether any given pattern of enhancement would inspire social/political instability. Much may depend on whether, despite possible increasing gaps between individuals and groups, the lot of the worse-off is improved.¹³⁹ Still, if the size of the gap between the better-off and worse-off is great enough, the overall risks of instability may go up even if the resources of the less well-off increase. Poverty, after all, is a matter of ordinal ranking as well as absolute value of holdings.

9. *Political Equality Imperiled: In General*

a. *Shifts in political/moral ideals.* Some prospective parents may be quite willing, and might even prefer, to accept whatever they receive from the genetic lottery. But competitive pressures, particularly where technological enhancement is in use, may inspire them to seek greater precision of result in their reproductive plans—partly out of fear of the child's reaction to discovering her relative disadvantages in remaining unenhanced. Moreover, the plans underlying germ or living-child enhancement may be rigorously enforced on their offspring.

What would parents say when faced with complaints brought by a competitively disadvantaged non-enhanced child? An unenhanced (deprived?) child could not rightly be told that her *existence as she is* was the only life possible for her. (I assume, as before, that the upgrading does not work an identity change.) The selfsame embryo from which she developed could have been isolated and altered, or her traits could have been changed after conception.

Assume now that the response to such social pressures is universal and successful efforts at enhancement. If so, incremental

138. See *MENSA Information* (visited July 1, 1999) <<http://www.mensa.org/info.html>> (stating that the only requirement for membership is a "high IQ").

139. See generally Richard A. Posner, *Equality, Wealth, and Political Stability*, 13 J.L. ECON. & ORG. 344 (1997) (presenting theoretical reasons and empirical data in support of the proposition that average incomes in a society, rather than the equality or inequality of the income distribution, determine the level of political stability).

equality problems attributable to enhancement would be greatly attenuated. From this branch of an egalitarian perspective, the more technology and the more widely it is used, the better.

It is far more likely, however, that, in a world where enhancement is feasible, there will, nevertheless, be large-scale distributional inequalities, and this risks (irreversible?) erosion of equality's status. Equality might be adhered to (if at all) only in the sense of preserving the abstract idea of equality of opportunity: no affirmative blockade interfering with one's right to use her preexisting intelligence and wealth to secure more intelligence and wealth, for herself and for her existing or future offspring, and to reap the benefits of her enriched capacities.

How might this shift our political and social ideals? Institutions and practices, by their very existence and visibility, "communicate" ideas and impressions, and these may have learning effects.¹⁴⁰ Of course, what is "learned" depends on what is perceived or understood. I leave the matter at that.

b. The segmented society. One feature of a world with both enhanced and nonenhanced persons might be more rigorous divisions of labor, perhaps of the sort displayed in Plato's *Republic*.¹⁴¹ After all, if we take the trouble to reassemble our offspring with certain "engineered" traits, they had better do as we planned, right? Equality analysis is difficult here because of factual as well as conceptual uncertainty. Perhaps enhanced persons will become polymaths and jacks-of-several-professions and so the world will contain relatively loose divisions of labor. I doubt that this is a likely outcome, however, given the increasing technical complexity of many professions and trades.

Nevertheless, it is conceivable that, despite rigorous division of labor, there may be political and social equality of a sort. Different professions, trades, and occupations and the varying aptitudes underlying them might be viewed as equally worthy. The "alphas" may be held equal to the "betas," though their augmentations (via the germ line or the living body) and life-work differ. Perhaps (paradoxically?) there will be an "equality of the enhanced" across their categories of enhancement. But do not count on it.

It seems at least as plausible to expect that, given continuing scarcity, equality in certain forms will be substantially "read out"

140. See Shapiro, *supra* note 123, at 772-74. I do not use "communicate" in a literal sense. I am not referring to speech or expression in the sense contemplated either by the First Amendment or by the disciplines of linguistics and communication theory. For the most part, in observing and participating in institutions and practices, we learn through perception and inference, not through someone, or something, literally speaking to us. See generally *id.* (discussing government regulation and its impact on market behavior).

141. PLATO, *THE REPUBLIC* Book VIII, at 446-47 (Benjamin Jowett trans., 1944).

where (from our present perspective) it seems most applicable and needed. The greater the entrenched social stratification, the greater the need for corrective notions of equality, but the less likely that there will be influential partisans for equality in the sense of sharing equally in basic rights. This is one component of the possible increasing rigidity of social barriers. An increasingly segmented society is a distinct possibility, though far from a certainty.

c. The more equalized society instead? In theory, enhancement resources could be distributed so as to promote equality in several senses, consistently with whatever divisions of labor are implemented. Recall the possibility that most members of future generations might be enhanced in similar degrees, so that the bell-shaped curve is shifted to the right for any given trait. And as we saw in the thought experiment involving distribution of intelligence-enhancing substances, distribution might be a function of need, where "need" is linked to equality of opportunity in securing life's rewards. Moreover, every person might be considered to have a stronger claim to the augmenting resources than his immediate "superiors" in native endowment, giving him the right of first refusal for the next set of augmentation resources.¹⁴²

Finally, where different traits are enhanced, the "overall" or "net" equality of the differently enhanced described above may hold. There is thus the bare possibility of a "more equalized" society.

But these questions about distribution and governance should now be applied to matters of political governance, particularly democratic voting.

