

ONE

Biotechnology and Our Human Future

Some General Reflections

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As nearly everyone appreciates, we live near the beginning of the golden age of biomedical science and technology. For the most part, we should be mightily glad that we do. We and our friends and loved ones are many times over the beneficiaries of its cures for diseases, prolongation of life, and amelioration of suffering, psychic and somatic. We should be deeply grateful for the gifts of human ingenuity and for the devoted efforts of scientists, physicians, and entrepreneurs who have used these gifts to make those benefits possible. And, mindful that modern biology is just entering puberty, we suspect that “ya’ ain’t seen nothin’ yet.”

Yet, notwithstanding these blessings, present and projected, we have also seen more than enough to make us concerned. For we recognize that the powers made possible by biomedical science can be used for nontherapeutic purposes, serving ends that range from the frivolous and disquieting to the offensive and pernicious. Biotechnologies are available as instruments of bioterrorism (for example, genetically engineered drug-resistant bacteria, or drugs that obliterate memory); as agents of social control (for example, drugs to tame rowdies and dissenters or fertility-blockers for welfare recipients); and as means of trying to improve or perfect our bodies and minds or those of our children (for example, genetically engineered “super-muscles,” or drugs to improve memory or academic performance). Anticipating possible threats to our security, freedom, and even our very humanity, many people are increasingly worried about where biotechnology may be taking us. We are concerned

not only about what others might do to us, but also about what we might do to ourselves. We are concerned that our society might be harmed and that we ourselves might be diminished, indeed, in ways that could undermine the highest and richest possibilities of human life.

In this essay I will consider only the last and most seductive of these disquieting prospects—the use of biotechnical powers to improve upon human nature or to pursue “perfection,” both of body and of mind. I select this subject for several reasons. First, although it is the most neglected topic in public bioethics, it is I believe the deepest source of public anxiety about biotechnology and the human future, represented in concerns expressed about “man playing God” or about the arrival of the Brave New World or a “post-human future.” Second, it raises the weightiest questions—questions about the ends and goals of the biomedical enterprise, the nature and meaning of human flourishing, and the intrinsic threat of dehumanization (or the promise of super-humanization). It therefore, third, compels attention to what it means to *be* a human being and to be active *as* a human being. Finally, it gets us beyond our narrow preoccupation with the “life issues” of abortion or embryo destruction, important though they are, to deal with what is genuinely novel in the biotechnical revolution: not the old, crude power to kill the creature made in God’s image, but science-based sophisticated powers to remake him after our own fantasies.

What exactly are the powers that I am talking about? What sorts of ends are they likely to serve? How soon are they available? They are powers that affect the capacities and activities of the human body, powers that affect the capacities and activities of the mind or soul, and powers that affect the shape of the human life cycle, at both ends and in between. We already have powers to prevent fertility and to promote it; to initiate life in the laboratory; to screen our genes, both as adults and as embryos, and to select (or reject) nascent life based on genetic criteria; to insert new genes into various parts of the adult body and someday soon also into gametes and embryos; to enhance muscle performance and endurance; to replace body parts with natural or mechanical organs, and perhaps soon, to wire ourselves using computer chips implanted into the body and brain; to alter memory, mood, desire, temperament, and attention through psychoactive drugs; and to prolong not just the average but also the maximum human life expectancy. The technologies for altering our native capacities and activities are mainly those of genetic screening and genetic engineering; drugs, especially psychoactive ones; and the ability to replace body parts or to insert novel ones. The availability of some of these capacities, using these techniques, has been demonstrated only with animals; but others are already in use in humans.

It bears emphasis that these powers have not been developed for the purpose of producing perfect or post-human beings. To the contrary, they have been produced largely for the purpose of preventing and curing disease and of reversing disabilities. Even the bizarre prospects of machine-brain interaction

and implanted nanotechnological devices start with therapeutic efforts to enable the blind to see and the deaf to hear. Yet the “dual use” aspects of most of these powers, encouraged by the ineradicable human urge toward “improvement” and the commercial interests that see market opportunities for such nontherapeutic uses, means that we must not be lulled to sleep by the fact that the originators of these powers were no friends to the Brave New World. Once here, techniques and powers can produce desires where none existed before, and things often go where no one ever intended—not least because each technological success in combating disease and disability seems only to increase popular demand for evermore-effective means of overcoming any and all remaining obstacles to satisfying our desires and working our wills.

How to organize our reflections? One should resist the temptation to begin with the new techniques or even with the capacities for intervention that they make possible. To do so runs the risk of losing the human import and significance of the undertakings. Better to begin with the human desires and goals that these powers and techniques are destined to serve, among them, the desires for better children, superior performance, ageless bodies, happy souls, and a more peaceful and cooperative society.¹ In this essay, I will concentrate mainly on the strictly personal goals of self-improvement and self-enhancement, and especially on those efforts to preserve and augment the vitality of the body and to increase the happiness of the soul. These goals are, arguably, the least controversial, the most continuous with the aims of modern medicine and psychiatry (better health, peace of mind), and the most attractive to most potential consumers—probably indeed to most of us. Indeed, these were the very goals, now at last in the realm of possibility, that animated the great founders of modern science, Francis Bacon and René Descartes: flawlessly healthy bodies, unconflicted and contented souls, and freedom from the infirmities of age, perhaps indefinitely.

Although our discussion here will not be driven by the biotechnologies themselves, it may be useful to keep in mind some of the technological approaches and innovations that, in varying degrees, can serve these purposes. For example, in pursuit of “ageless bodies,” (1) we can replace worn-out parts, by means of organ transplantation or, in the future, by regenerative medicine where decayed tissues are replaced with new ones produced from stem cells; (2) we can improve upon normal and healthy parts, for example, via precise genetic modification of muscles, through injections of growth factor genes that keep the transformed muscles whole, vigorous, and free of age-related decline;² and (3) most radically, we can try to retard or stop the entire process of biological senescence. Especially noteworthy for this last possibility are recent discoveries in the genetics of aging that have shown how the *maximum* species lifespan of worms and flies can be increased two- and threefold by alterations in a *single* gene, a gene now known to be present also in mammals, including humans.