10. More on Political Equality Imperiled: Democracy and Governance

a. Enhancement and democratic theory: Millian plural voting and the attenuation of democracy.

i. Kinds of democracy; is one-person, one-vote a defining characteristic of democracy? Most persons now acknowledge that there are stunning differences, both inborn and acquired, among individuals. Not everyone can be a physicist, novelist, grandmaster, astronaut, juggler, athlete, or model, at least without enhancement, and those who can will vary sharply among themselves in abilities.

For better or worse, these differences make for serious social, economic, and political inequalities. The question here is what effect these differences in human characteristics *ought* to have on various matters of political governance. If we are not in fact equal

142. Lexical priority is an important aspect of Rawlsian thinking. See RAWLS, *supra* note 67, at 42-45. "This is an order which requires us to satisfy the first principle in the ordering before we can move on to the second, the second before we consider the third, and so on." *Id.* at 43.

to each other in deliberative ability, judgment, and drive, why do we all have equal voting power in the sense that, when casting ballots in general elections, no one's vote counts for more than another's?¹⁴³ We are not equal in our knowledge of the issues, our abilities to assess competing arguments, the nature and intensities of our preferences, our capacities to contribute to our social and economic system, our stakes in the outcomes of particular government policies, or even in our very interest in public affairs.

Yet, for most of us, "democracy" seems to be all but definitionally connected with the maxim "one person, one vote." Indeed, given our views of the very rationales and functions of democracy, one could argue that, unless the maxim holds, there is no true democracy.¹⁴⁴ Is this definitional link indeed appropriate given our vast interpersonal differences? Not all political thinkers have thought so. As Dennis F. Thompson summarizes John Stuart Mill's well known discussion of plural voting: "The principle of competence expresses Mill's belief that a democracy should give as much weight as possible to superior intelligence and virtue in the political process."¹⁴⁵

Mill obviously did not think that equal votes for electors was a defining element of "democracy" or a requisite for promoting the public good. He endorsed plural voting, though perhaps with later reservations and possibly as a temporary measure.¹⁴⁶ In his system,

143. The power to elect a preferred candidate may be affected by the voting system in use (e.g., whether elections are at large or segmented and whether a "unit rule" is in place, as in a state where the winner takes all of its votes in the electoral college) and by the arrangement of geographical or other electoral units. See generally Michael J. O'Sullivan, *Artificial Unit Voting and the Electoral College*, 65 S. CAL. L. REV. 2421 (1992) (proposing changes to the implementation of the electoral college but without amending the Constitution). This is a difficult matter of voting theory and of statutory and constitutional law.

144. Cf. Joshua Cohen & Charles Sabel, *Directly-Deliberative Polyarchy*, 3 EUR. L.J. 313, 318 (1997).

Though polyarchies can be more or less democratic, making them more so does not require negating, subverting or otherwise transcending the political institutions definitive of polyarchy. This said, however, polyarchy is insufficient for full democracy—or full political equality—because, for example, it is compatible with inequalities in opportunities for effective political influence that would be condemned by any plausible statement of the ideal.

Id. Polyarchies are "political systems in which virtually all adults have rights of suffrage, political expression, association, and office-holding, as well as access to diverse sources of information; in which elected officials control public policy; and citizens choose those officials through free and fair elections." *Id.* at 317-18 (following Robert A. Dahl's definition). Cf. also *id.* at 321 (referring to "the idea that democratic procedures are desirable because they treat citizens with respect, as free and equal"). Cohen and Sabel characterize their discussion of democracy as "an account of the ideal of democracy." *Id.* at 317.

145. DENNIS F. THOMPSON, JOHN STUART MILL AND REPRESENTATIVE GOVERNMENT 54 (1976).

146. See MORALES, *supra* note 127, at 86; THOMPSON, *supra* note 145, at 100.

individual citizens would have votes proportional to their "individual mental superiority."¹⁴⁷ The number of votes per elector would thus be a function of his or her revealed competence. Mill discussed occupational success, test results, and educational status as criteria for assigning more than one vote.¹⁴⁸

For Mill, plural voting is one method, among others, for furthering the principle of competence.¹⁴⁹ His idea of competence is complex, however. It is related to intelligence, but is also linked to skills, since highly intelligent persons might lack skills relevant to governance.¹⁵⁰ His view of competence also includes "moral competence."¹⁵¹ Education seems to be not merely a proxy for competence, but partly constitutive of it. It may also be a proxy for intellectual ability. Finally, Mill qualified his recommendations by recognizing that participation values were in tension with competence values.¹⁵²

The connection between Mill's competence principle and human enhancement is clear. Commentators on genetic engineering, for example, have long speculated that enhancement could threaten democracy, at least in one-person, one-vote regimes. Robert L. Sinsheimer has asked, "Could . . . deeper knowledge of the realities of human genetics affect our commitment to democracy?"¹⁵³ The idea seems to be that democracy can be threatened by mere knowledge that our democracy-relevant talents (including Millian competence) are largely fixed by the physical/genetic foundations of our native endowments. But suppose that the substantial interpersonal differences observed by Mills are now enlarged by unevenly distributed enhancement resources. One might expect that the vivid impact of the vast gulf between the enhanced and the unenhanced would pose an even greater threat.

But just what is the nature of the threat to democracy? Democracy may take variant forms, and whether democracy that exclusively embraces the one-person, one-vote standard is the premier

147. MILL, *supra* note 6, at 475.

148. *Id.* at 475-76.

149. See THOMPSON, *supra* note 145, at 99.

150. See *id.* at 88-89 (pointing out that certain specialized elites cannot implement the functions of Mill's "competent minority").

151. See *id.* at 55.

152. See *id.* at 10-11. For other discussions of Millian plural voting, see Richard J. Arneson, *Democracy and Liberty in Mill's Theory of Government*, 20 J. HIST. PHIL. 43, 59-62 (1982) (arguing that Mill's account of plural voting is inconsistent with his antipaternalistic stance, given the failure of his other arguments for it); Christopher J. Peters, *Adjudication as Representation*, 97 COLUM. L. REV. 312, 334-336 (1997) (pointing out that Mill believed democracy promoted meritocratic government but considered a system of proportional representation necessary); Jeremy Waldron, *Legislation, Authority, and Voting*, 84 GEO. L.J. 2185, 2211-12 (1996) (agreeing with Mill that fairness or equal respect for persons does not require a majority).

153. Robert L. Sinsheimer, *The Presumptions of Science*, in LIMITS OF SCIENTIFIC INQUIRY 23, 34 (Gerald Holton & Robert S. Morrison eds., 1979).

form of democracy is a question at issue. (For present purposes, this is the only form of democracy that is challenged).

If we move beyond questions of number-of-votes-per-elect, we see that all democracies are linked because, in each, the governed, or a significant portion of them, are to have an important say in what affects them. (This is a crucial component of autonomy, which is in turn an essential ground of democracy). Their "say" is implemented by some form of majoritarian aggregation of votes on important matters of governance. This voice is not simply a right or power to give advice to or request redress from the true rulers "above." "The say" is to be decisive within a certain domain, although it may be subject to principled constraints derived from constitutions or other sources of law. (There of course remain issues concerning systematically withholding from various groups the power actually to select representatives or issues for approval or rejection. This may occur because of the structure of the voting system—e.g., at-large elections.)

Given this range of democratic possibilities, return now to the question that opened this section. Why is the political equality implemented by one-person, one-vote accepted in the face of individual differences? Robert A. Dahl raises a parallel question: "[I]f income, wealth, and economic position are also political resources, and if they are distributed unequally, then how can citizens be political equals? And if citizens cannot be political equals, how is democracy to exist?"¹⁵⁴

One might say, trivially, that we are merely shifting from one equality ratio (the ratio of votes to threshold personhood) to another (the ratio of votes to ability or its proxies). But this simply re-describes the question: which ratio *should* we prefer? Which better reflects equality, fairness, or justice? Let us continue to investigate the possible fates of equality where effective technological enhancement is possible.

ii. Applications to an Age of Enhancement. If enhancement is feasible, might equal-vote democracy (somewhat paradoxically?) be the preferred form of political governance *because of*, rather than despite, greater interpersonal differences? After all, even though we are not equally *able*, we may be equally *affected* by particular government policies. To respond that impacts on lesser-abled persons count for less than impacts on persons of greater ability is to presuppose a far different theory of the equality of persons *as* persons than is now held, at least in many quarters.

We might view the one-person, one-vote issue as partially a question of "management," rather than pure theory. For example, assigning different weights to individual voters might not be viewed as an efficient and realistic recognition of differences in ability, na-

154. DAHL, *supra* note 92, at 326.

tive or augmented, or of the varying degrees to which public policies affect us. Instead, it might be taken to reflect deep *disrespect* for those allotted fewer votes.¹⁵⁵ The latter, however, may not become powerless, and serious instabilities might arise. Obvious responses are that no disrespect is intended—the only goal is “efficiency”—and that the disrespect, if that is what it is, is well taken when there are substantial gulfs in ability, skill, etc. However, to publish and rely on this latter view would be to pour gasoline on a fire. It also begs the central questions concerning the very nature and moral significance of “equalities” in the face of ever-larger human differences.

It is true that, in special cases involving particular interests supposedly shared only by certain citizens, democratic systems do not always equalize individual voting power. Not all political or associational entities are or need to be well served by a one-person, one-vote rule.¹⁵⁶ An obvious example is a water district in which only high-volume water users such as farmers and manufacturers can vote on water policy issues. Moreover, in complex, layered systems such as democratic republics, the one-person, one-vote standard is attenuated in various ways (e.g., in the U.S. Senate and the Electoral College).

Leaving these special situations aside, however, plural voting is excluded from most modern ideas of democracy. Mill himself did not necessarily endorse it over other techniques for enhancing the influence of competent elites.¹⁵⁷ He seemed well aware of the substance of the Matthew Effect: those with excess voting power may draw increasingly disproportionate shares of rewards,¹⁵⁸ and possibly still

155. Cf. Cohen & Sabel, *supra* note 144, at 319 (stating that “democratic arrangements have the intrinsic value of treating those who are subject to binding collective decisions with respect, as free and equal”). Mill believed that rational persons of lesser competence would agree to a system of plural voting, and he evidently did not take plural voting to reflect disrespect in any deep sense. To the extent it does, I suppose he would regard this as an acceptable cost for superior government. In any event, his system contemplates some social mobility across “competence” categories. See the earlier reference to Mill’s discussion of occupational success, test results, and educational status as criteria for plural voting, *supra* text accompanying note 148.