In pursuit of “happy souls,” we can eliminate psychic distress, we can produce states of transient euphoria, and we can engineer more permanent conditions of good cheer, optimism, self-esteem, and contentment. Accordingly, please keep in mind the existence of drugs now available that, administered promptly at the time of memory formation, blunt markedly the painful emotional content of the newly formed memories of traumatic events (so-called memory blunting or erasure, a remedy being sought to prevent posttraumatic stress disorder). Keep in mind, second, the existence of euphorants, like Ecstasy, the forerunner of Huxley’s “soma,” widely used on college campuses; and, finally, powerful yet seemingly safe antidepressants and mood brighteners like Prozac, wonderful for the treatment of major depression yet also capable in some people of utterly changing their outlook on life from that of Eeyore to that of Mary Poppins.

Problems of Description: The Distinction between Therapy and Enhancement

People who have tried to address our topic have usually approached it through a distinction between “therapy” and “enhancement”: “therapy,” the treatment of individuals with known diseases or disabilities; “enhancement,” the directed uses of biotechnical power to alter, by direct intervention, not diseased processes but the “normal” workings of the human body and psyche. Those who introduced this distinction hoped by this means to distinguish between the acceptable and the dubious or unacceptable uses of biomedical technology: therapy is always ethically fine, enhancement is, at least *prima facie*, ethically suspect. Gene therapy for cystic fibrosis or Prozac for psychotic depression is fine; insertion of genes to enhance intelligence or steroids for Olympic athletes is not.³

This distinction is useful as a point of departure: restoring to normal does differ from going beyond the normal. But it proves finally inadequate to the moral analysis. Enhancement is, even as a term, highly problematic. Does it mean “more” or “better,” and, if “better,” by what standards? Can both improved memory and selective erasure of memory both be “enhancements”? If “enhancement” is defined in opposition to “therapy,” one faces further difficulties with the definitions of “healthy” and “impaired,” “normal” and “abnormal” (and hence, “super-normal”), especially in the area of “behavioral” or “psychic” functions and activities. Some psychiatric diagnoses are notoriously vague, and their boundaries indistinct: how does “social anxiety disorder” differ from shyness, “hyperactivity disorder” from spiritedness, “oppositional disorder” from the love of independence? Furthermore, in the many human qualities (for example, height or IQ) that distribute themselves “normally,” does the average also function as a norm, or is the norm itself appropriately subject

to alteration? Is it therapy to give growth hormone to a genetic dwarf but not to an equally short fellow who is just unhappy to be short? And if the short are brought up to the average, the average, now having become short, will have precedent for a claim to growth hormone injections. Needless arguments about whether or not something is or is not an “enhancement” get in the way of the proper questions: What are the good and bad uses of biotechnical power? What makes a use “good,” or even (merely) “acceptable”? It does not follow from the fact that a drug is being taken solely to satisfy one’s desires—for example, to sleep less or to concentrate more—that its use is objectionable. Conversely, certain interventions to restore natural functioning wholeness—for example, to enable postmenopausal women to bear children or sixty-year-old men to keep playing professional ice hockey—might well be dubious uses of biotechnical power.

This last observation points to the deepest reason why the distinction between healing and enhancing is finally insufficient, both in theory and in practice. For the human whole whose healing is sought or accomplished by biomedical therapy is finite and frail, medicine or no medicine. The healthy body declines and its parts wear out. The sound mind slows down and has trouble remembering things. The soul has aspirations beyond what even a healthy body can realize, and it becomes weary from frustration. Even at its fittest, the fatigable and limited human body rarely carries out flawlessly even the ordinary desires of the soul. Moreover, there is wide variation in the natural gifts with which each of us is endowed: some are born with perfect pitch, others are born tone-deaf; some have flypaper memories, others forget immediately what they have just learned. And as with talents, so too with the desires and temperaments: some crave immortal fame, others merely comfortable preservation. Some are sanguine, others phlegmatic, still others bilious or melancholic. When nature deals her cards, some receive only from the bottom of the deck.⁴

As a result of these infirmities, human beings have long dreamed of overcoming limitations of body and soul, in particular the limitations of bodily decay, psychic distress, and the frustration of human aspiration. Until now these dreams have been pure fantasies, and those who pursued them came crashing down in disaster. But the stupendous successes over the past century in all areas of technology, and especially in medicine, have revived the ancient dreams of human perfection. We major beneficiaries of modern medicine are less content than we are worried, less grateful for the gifts of longer life and better health and more anxious about losing what we have. Accordingly, we regard our remaining limitations with less equanimity, even to the point that dreams of getting rid of them can be turned into moral imperatives. For these reasons, thanks to biomedical technology, people will be increasingly tempted to pursue these dreams, at least to some extent: ageless and ever-vigorous bodies, happy (or at least not unhappy) souls, and excellent human achievement (with diminished effort or toil).

Why should anyone be bothered by these prospects? What could be wrong with efforts to improve upon human nature, to try, with the help of biomedical technology, to gain ageless bodies and happy souls? I begin with some familiar sources of concern.

Familiar Sources of Concern

Not surprisingly, the objections usually raised to the “beyond therapy” uses of biomedical technologies reflect the dominant values of modern America: health, equality, and liberty.

(1) *Health: issues of safety and bodily harm.* In our health-obsessed culture, the first reason given to worry about any new biological intervention is safety, and that is true also here. Athletes who take steroids will later suffer premature heart disease. College students who take Ecstasy will damage dopamine receptors in their basal ganglia and suffer early Parkinson’s disease. To generalize: no biological agent used for purposes of self-perfection will be entirely safe. This is good conservative medical sense: anything powerful enough to enhance system A is likely to be powerful enough to harm system B. Yet many good things in life are filled with risks, and free people if properly informed may choose to run them, if they care enough about what is to be gained thereby. If the interventions are shown to be *highly* dangerous, many people will (later if not sooner) avoid them, and the Food and Drug Administration and/or tort liability will constrain many a legitimate purveyor. It surely makes sense, as an ethical matter, that one should not risk basic health pursuing a condition of “better than well.” But, on the other hand, if the interventions work well and are indeed highly desired, people may freely accept, in trade-off, even considerable risk of later bodily harm. But in any case, the big issues have nothing to do with safety; as in the case of cloning children, the real questions concern not the safety of the procedures but what to think about the perfected powers, assuming that they may be safely used.

(2) *Equality: issues of unfairness and distributive justice.* An obvious objection to the use of personal enhancers by participants in competitive activities is that they give those who use them an unfair advantage: blood doping or steroids in athletes, stimulants in students taking the SATs. The objection has merit, but it does not reach to the heart of the matter. For even if *everyone* had *equal* access to brain implants or genetic improvement of muscle strength or mind-enhancing drugs, a deeper disquiet would still remain. Even were steroid or growth hormone use by athletes to be legalized, most athletes would be ashamed to be seen injecting themselves before coming to bat. Besides, not all activities of life are competitive: it would matter to me if she says she loves me only because she is high on “erotogenin,” a new brain stimulant that mimics perfectly the feeling of falling in love. It matters to me

when I go to a seminar that the people with whom I am conversing are not drugged out of their right minds.

The distributive justice question is less easily set aside than the unfairness question, especially if there are systematic disparities between who will and who will not have access to the powers of biotechnical “improvement.” The case can be made yet more powerful to the extent that we regard the expenditure of money and energy on such niceties as a misallocation of limited resources in a world in which the basic health needs of millions go unaddressed. It is embarrassing, to say the least, to discover that in 2002, for example, Americans spent one billion dollars on baldness, roughly ten times the amount spent worldwide for research on malaria. But, once again, the inequality of access does not remove our disquiet to the thing itself. And it is to say the least paradoxical, in discussions of the dehumanizing dangers of, say, eugenic choice, when people complain that the poor will be denied equal access to the danger: “The food is contaminated, but why are my portions so small?” Check it out: yes, Huxley’s *Brave New World* runs on a deplorable and impermeably rigid class system, but would you want to live in that world if offered the chance to enjoy it as an alpha (one of the privileged caste)? Even an elite can be dehumanized, can dehumanize itself. The central matter is not equality of access, but the goodness or badness of the thing being offered.

(3) *Liberty: issues of freedom and coercion, overt and subtle.* This comes closer to the mark, especially with uses of biotechnical power exercised by some people upon other people, whether for social control—say in, the pacification of a classroom of Tom Sawyers—or for their own putative improvement—say, with genetic selection of the sex or sexual orientation of a child-to-be. This problem will of course be worse in tyrannical regimes. But there are always dangers of despotism within families, as parents already work their wills on their children with insufficient regard to a child’s independence or long-term needs or the “freedom to be a child.” To the extent that even partial control over genotype—say, to take a relatively innocent example, musician parents selecting a child with genes for perfect pitch—adds to existing social instruments of parental control and its risks of despotic rule, this matter will need to be attended to.

There are also more subtle limitations of freedom, say, through peer pressure. What is permitted and widely used may become mandatory. If most children are receiving memory enhancement or stimulant drugs to enable them to “get ahead,” failure to provide them for your child might come to be seen as a form of child neglect. If all the defensive linemen are on steroids, you risk mayhem if you go against them chemically pure. And, a point subtler still, some critics complain that, as with cosmetic surgery, Botox, and breast implants, the enhancement technologies of the future will likely be used in slavish adherence to certain socially defined and merely fashionable notions of “excellence” or improvement, very likely shallow, almost certainly conformist.

This special kind of restriction of freedom—let’s call it the problem of conformity or homogenization—is in fact quite serious. We are right to worry that the self-selected nontherapeutic uses of the new powers, especially where they become widespread, will be put in the service of the most common human desires, moving us toward still greater homogenization of human society—perhaps raising the floor but greatly lowering the ceiling of human possibility, and reducing the likelihood of genuine freedom, individuality, and greatness. Indeed, such homogenization may be the most important society-wide concern, if we consider the aggregated effects of the likely individual choices for biotechnical “self-improvement,” each of which might be defended or at least not objected to on a case-by-case basis (the problem of what the economists call “negative externalities”). For example, it would be difficult to object to a personal choice for a life-extending technology that would extend the user’s life by three healthy decades or a mood-brightened way of life that would make the individual more cheerful and untroubled by the world around him. Yet the aggregated social effects of such choices, widely made, could lead to a Tragedy of the Commons, where genuine and sought for satisfactions for individuals are nullified or worse, owing to the social consequences of granting them to everyone.⁵ And, as Aldous Huxley strongly suggests in *Brave New World*, the use of biotechnical powers to produce contentment in accordance with democratic tastes threatens the character of human striving and diminishes the possibility of human excellence; perhaps the best thing to be hoped for is preservation of pockets of difference (as on the remote islands in *Brave New World*) where the desire for high achievement has not been entirely submerged in the culture of “the last man.”

But, once again, important though this surely is as a social and political issue, it does not settle the question regarding individuals. What if anything can we say to justify our disquiet over the individual uses of performance-enhancing genetic engineering or mood-brightening drugs for other than medical necessity? For even the safe, equally available, non-coerced and non-faddish uses of these technologies for “self-improvement” raise ethical questions, questions that are at the heart of the matter: the disquiet must have something to do with the essence of the activity itself, the use of technological means to intervene into the human body and mind not to ameliorate disease but to change and improve their normal workings. Why, if at all, are we bothered by the voluntary *self-administration* of agents that would change our bodies or alter our minds? What is disquieting about our freely chosen attempts to improve upon human nature, or even our own particular instance of it?