156. For additional discussion, see Shapiro, *supra* note 26, at 99-100.

157. See MILL, *supra* note 6, at 476 (qualifying his plural voting system with the proviso that those with plural votes or the class they belong to cannot out-vote the remainder of the community); THOMPSON, *supra* note 145, at 100.

158. See BEITZ, *supra* note 125, at 35.

[Mill] presumed that those of greater intelligence or education would be more effectively motivated to temper self-interest with consideration of the interests of others in deciding how to vote. But this is naive; it seems at least as likely that those granted procedural advantages will use them to secure more effective representation of their interests than they would receive under a scheme of equal votes. Thus, assuming that those with extra votes would disproportionately represent the higher income classes, the scheme would reinforce existing inequalities in the distribution of property, or, at least diminish

more voting power, in an extended cycle. He did not endorse what Thompson describes as "blind submission of dunces to men of knowledge."¹⁵⁹ As mentioned, he also strongly emphasized participation values in democracy, both to control government and to educate the participants, making them more competent.¹⁶⁰ As Thompson describes Mill's compromise: "Just as the educative benefits of participation partly justify the extension of participation, so the educative value of superior competence partly justifies the influence of a competent minority."¹⁶¹

But participation-to-promote-competence will not necessarily save the day for one-person, one-vote, particularly in an age of enhancement, with its increased and possibly unbridgeable gulfs in ability, as we discuss next.

Plural voting is a long way from autocracy. However, from our present (transient?) value perspective, it is a lesser distance from oligarchy. It is also likely to be taken as inconsistent with the idea of equality of persons *as* persons, regardless of the measure of one's traits.¹⁶² One might thus question the seriousness of enhancement's challenge to equal-vote democracy by recalling that we now maintain democratic ideals *notwithstanding* the *present* perception of very wide differences in endowed merit attributes such as ability, and in accomplishment, wealth, power, and intensity of preferences. A major rationale for maintaining the one-person, one-vote regime is to prevent still further unjustified agglomerations of power and wealth that leave persons with inadequate access to basic commodities and reasonable opportunities for advancement. Except for those who associate rightful opportunities to flourish solely with ability or talent, this in an important argument.

But even our current commitment to equal-vote democracy might be fragile nonetheless, as suggested by Robert Dahl and Charles Lindblom.¹⁶³

Equality of control is an unstable equilibrium. Differences in knowledge, skill, opportunity and activity create inequalities of

the prospects of desirable egalitarian reform.

Id. See also *infra* note 170 and accompanying text.

159. THOMPSON, *supra* note 145, at 85 (quoting Auguste Comte).

160. As Thompson puts it, "the more competent citizens ought to have enough influence in politics to protect democracy against the most serious infirmities of rule by the less competent and enough to promote the development of competence among all citizens." *Id.* at 63.

161. *Id.* at 79.

162. See Waldron, *supra* note 152, at 2211-12. "[A]ccording equal weight or equal potential decisiveness to individual votes is a way of respecting persons . . . I am *not* saying, however . . . that either fairness or equal respect for persons *requires* majority decision. [J.S.] Mill's position . . . embodies the possibility that it does not." *Id.* at 2211.

163. ROBERT A. DAHL & CHARLES E. LINDBLOM, *POLITICS, ECONOMICS, AND WELFARE* (1953).

control; these in turn tend to generate further differences, which create further inequalities. [Note how this may be compounded in still further cycles by enhancement—again, the “who merits merit?”/Matthew Effect problems.] Hence the struggle to maintain a polyarchal organization is never won; indeed, it is always on the verge of being lost.¹⁶⁴

For Dahl and Lindblom, “polyarchal organization” is “the main social process for approximating (although not achieving) democracy.”¹⁶⁵

But several arguments suggest that the prospect of ever-greater differences among persons in the strength of their merit attributes does not put egalitarian democracy at extreme risk, either in theory or in fact.

First, and of first importance, the arguments about allocating votes as a function of competence may be somewhat misdirected. Democracy, again, is in part about having a say in what affects you. But how much something affects you may have little or no connection to your varying talents and fields of competence. Of course, this point implicates issues about interpersonal comparison of utilities. But there is a rough intuitive sense in which we think the basic impacts of both major and minor life events (e.g., injury, family formation, natural and other disasters) are presumptively similar for all of us, even if the world as seen by an Einstein is quite different from that seen by an Everyperson.

Put otherwise, the right to have a say in what affects one is not obviously dependent on how smart, talented, strong, or attractive she may be—or so most of us now think. Indeed, the moral premise that is missing here concerns the proper relationship between one’s political (or other) power on the one hand and one’s particular circumstances on the other. These “circumstances” include not only one’s competence but one’s vulnerabilities under various government policies, one’s deliberative abilities, one’s strength or intensity of preferences, and so on. To justify plural voting or even government by elite in an age of enhancement requires a political/moral theory that would explain an exclusive focus on a limited set of traits rather than on one’s needs and interests (especially those held in common by persons as persons).

Of course, any such theory, from our present standpoint, would probably be unpersuasive. Democracy may contemplate an ideal of superbly qualified electors and even more superbly qualified representatives, but the ground for democracy is not the superior decision making competence of the people (as opposed to rulers and other elites). The ground for democracy rests on the unfairness of subjecting people to policies, conditions and interactions that affect

164. *Id.* at 282.