It will be difficult, I acknowledge at the outset, to put this disquiet into words. Initial repugnances are hard to translate into sound moral arguments. We are probably repelled by the idea of drugs that would erase memories or change personalities, or interventions that might enable seventy-year-olds to bear children or play professional sports, or, to engage in some wilder imagin-

ings, the prospect of mechanical implants that would enable men to nurse infants or computer/body hookups that would enable us to download the *Oxford English Dictionary*. But is there wisdom in this repugnance? Taken one person at a time, with a properly prepared set of conditions and qualifications, it is going to be hard to say what is wrong with any biotechnical intervention that could give us (more) ageless bodies or superior performances or could make it possible for us to have happier souls.

If there are essential reasons to be concerned about these activities and where they may lead us, we sense that they must have something to do with challenges to what is naturally human, to what is humanly dignified, or to attitudes that show proper respect for what is naturally and dignifiedly human. In reverse order, I will make three arguments, one on each of these three themes: respect for “the naturally given,” threatened by hubris; the dignity of unadulterated human activity, threatened by “unnatural” means; and the nature of full human flourishing, threatened by spurious, partial, or shallow substitutes.

Hubris or Humility? Respect for “the Given”

A common man-on-the-street reaction to these prospects is the complaint of “men playing God.” If properly unpacked, this worry is in fact shared by people holding various theological beliefs and by people holding none at all. Sometimes the charge means the sheer prideful presumption of trying to alter what God has ordained or nature has produced, or what should, for whatever reason, not be fiddled with. Sometimes the charge means not so much usurping godlike powers, but doing so in the absence of godlike knowledge: the mere playing at being God, the hubris of acting with insufficient wisdom.

Over the past few decades, environmentalists, forcefully making the case for respecting Mother Nature, have urged upon us a “precautionary principle” regarding our interventions into the natural world. Go slowly, they say, you can ruin everything. The point is certainly well taken in the present context. The human body and mind, highly complex and delicately balanced as a result of eons of gradual and exacting evolution, are almost certainly at risk from any ill-considered attempt at “improvement.” There is not only the matter of unintended consequences, a concern present even with interventions aimed at therapy. There is also the matter of uncertain goals and absent natural standards, once one proceeds “beyond therapy.” When a physician intervenes therapeutically to correct some deficiency or deviation from a patient’s natural wholeness, he acts as a servant to the goal of health and as an assistant to nature’s own powers of self-healing, themselves wondrous products of evolutionary selection. But when a bioengineer intervenes to “improve upon nature,” he stands not as nature’s servant but as her aspiring master, guided by

nothing but his own will and serving ends of his own devising. It is far from clear that our delicately integrated natural bodily powers will take kindly to such impositions, however desirable the sought-for change may seem to the overconfident intervener. And there is the further question of the goodness of the goals being sought, a matter to which I will return.

One revealing way to formulate the problem of hubris is what Michael Sandel has called the temptation to “hyper-agency,” a Promethean aspiration to remake nature, including human nature, to serve our purposes and to satisfy our desires. This attitude is to be faulted not only because it can lead to bad, unintended consequences; more fundamentally, it also represents a false understanding of, and an improper disposition toward, the naturally given world. The root of the difficulty, according to Sandel, seems to be both cognitive and moral: the failure properly to appreciate and respect the “giftedness” of the world.

To acknowledge the giftedness of life is to recognize that our talents and powers are not wholly our own doing, nor even fully ours, despite the efforts we expend to develop and to exercise them. It is also to recognize that not everything in the world is open to any use we may desire or devise. An appreciation of the giftedness of life constrains the Promethean project and conduces to a certain humility. It is, in part, a religious sensibility. But its resonance reaches beyond religion.⁶

The point is well taken, as far as it goes, for the matter of our attitude toward nature is surely crucial. Human beings have long manifested both wondering appreciation for nature’s beauty and grandeur and reverent awe before nature’s sublime and mysterious power. From the elegance of an orchid to the splendor of the Grand Canyon, from the magnificence of embryological development to the miracle of sight or consciousness, the works of nature can still inspire in most human beings an attitude of respect, even in this age of technology. Nonetheless, the absence of a respectful attitude is today a growing problem in many quarters of our high-tech world. It is worrisome when people act toward, or even talk about, our bodies and minds—or human nature itself—as if they were mere raw material to be molded according to human will. It is worrisome when people speak as if they were wise enough to redesign human beings, improve the human brain, or reshape the human life cycle. In the face of such hubristic temptations, appreciating that the given world—including our natural powers to alter it—is not of our own making could induce a welcome attitude of modesty, restraint, and humility. Such an attitude is surely recommended for anyone inclined to modify human beings or human nature for purposes beyond therapy.

Yet the respectful attitude toward the “given,” while both necessary and desirable as a restraint, is not by itself sufficient as a guide. The “giftedness of nature” also includes smallpox and malaria, cancer and Alzheimer’s disease, decline and decay. Moreover, nature is not equally generous with her gifts, even to human beings, the most gifted of her creatures. Modesty born of grat-

itude for the world's "givenness" may enable us to recognize that not everything in the world is open to any use we may desire or devise, but it will not *by itself* teach us *which* things can be tinkered with and *which* should be left inviolate. Respect for the "giftedness" of things cannot tell us which gifts are to be accepted as is, which are to be improved through use or training, which are to be housebroken through self-command or medication, and which opposed like the plague.

The word "given" has two relevant meanings, the second of which Sandel's account omits: "given," meaning "bestowed as a gift," and "given" (as in mathematical proofs), something "granted," definitely fixed and specified. Most of the given bestowals of nature have their given species-specified *natures*: they are each and all of a given *sort*. Cockroaches and humans are equally bestowed but differently natured. To turn a man into a cockroach would be dehumanizing. To try to turn a man into more than a man might be so as well. To avoid this, we need more than generalized appreciation for nature's gifts. We need a particular regard and respect for the special gift that is our own given nature.

In short, only if there is a human "givenness," or a given "humanness," that is also *good and worth respecting*, either as we find it or as *it could be perfected without ceasing to be itself*, will the "given" serve as a *positive* guide for choosing what to alter and what to leave alone. Only if there is something precious *in our given human nature*—beyond the mere fact of its giftedness—can what is given guide us in resisting efforts that would degrade it. When it comes to human biotechnical engineering beyond therapy, only if there is something inherently good or dignified about, say, natural procreation, the human life cycle (with its rhythm of rise and fall), and human erotic longing and striving; only if there is something inherently good or dignified about the ways in which we engage the world as spectators and appreciators, as teachers and learners, leaders and followers, agents and makers, lovers and friends, parents and children, citizens and worshippers, and as seekers of our own special excellence and flourishing in whatever arena to which we are called, only then can we begin to see why those aspects of our nature need to be defended against our deliberate redesign.

We must move, therefore, from the danger of hubris in the powerful designer to the danger of degradation in the designed, considering how any proposed improvements might impinge upon the nature of the one being improved. With the question of human nature and human dignity in mind, we move to questions of means and ends.

"Unnatural" Means: The Dignity of Human Activity

Until only yesterday, teaching and learning or practice and training exhausted the alternatives for acquiring human excellence, perfecting our natural gift

through our own efforts. But perhaps no longer: biotechnology may be able to do nature one better, even to the point of requiring no teaching and less training or practice to permit an improved nature to shine forth. The insertion of the growth factor gene into the muscles of rats and mice bulks them up and keeps them strong and sound without the need for nearly as much exertion. Drugs to improve memory, alertness, and amiability could greatly relieve the need for exertion to acquire these powers, leaving time and effort for better things. What, if anything, is disquieting about such means of gaining improvement?

The problem cannot be that they are artificial, unnatural, in the sense of having man-made *origins*. Beginning with the needle and the fig leaf, man has from the start been the animal that uses art to improve his lot. By our very nature, we are constantly looking for ways to better our lives through artful means and devices, for we humans are creatures with what Rousseau called “perfectibility.” Ordinary medicine makes extensive use of artificial means, from drugs to surgery to mechanical implants, in order to treat disease. If the use of artificial means is absolutely welcome in the activity of healing, it cannot be their unnaturalness alone that makes us uneasy when they are used to make people “better than well.”

Still, in those areas of human life in which excellence has until now been achieved only by discipline and effort, the attainment of those achievements by means of drugs, genetic engineering, or implanted devices looks to many people to be “cheating” or “cheap.” Many people believe that each person should work hard for his achievements. Even if one prefers the grace of the natural athlete or the quickness of the natural mathematician—people whose performance deceptively appears to be effortless—we admire also those who overcome obstacles and struggle to try to achieve the excellence of the former. This matter of character—the merit of disciplined and dedicated striving—though *not* the deepest basis of one’s objection to biotechnological shortcuts, is surely pertinent. For character is not only the source of our deeds, but also their product. Healthy children whose disruptive behavior is “remedied” by pacifying drugs rather than by their own efforts are not learning self-control; if anything, they are learning to think it unnecessary. People who take pills to block out from memory the painful or hateful aspects of a new experience will not learn how to deal with suffering or sorrow. A drug to induce fearlessness does not produce courage.

Yet things are not so simple. Some biotechnical interventions may assist in the pursuit of excellence without cheapening its attainment. And many of life’s excellences have nothing to do with competition or adversity. Drugs to decrease drowsiness or increase alertness, sharpen memory, or reduce distraction may actually help people to pursue their natural goals of learning or painting or performing their civic duty. Drugs to steady the hand of a neurosurgeon or to prevent sweaty palms in a concert pianist cannot be regarded as

“cheating,” for they are not the source of the excellent activity or achievement. And, for people dealt a meager hand in the dispensing of nature’s gifts, it should not be called cheating or cheap if biotechnology could assist them in becoming better equipped—whether in body or in mind.

Nevertheless, there is a sense here where the issue of “naturalness” of means matters. It lies not in the fact that the assisting drugs and devices are artifacts, but in the danger that they will violate or distort human agency and undermine the dignity of the naturally human way of being-at-work in the world. Here, in my opinion, is one of the more profound ways in which the use of at least some of these biotechnological means of seeking perfection—those that work on the brain—come under grave suspicion. In most of our ordinary efforts at self-improvement, whether by practice or training or study, we sense the relation between our doings and the resulting improvement, between the means used and the end sought. There is an experiential and intelligible connection between means and ends; we can see how confronting fearful things might eventually enable us to cope with our fears. We can see how curbing our appetites produces self-command. The capacity to be improved is improved by using it; the deed to be perfected is perfected by doing it.

In contrast, biomedical interventions act directly on the human body and mind to bring about their effects on a subject who is not merely passive but who plays no role at all. He can at best *feel* their effects *without understanding their meaning in human terms*.⁷ Thus, a drug that brightened our mood would alter us without our understanding how and why it did so—whereas a mood brightened as a fitting response to the arrival of a loved one or an achievement in one’s work is perfectly, because humanly, intelligible. And not only would this be true about our states of mind. *All* of our encounters with the world, both natural and interpersonal, would be mediated, filtered, and altered. Human experience under biological intervention becomes increasingly mediated by unintelligible forces and vehicles, separated from the human significance of the activities so altered. The relations between the knowing subject and his activities, and between his activities and their fulfillments and pleasures, are disrupted. The importance of human effort in human achievement is here properly acknowledged: the point is not the exertions of good character against hardship, but rather the humanity of an alert and self-experiencing agent making his deeds flow intentionally from his willing, knowing, and embodied soul.⁸

To be sure, an increasing portion of modern life is mediated life: the way we encounter space and time, the way we “reach out and touch somebody” via the telephone or internet. And one can make a case that there are changes in our souls and dehumanizing losses that accompany the great triumphs of modern technology. Life becomes easier, but, at the same time, it becomes less “real” and less immediate, as all our encounters with each other and the world

are increasingly filtered through the distorting lenses of our clever devices and crude images. But so long as these technologies do not write themselves directly into our bodies and minds, we are in principle able to see them working on us, and free (again, in principle) to walk away from their use (albeit sometimes only with great effort). Once they work on us in ways beyond our ken, we are, as it were, passive subjects of what might as well be “magic.” We become, in a sense, more and more like artifacts, creatures of our chemists and bioengineers.