165. *Id.* at 41.

them, possibly in ways utterly disconnected from their abilities.¹⁶⁶ And the ground for equal-vote democracy rests at least partly on the unfairness of giving unequal power to persons whose vulnerabilities are likely to be quite similar, whatever their mental and physical aptitudes. Thus, the “equally (or heavily) affected” argument may overpower the “superior contribution by the competent.”

To turn things around, one might urge that, under given circumstances, it is the *enhanced* who are at risk, particularly if they are a minority, which is quite likely. Even if they might be harmed because of their special status, however, assigning plural votes to them may not be the best mechanism for protecting them. A strong regime of individual-rights enforcement might be effective, although it too may be impaired by a hostile majority of the non-enhanced.

Second, even within the Millian frame, the kinds of enhancements available might not affect competences relevant to democratic decision making. It is not clear that “moral competence” can be affected in any but the most slapdash way by genetic engineering, but the possibility should not be entirely dismissed.¹⁶⁷

Nor is it clear how the very idea of competence, moral or otherwise, can be assessed entirely independently of moral issues concerning, say, the fair/just/egalitarian distribution of goods and services. In the assumed enhancement context, the lengthening “ability distances” between persons are themselves a partial function of wealth differences that are not directly related to “merit.” These wealth differences, divorced from merit (and perhaps in some cases morally questionable on other grounds) would be unjustifiably ratified and reified by plural voting. Because Millian competence is tied to wealth, which may be morally irrelevant or arbitrary, to defend plural voting on competence grounds thus begs some questions of moral evaluation concerning distribution and underlying issues of equality and fairness.

Superiority, in this context, thus remains a murky concept and of uncertain moral relevance. Indeed, as Peter Singer observes:

Mill himself said, later in life, that this [plural voting] was a proposal which found favour with no one. The reason, I think, is not that it would obviously be unfair to give more votes to better qualified people, but rather that it would be impossible

166. If the strength of traits differs significantly from person to person, one might urge that “being equally affected” is unlikely. For example, no known drugs act identically on all persons. This holds even if doses are precisely calibrated for size, age, gender, race or ethnicity.

167. See H. Tristram Engelhardt, Jr., *Human Nature Technologically Revisited*, SOC. PHIL. & POL., Autumn 1990, at 180, 186-89. Englehardt addresses the possibility “that there is a range of human antisocial dispositions and inclinations that can be more easily modified through genetic engineering than through education or through coercive or instructive social structures.” *Id.* at 188.

to get everyone to agree on who was to have the extra votes.¹⁶⁸

Third, even if technological enhancement did affect relevant competencies, those who remain unenhanced are not "incompetent" in any sense, including Mill's. Competence may concern attaining a threshold as much as it concerns the distance between oneself and others, though the two are connected. Here, a Millian might respond that technology could raise the competence threshold for qualifying as a voter, but this still would not establish the case for supernumerary votes.

Fourth, far from being inconsistent with equal-vote-democracy, the increasing gaps between persons make it all the more desirable to retain it, as already suggested.¹⁶⁹ The lesser-endowed and lesser-enhanced are not likely to suspend pursuit of their own interests, despite their new relative stupidity. Although the better-endowed might be specially able to protect themselves, given their superiority, the likeliest result of plural voting will be serious and dangerous instabilities, partly because of the perceived risk and actual aggrandizement of resources and power by the elites.¹⁷⁰ The greater the fear of such risks, the more that departure from equal voting will be seen as sending us down a steep, greasy slope emptying into an abusive oligarchy. In such a world, not only is equality compromised, all other basic values are also.

Equal-vote democracy would thus be urgently needed in an enhancement age to impede elites from conspiring to pursue their own

168. PETER SINGER, *DEMOCRACY AND DISOBEDIENCE* 34-35 (1973).

169. See *supra* text accompanying note 155.

170. See Nicholas Lemann, *Rewarding The Best, Forgetting The Rest*, N.Y. TIMES, Apr. 26, 1998, § 4, at 15. He refers to "the current American meritocracy" as

a system that is good at selecting and compensating superstars, that generates never-ending conflict over how rewards are distributed, but that has lost its public and moral dimension. The questions we ask about the meritocracy [defined, in part, by standardized tests by tests, awarding degrees]—mostly variants on "Who gets the goods?"—are far too narrow. Does the elite serve the public, as well as itself? Do most Americans get, through the education system or otherwise, the skills they need to lead a good, decent life? Meritocracy should be a system of governance, not a contest over spoils.

Id. Lemann also believes that "[w]e are obsessed with testing and ranking in our own lives as well as our children's." *Id.* "[O]ur understanding of the purpose of the meritocratic system is badly warped. It wasn't meant to be a way of distributing money and prestige. It was meant to be a way of making the whole society strong and coherent." *Id.* Lemann continues:

The founders of the American meritocracy . . . wanted to expand educational opportunity, but in a way that paid close attention to the rank-ordering of students and that carefully selected and nurtured a small group at the top. ([Former Harvard President James Bryant] Conant was the leading opponent of the G.I. Bill, because every veteran with a high school degree qualified.)

Id.

interests at the expense of others and to reserve power to themselves exclusively, to the vast detriment of autonomy as well as equality. (On this view, providing extra votes for the non-enhanced might be considered; it would serve as a form of redress or rectification of worsened equality conditions.) One could of course deny this "need" for egalitarian democracy by urging that the superior are entitled (within hotly contested limits) to reap the benefits of their superiority. But the self-expanding aggrandizement made possible by elite-creating resources allows distributional patterns that go far beyond the idea of fair returns on one's ability. Given the nature of the resource, power and wealth accumulations may become more securely "locked-in" than they may already be. And, once again, the very distribution scheme resulting in a given pattern of trait distribution is itself likely to have morally questionable components.

Think now not of equality, but of autonomy. I suppose that value also can be questioned as people become ever more distant from each other in merit attributes. Not only do the less "gifted" deserve fewer rewards, their autonomy is of lesser worth. Nevertheless, autonomy rights are not ordinarily, let alone exclusively, tied to one's measure of abilities. And if autonomy for all is to be protected, it seems essential to have some sort of (principled) equal-vote democracy. Equality ("empty" or not) is arguably necessary to preserve autonomy. Autonomy concerns having a say in what affects one (this is why democracy is in part founded on it) and, more generally, rests on opportunities to pursue one's preferences, including those for self-enhancement. Autonomy as so understood may be salvageable in an enhancement age only by rigorously preserving equal-vote democracy so as to maximize the recognition and wide distribution of personal and group autonomy. Autonomy, of course, may be viewed by plural-voting supporters as declining in value with the declining relative competence of the autonomy claimant. But, yet again, this moral proposition is not obviously true.

Still, defenders of plural voting or rule by an elite are likely to suggest that, precisely because of the elite group's superior competence, autonomy and even equality itself are better promoted by what seems like an inegalitarian system.¹⁷¹ But this is less persuasive than the view that democracy is a generally preferred mechanism of government partly *because* of the posited inequalities, not despite them. In any case, there is no point in launching an extended analysis of oligarchy or rule by philosopher-kings.

Fifth, perhaps the most obvious point in defending equal-vote democracy is that it may be instrumental in promoting opportunities to obtain the very enhancement resources that inspired this debate. There is certainly no assurance that the elites will look out for

171. See DAHL, *supra* note 92, at 88 ("[I]f a superior group of guardians could best ensure equal consideration, then it follows that guardianship would definitely be desirable, and democracy just as definitely would be undesirable.").

anyone's interests but their own, except on the very doubtful assumption that they will also be moral elites of a generous turn of mind.

Sixth, plural voting defenders will, sooner or later, make the simple-sounding argument that there is *no* threat to equality in an enhancement age. Equality, after all, concerns the similar treatment of similarly situated persons and the dissimilar treatment of dissimilarly situated persons. And, recalling an earlier argument, people of greater ability are simply different from those of lesser ability, and disparate treatment between the former and latter is not only not inconsistent with equality, it is required by it. As for further enlarging and reifying differences through uneven distribution of enhancement resources, this is no worse than uneven distribution of anything else. We are entitled to the fruits of our varying natural abilities, including the acquisition of still more abilities.

All I say here in response is that these claims rest on adhering to some views of equality rather than others, and that equality must at some point be put to the side while we address claims based on different values, notably, fairness, justice, autonomy, and utility. (Once again, we bump against the equality-is-empty thesis.) Whether "disparate" treatment of differently-abled persons is permissible depends entirely on the conception of equality in use and on the role of various traits as criteria for distribution.

b. Social changes in attitudes concerning equality, self-regard, and community: symbols, communication, and learning. I said earlier that the operation and observation of our institutions generate learning effects. Present conceptions of equality and other values may encounter a world in which long-standing assumptions about the relative stability of traits and character will be loosened. As suggested, the emergence of a world in which human traits are far more controllable may drive changes in our attitudes concerning the demands of equality and fairness generally, and merit and desert in particular. These shifts of view might occur for a variety of reasons. The consolidation of political power into hierarchies, for example, may result from the limited distribution of enhancement opportunities to those already holding wealth and power. Once in place, hierarchical institutions and practices might generate self-perpetuating learning effects through citizen participation and observation. Institutions and regulations generate learning effects—and this is why "arguments from symbolism" should not be dismissed as gossamer or be otherwise underestimated.¹⁷² The actual technical possibility of enhancement is likely to spur intense focus on traits and their measures and variations, and on their social and commercial value. Put otherwise, this concentrated focus would derive from our ampli-

172. See Shapiro, *supra* note 95, at 1214-20 (discussing arguments from symbolism in a reproductive technology context).

fied sense of “trait-control”—and this, in turn, may well magnify their apparent importance in our eyes. Whether this will promote “reduction” of persons to their enhanced traits or elevate their value in the eyes of others is not now predictable.

So, by directing our attention to certain traits, to their growing mutability, *and therefore to our interpersonal differences*, the use of enhancement technologies may alter how we see and assess these traits and their variations from person to person, and thus how we see each other and ourselves. Some of these changes may conflict with current egalitarian attitudes of certain sorts. Perhaps in our eyes, while traditional enhancement may still enhance, technological enhancement will “reduce.” We may see certain persons as semi-manufactured artifacts, rather than full-fledged persons, even though their powers may exceed ours.¹⁷³ Perhaps those with more votes may come to disdain those with fewer, and the latter may come to share this dim view of themselves. The nature of “community” may thus change radically, along with affiliated ideas of friendship and loyalty, as well as with our foundational values of autonomy, equality, fairness and justice, and utility. On the other hand, maybe not.