The same point can perhaps be made about enhanced achievements as about altered mental states: to the extent that an achievement is the result of some extraneous intervention, it is detachable from the agent whose achievement it purports to be. That I can use a calculator to do my arithmetic does not make me a knower of arithmetic; if computer chips in my brain were to “download” a textbook of physics, would that make me a knower of physics? Admittedly, this is not always an obvious point to make: if I make myself more alert through Ritalin or coffee, or if drugs can make up for lack of sleep, I may be able to learn more using my unimpeded native powers and in ways to which I can existentially attest that it is *I* who is doing the learning. Still, if human flourishing means not just the accumulation of external achievements and a full curriculum vitae but a lifelong *being-at-work* exercising one’s *human* powers *well* and without great impediment, our genuine happiness requires that there be little gap, if any, between the dancer and the dance.

Like dancing, most of life’s activities are, to repeat, noncompetitive; most of the best of them—loving and working and savoring and learning—are self-fulfilling beyond the need for praise and blame or any other external reward. Indeed, in these activities, there is at best no goal beyond the activity itself. Such for-itself human-being-at-work-in-the-world, unimpeded and wholehearted, is what we are eager to preserve against dilution and distortion.

In a word: one major trouble with biotechnical (especially mental) “improvers” is that they produce changes in us by disrupting the normal character of human being-at-work-in-the-world, what Aristotle called *energeia psyches*, activity of soul, which, when fine and full constitutes human flourishing. With biotechnical interventions that skip the realm of intelligible meaning, we cannot really own the transformations nor experience them *as genuinely ours*. And we cannot know whether the resulting conditions and activities of our bodies and our minds are, in the fullest sense, our own *as human*.

Partial Ends, Full Flourishing

In taking up first the matter of questionable means for pursuing excellence and happiness, we have put the cart before the horse: we have neglected to

speak about the goals. The issue of good and bad means must yield to the question about good and bad ends.

What do we think about the goals of ageless bodies and happy souls? Would their attainment in fact improve or perfect our lives *as* human beings? These are very big questions, too long to be properly treated here. But the following considerations seem to merit attention.

The case for ageless bodies seems at first glance to look pretty good. The prevention of decay, decline, and disability, the avoidance of blindness, deafness, and debility, the elimination of feebleness, frailty, and fatigue all seem to be conducive to living fully as a human being at the top of one's powers—of having a good “quality of life” from beginning to end. We have come to expect organ transplantation for our worn-out parts. We will surely welcome stem-cell-based therapies for regenerative medicine, reversing by replacement the damaged tissues of Parkinson's disease, spinal cord injury, and many other degenerative disorders. It is hard to see any objection to obtaining in our youth a genetic enhancement of all of our muscles that would not only prevent the muscular feebleness of old age but would empower us to do any physical task with much greater strength and facility throughout our lives. And, should aging research deliver on its promise of adding not only extra life to years but also extra years to life, who would refuse it? Even if you might consider turning down an ageless body for yourself, would you not want it for your beloved? Why should she not remain to you as she was back then when she first stole your heart? Why should her body suffer the ravages of time?

To say no to this offer seems perverse, but I would suggest that it is not. Indeed, the deepest human goods may be ours only because we live our lives in aging bodies, made mindful of our living in time and inseparable from the natural life cycle through which each generation gives way to the one that follows it. Yet because this argument is so counterintuitive, we need to begin not with the individual choice for an ageless body, but to look first at what the individual's life might look like in a world in which everyone made the same choice. We need to make the choice universal, and see the meaning of that choice in the mirror of its becoming the norm.

What if everybody lived life to the hilt, even as they approached an ever-receding age of death in a body that looked and functioned—let's not be too greedy—like that of a thirty year old? Would it be good if each and all of us lived like light bulbs, burning as brightly from beginning to end, but then popping off without warning, leaving those around us suddenly in the dark? Or is it perhaps better that there be a shape to life, everything in its due season, the shape also written, as it were, into the wrinkles of our bodies that live it? What would the relations between the generations be like if there never came a point at which a son surpassed his father in strength or vigor? What incentive would there be for the old to make way for the young, if the old slowed down but little and had no reason to think of retiring—if Michael

could play until he were not forty but eighty or if most members of Congress could serve for more than sixty years? And might not even a moderate prolongation of life span with vigor lead to a prolongation in the young of functional immaturity—of the sort that has arguably already accompanied the great increase in average life expectancy experienced in the past century? One cannot think of enhancing the vitality of the old without retarding the maturation of the young.

Going against both common intuition and my own love of life, I have tried elsewhere to make a rational case for the blessings of mortality. In an essay entitled “*L’Chaim* and Its Limits: Why Not Immortality?” I suggest that living self-consciously with our finitude is the condition of the possibility of many of the best things in human life: engagement, seriousness, a taste for beauty, the possibility of virtue, the ties born of procreation, the quest for meaning. Though the arguments are made against the case for immortality, they have weight also against even more modest prolongations of the maximum life span, especially in good health, that would permit us to live as if there were always tomorrow. For it is, I submit, only our ability to number our days that enables us to make them count.