VIII. CONSTITUTIONAL CONSIDERATIONS IN BRIEF

In the United States, government policy decisions and actions concerning enhancement and its (non)regulation may be subject to certain constitutional constraints. There are some key ideas at work in tracing these constraints and their limits, but I present them only in summary fashion.

Regulation or flat prohibition of distributing merit attribute enhancers must, in some circumstances, be tested against claims of violating implied “fundamental liberty interests” under the Due Process Clauses of the Fifth and Fourteenth Amendments. The right to procreate, articulated in *Skinner v. Oklahoma*¹⁷⁴ without benefit of much explanation by Justice Douglas, might be taken to encompass germ line engineering of certain sorts. The right to determine the nurture and education of one’s children, as described in a variety of cases under a variety of theories, might be held to include that of technological enhancement. A liberty interest in control of mentation and bodily physiology generally might be invoked to support a fundamental non-interference right of access to augmentation services. The interpretive maneuvers underlying these arguments are entertainingly complex, but are not pursued here.

Depending on the outcome of the efforts to characterize enhancement as involving specially protected constitutional rights and

173. See discussion *supra* Section IV.B.

174. *Skinner v. Oklahoma*, 316 U.S. 535, 541 (1942), is discussed *supra* at note 17.

interests, the government may be significantly burdened in justifying its regulations and prohibitions. If so, it will have to identify serious interests that may be compromised and defend the precision of its means for protecting them, a judicial decision path known as "heightened scrutiny."¹⁷⁵ The maximum form of such scrutiny is the well-known strict scrutiny standard of review (the government action falls unless it is "necessary" to promote a "compelling interest"), which was apparently implemented in *Skinner*.¹⁷⁶ But recall that the U.S. Supreme Court has, during the last decade, recognized "liberty interests" that draw an "intermediate" form of scrutiny rather than the maximum.

It is, of course, difficult to project future constitutional analysis when the reproductive or transformative processes in question seem far removed from traditional paradigms and historical understandings, assuming these matters remain constitutionally relevant. To the extent that "tradition," "history," "original intent," and lexical understandings at the time continue to be viewed as decisive (whether separately or in some combination) in all but a few cases,¹⁷⁷ those arguing that enhancement falls under a strongly protected liberty interest will have considerable difficulty in making their case. If their characterization is rejected by the courts, then the government's burden of justification is very weak (a minimal rationality test that constrains far less than the ordinary meaning of "rationality" would suggest).

I add one note concerning the elaboration of the constitutional characterization efforts. Consider germ line augmentation. Determining whether reproductive ventures involving germ line "engineering" fall within a strongly protected "liberty interest" will, like any other form of adjudication, involve comparisons to known standard instances and "paradigms" of what is or is not protected. Partisans then characteristically state whether the interest proposed for special protection is "too far removed" or "distant" from the (possibly grudgingly) accepted exemplar.

The problem, however, is that the supposedly defining features of the exemplar may be contested. Is the process of creating a person who didn't exist before a sufficient condition for calling the process procreation? Or must the person have been created by human

175. For a discussion of the various levels of scrutiny in constitutional law, see ERWIN CHEMERINSKY, *CONSTITUTIONAL LAW: PRINCIPLES AND POLICIES* 414-17 (1997).

176. See generally *Skinner v. Oklahoma*, 316 U.S. 535 (1942) (striking down Oklahoma law that imposed sterilization as a criminal penalty upon persons convicted of two or more felonies involving moral turpitude).

177. The standard exceptions invoked are *Roe v. Wade*, 410 U.S. 113 (1973), and *Brown v. Board of Education*, 347 U.S. 483 (1954). Whether they are indeed "exceptions," and if so to what extent, is much discussed. So also is the question of what theories of constitutional adjudication they might represent beyond those mentioned in the text.

sexual recombination, rather than asexual means? If we do not know what defines the standard example, we cannot tell how "far" we are from it. As things stand, forbidding us from prenatal or pre-conception screening would impermissibly burden procreational rights, but does this authorize an inference that forbidding alteration of the germ line might also be impermissible? How "far" is affirmative genetic change in persons-to-be from testing to determine whether to abort a fetus or forego procreational attempts altogether? Both are forms of "genetic control," but they differ in obvious respects. When biological technologies separate and rearrange life processes in ways not contemplated by our existing concepts, the interpretive difficulties we already face are greatly amplified.

There may also be questions concerning the status of either enhanced or nonenhanced persons as members of discrete, identifiable groups at risk for discrimination and other forms of abuse. If so identified, classifications concerning the group might be treated as (semi?)suspect under the Fourteenth Amendment's Equal Protection Clause and the Fifth Amendment's implied parallel protection, again triggering some version of heightened scrutiny and imposing a nontrivial burden of justification on government action. If this "suspectness" characterization fails, the government is likely to prevail. (In some cases, the U.S. Supreme Court has applied the "rationality test" more stringently in equal protection as opposed to due process contexts and invalidated government classifications.¹⁷⁸ Clearly, the two "rationality" test are different, but if you are awaiting clarification from the highest forum, you will have to be extremely patient.)

In particularly egregious cases of abuse or manipulative control over enhanced or unenhanced persons, one might even claim violation of the Thirteenth Amendment (banning slavery) or the Nobility Clause¹⁷⁹ of article I, section 9.¹⁸⁰

Because of the strong link between mental functioning and communication, a First Amendment argument for fair access to intellectual enhancement resources, as well as the right to refuse such resources, might also be crafted.¹⁸¹

178. Why the rational basis test should be more successful in one context than in another is a matter for other occasions. See, e.g., *City of Cleburne v. Cleburne Living Ctr.*, 473 U.S. 432, 450 (1985) (holding that refusing a zoning variance for an institution for mentally impaired persons lacked a rational basis). If accuracy were mandatory for the Court, it would have acknowledged that it had applied heightened, if non-strict, scrutiny. See also *Plyler v. Doe*, 457 U.S. 202, 220 (1982) (ruling that there was no rational basis for denying a free public education to undocumented children).

179. See generally Francis C. Pizzulli, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. CAL. L. REV. 476 (1974) (discussing the constitutional implications of genetic engineering).

180. U.S. CONST. art. I, § 9.

181. See Michael H. Shapiro, *Legislating the Control of Behavior Control: Autonomy and the Coercive Use of Organic Therapies*, 47 S. CAL. L. REV. 237,

Congress has an uncertain range of powers to promote constitutional rights under section 5 of the Fourteenth Amendment, subject to Supreme Court control. If any group, nonenhanced or enhanced, seems especially put upon, Congress could consider remedial legislation, perhaps as a form of "affirmative action".¹⁸² To recall an earlier point, however, government generally has no positive constitutional obligation to assist persons in actually realizing their preferences or to "equalize" what seem to be unjust distributions. Where government has already undertaken some project, however, there may be constitutional constraints on undoing or altering what has been done. (Could a city, for example, declare all traditional public forums to be henceforth off-limits to personal communication?)

CONCLUSION

Significant enhancement of merit attributes is not yet technologically possible, but there is little scientific basis for thinking that this will hold indefinitely, and saying so does not evidence a credulous turn of mind. Our knowledge of relevant life processes and how to intervene in them effectively and precisely is quite limited, despite impressive advances in biomedical and biotechnological knowledge during the past generation. But these developed capabilities, including accurate genetic screening and the use of powerful psychotropic drugs to control mental disorder, suggest much more to come. Both abstract understanding and technological know-how will accumulate, and technical mechanisms for controlling mental and physical processes and traits can exist even if it is not fully understood how they work. Our knowledge of how psychotropic drugs affect symptoms of psychosis and major affective disorders, for example, is incomplete and contested.¹⁸³ Moreover, the intimidating intricacy of the physiological foundations of life processes includes within it elements that have "outsize" effects, so that even complex and poorly understood biological processes can be significantly altered.¹⁸⁴

One can, of course, overestimate the power and pace of technological change, but the direction of many lines of research is consistent with many tentative forecasts. Neurochemical intervention and somatic cell gene therapy may attain new levels of precision. If not all genes or physiological processes are equal, then some interventions may be quite potent, whether or not we understand why this is so.

255-72 (1974).

182. On this and other constitutional issues, see generally Attanasio, *supra* note 15.

183. Not everyone is persuaded that these therapeutic agents are effective. See generally ELLIOT S. VALENSTEIN, *BLAMING THE BRAIN: THE REAL TRUTH ABOUT DRUGS AND MENTAL HEALTH* (1998).

184. See *supra* notes 20-22 and accompanying text.

Significant enhancement of merit attributes will change both the physical world and how we think about it. The long-standing and often intractable difficulties of mapping our basic values onto the world as it is will soon have to be applied to startlingly new situations. There is no prospect of closure on our major disputes about equality, liberty, and the rest of our Standard Values Pantheon, even when the deliberations are about the world as it is. This will not change when we enter an enhancement context in which implicit assumptions about the relative stability of our personal identifying features no longer hold.

The major risks of constructing such a world include the strengthening and possible irreversibility of social stratification, and thus ever-more-wildly uneven distributions of power and wealth. In turn, one can perceive threats to equal-vote democracy and to respect for persons generally.

To be sure, such inequalities are not necessarily inconsistent with our being better off, all told, than we were before. And with a future so sharply different from what preceded it, we have no assured way even to tell what it means to be better off or worse off. For all we know, distribution of significant trait enhancements may produce more and better products, services, and works of art; and it may drive superior science and engineering. For all we know, we may raise the standard of living of the worst-off, while simultaneously increasing gulfs and sharpening borders between groups, moving us toward oligarchic technocracies and making us obsess more than we already do about the exact measures of our personal attributes. On the other hand, a wider (more egalitarian?) distribution may have a lesser impact on the Gross Domestic Product, but leave people more comfortable with their relative social standing.

I have not addressed the merits or constitutional aspects of banning or restricting access to elite-creating resources, except in the brief commentary above on some aspects of constitutional analysis. One would expect strong opposition to the development of enhancement products and services, partly because of aversion to the risks and uncertainties of moving toward an enhancement world, and partly because of hostility to "unnatural," external, identity-threatening alterations of our native endowments. Whether the prospect of technological enhancement is one we should oppose is a question I leave for another time. On the basis of this brief review, however, there is no slam-dunk case for trying to inhibit the perfection of perfection technologies.