Although human beings are understandably reluctant to grow old and die, and although many religions offer us the promise of a better life hereafter, I contend that the human desire for immortality is in fact a desire not so much for deathlessness as for something transcendent and perfect. It is therefore not a desire that the biomedical conquest of aging or the possession of an ageless body can satisfy. No amount of prolonging earthly life—not even a limitless period of “more of the same”—will answer our deepest longings, namely, longings for wholeness, wisdom, goodness, or godliness. Indeed, our relentless pursuit of perfect bodies and further life extension will deflect us—may indeed already be deflecting us—from realizing more fully the aspirations to which our lives naturally point, and from living well rather than merely staying alive.

A preoccupation with personal agelessness is finally incompatible with accepting the need for procreation and human renewal. Both for individuals and for a whole society, to covet a prolonged life span for ourselves is both a sign and a cause of our failure to open ourselves to procreation and to any higher purpose. It is probably no accident that it is a generation whose intelligentsia proclaims the death of God and the meaninglessness of life that embarks on life’s indefinite prolongation and that seeks to cure the emptiness of life by extending it forever. For the desire to prolong youthfulness is not only a childish desire to eat one’s life and keep it; it is also an expression of a childish and narcissistic wish incompatible with devotion to posterity. It seeks an endless present, isolated from anything truly eternal and severed from any true continuity with past and future. It is in principle hostile to children, because children, those who come after, are those who will take one’s place;

they are life's answer to mortality, and their presence in one's house is a constant reminder that one no longer belongs to the frontier generation. One cannot pursue agelessness for oneself and remain faithful to the spirit and meaning of perpetuation.

Those who think that having an ageless body would solve the problems of growing old ignore the psychological effects simply of the passage of time—of experiencing and learning about the way things are. After a while, no matter how healthy we are, no matter how respected and well placed we are socially, most of us cease to look upon the world with fresh eyes. Little surprises us, nothing shocks us, righteous indignation at injustice dies out. We have seen it all already, seen it all. We have often been deceived; we have made many mistakes of our own. Many of us become small-souled, having been humbled not by bodily decline or the loss of loved ones but by life itself. So our ambition also begins to flag, or at least our noblest ambitions. As we grow older, Aristotle already noted, we “aspire to nothing great and exalted and crave the mere necessities and comforts of existence.” At some point, most of us turn and say to our intimates, “Is this all there is?” We settle, we accept our situation—if we are lucky enough to be able to accept it. In many ways, perhaps in the most profound ways, most of us go to sleep long before our deaths—and we might even do so earlier in life if awareness of our finitude no longer spurred us to make something of ourselves.

Finally, a world devoted to ageless bodies paradoxically would not lead us to appreciate life or celebrate the health we have. On the contrary, as we have seen in recent decades, it would likely be a world increasingly dominated by anxiety over health and fear of death, intolerant of all remaining infirmity and disability and absolutely outraged by the necessity of dying, now that each of us is, like Achilles, seemingly but a heel short of immortality.

Assume for the sake of the argument that some of these consequences would follow from a world of greatly increased longevity and vigor: would it be simply good to have an ageless body? Is there not wisdom and goodness in the natural human life cycle, roughly three multiples of a generation: a time of coming of age; a time of flourishing, ruling, and replacing of self; and a time of savoring and understanding, but still sufficiently and intimately linked to one's descendants to care about their future and to take a guiding, supporting, and cheering role?

And what about pharmacologically assisted happy souls? Painful and shameful memories are disquieting; guilty consciences disturb sleep; low self-esteem, melancholy and world-weariness besmirch the waking hours. Why not memory blockers for the former, mood brighteners for the latter, and a good euphoriant—without risks of hangovers or cirrhosis—when celebratory occasions fail to be jolly? For let us be clear: if it is imbalances of neurotransmitters—a modern equivalent of the medieval doctrine of the four humors—that are responsible for our state of soul, it would be sheer priggishness to

refuse the help of pharmacology for our happiness, when we accept it guiltlessly to correct for an absence of insulin or thyroid hormone.

The problem with pursuing a happy soul differs from the problem with pursuing an ageless body. An ageless body, I have argued, is a goal incompatible with preserving our full humanity. Being happy, however, would seem to be precisely a proper, even *the* proper, goal of human life. Still, seeking happiness through pharmacology is dubious on two grounds, each having to do with the shrunken view of “happiness” that informs such a quest and the limited (and limiting) sort of happiness that is obtainable with the aid of drugs. Regarding the removal of psychic troubles, it turns out that some suffering and unhappiness are probably good for us; regarding the creation of psychic satisfactions, it turns out that the mere fragrance of happiness gets mistaken for its real flowering.

Notwithstanding the reality of serious mental illness and the urgent need to treat it (with drugs, of course, if necessary), a little reflection makes clear that there is something misguided about the pursuit of *utter* psychic tranquility or the attempt to eliminate shame, guilt, and all painful memories. Traumatic memories, shame, and guilt, are, it is true, psychic pains. In extreme doses, they can be crippling. Yet short of the extreme, they can also be helpful and fitting. They are appropriate responses to horror, disgraceful conduct, and sin, and as such help us to avoid or fight against them in the future. Witnessing a murder *should* be remembered as horrible; doing a beastly deed *should* trouble one’s soul. Righteous indignation at injustice depends on being able to feel injustice’s sting. An untroubled soul in a troubling world is a shrunken human being. Moreover, to deprive oneself of one’s true memories—in their truthfulness also of feeling—is to deprive oneself of one’s own life and identity.

The positive feeling-states of soul (especially those inducible by drugs), though perhaps accompaniments of human flourishing, are not its essence. Ersatz pleasure or feelings of self-esteem are not the real McCoy. They are at most but shadows divorced from *the underlying human activities that are the essence of human flourishing*. Not even the most doctrinaire hedonist wants to have the pleasure that comes from playing baseball without swinging the bat or catching the ball. No music lover would be satisfied with getting from a pill the pleasure of listening to Mozart without ever hearing the music. Most people want both to feel good and to feel good about themselves, but only as a result of being good and doing good.

At the same time, there appears to be a connection between the possibility of feeling deep unhappiness and the prospects for genuine happiness. If one cannot grieve, one has not loved.¹⁰ And to be capable of aspiration, one must know and feel lack. As Wallace Stevens put it, “Not to have is the beginning of desire.” In short, if human fulfillment depends on our being creatures of need and finitude and therewith of longing and attachment, there may be a double-barreled error in the pursuit of ageless bodies and factitiously happy

souls: far from bringing us what we really need, pursuing these partial goods could deprive us of the urge and energy to seek a richer and more genuine flourishing.

It is, indeed, the peculiar gift of our humanity to recognize the linkage between our unavoidable finitude and our higher possibilities. As Plato's Socrates observed long ago (in the *Symposium*), the heart of the human soul is *eros*, an animating power born of lack but pointed upward. At bottom, human *eros* is the fruit of the peculiar conjunction of and competition between two competing aspirations conjoined in a single living body, both tied to our finitude: the impulse to self-preservation and the urge to reproduce. The first is a self-regarding concern for our own personal permanence and satisfaction; the second is a self-denying aspiration for something that transcends our own finite existence, and for the sake of which we spend and even give our lives. Other animals, of course, live with these twin and opposing drives. But only the human animal is conscious of their existence and is driven to devise a life based in part on the tension between them. In consequence, only the human animal has explicit and conscious longings for something higher, something whole, something eternal, longings that we would not have were we not the conjunction of this bodily "doubleness," elevated and directed upward through conscious self-awareness. Nothing humanly fine, let alone great, will come out of a society that has crushed the source of human aspiration, the germ of which is to be found in the meaning of the sexually complementary "two" that seek unity and wholeness, and willingly devote themselves to the well-being of their offspring. Nothing humanly fine, let alone great, will come out of a society that is willing to sacrifice all other goods to keep the present generation alive and intact. Nothing humanly fine, let alone great, will come from the desire to pursue bodily immortality or pharmacological happiness for ourselves.

Looking into the future at goals pursuable with the aid of new biotechnologies, we can turn a reflective glance at our present human condition and the prospects now available to us to live a flourishing human life. For us today, assuming that we are blessed with good health and a sound mind, a flourishing human life is not a life lived with an ageless body or an untroubled soul, but rather a life lived in rhythmized time, mindful of time's limits, appreciative of each season and filled first of all with those intimate human relations that are ours only because we are born, age, replace ourselves, decline, and die—and know it. It is a life of aspiration, made possible by and borne of experienced lack, of the disproportion between the transcendent longings of the soul and the limited capacities of our bodies and minds. It is a life that stretches toward some fulfillment to which our natural human soul has been oriented, and, unless we extirpate the source, will always be oriented. It is a life not of better genes and enhancing chemicals but of love and friendship, song and dance, speech and deed, working and learning, revering and worshipping.

If this is true, then the pursuit of an ageless body may prove finally to be a distraction and a deformation. The pursuit of an untroubled and self-satisfied soul may prove to be deadly to desire, if finitude recognized spurs aspiration and fine aspiration acted upon *is itself* the core of happiness. Not the agelessness of the body, not the contentment of the soul, and not even the list of external achievements and accomplishments of life, but the engaged and energetic being-at-work of what nature uniquely gave to us is what we need to treasure and defend. All other “perfections” may turn out to be at best but passing illusions, at worst a Faustian bargain that could cost us our full and flourishing humanity.

Notes

1. The 2003 report of the President’s Council on Bioethics on this topic, *Beyond Therapy: Biotechnology and the Pursuit of Happiness*, is organized around the first four of these themes. The complete text is available online at www.bioethics.gov or in two commercially reprinted editions published by ReganBooks (HarperCollins) and the Dana Press. This essay, in many places, draws on the council’s report.

2. These powers, already used to produce “mighty mouse” and “super rat,” will soon be available for treatment of muscular dystrophy and muscle weakness in the elderly. They will also be of interest to football and wrestling coaches and to the hordes of people who spend several hours daily pumping iron or sculpting their bodies.

3. Health-care providers and insurance companies have for now bought into this distinction, paying for treatment of disease and disability but not for enhancements.

4. Curiously—but, on reflection, not surprisingly—it is often the most gifted and ambitious who most resent their limitations: Achilles was willing to destroy everything around him, so little could he stomach that he was but a heel short of immortality.

5. I myself will later argue such a case with respect to the goal of increasing longevity with ageless bodies.

6. See his “What’s Wrong with Enhancement?” a working paper prepared for the President’s Council on Bioethics (<http://www.bioethics.gov/background/sandelpaper.html>). See also his “The Case against Perfection” in the April 2004 issue of *The Atlantic*.

7. So do alcohol and caffeine and nicotine, though, it should be pointed out, we use these agents not as pure chemicals but in forms and social contexts that, arguably, give them a meaning different from what they would have were we to take them as pills. Besides, our acceptance of these “drugs” cannot, without extensive further argument, serve as precedent or moral justification for accepting newer psychoactive enhancers. On the contrary, concerns about the newer possibilities may rightly serve to clarify and intensify our misgivings about these age-old “uppers” and “downers.”

8. The lack of “authenticity” sometimes complained of in these discussions is not so much a matter of “playing false” or of not expressing one’s “true self,” as it is a departure from “genuine,” unmediated, and (in principle) self-transparent human activity.

9. It appears as the penultimate chapter of my book, *Life, Liberty and the Defense of Dignity: The Challenge for Bioethics* (Encounter Books, 2002). The discussion in the next few paragraphs borrows heavily from that essay.

10. As C. S. Lewis observed profoundly, speaking about his grief, “The pain I feel now is the happiness I had before. That’s the deal.”