

## Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection

Leon R. Kass

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Let me begin by offering a toast to biomedical science and biotechnology: May they live and be well. And may our children and grandchildren continue to reap their ever tastier fruit—but without succumbing to their seductive promises of a perfect, better-than-human future, in which we shall all be as gods, ageless and blissful.

As nearly everyone appreciates, we live near the beginning of the golden age of biotechnology. For the most part, we should be very glad that we do. We are many times over the beneficiaries of its cures for diseases, prolongation of life, and amelioration of suffering, psychic as well as somatic. We should be deeply grateful for the gifts of human ingenuity and cleverness, 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 the finest fruit is yet to come.

Yet, notwithstanding these blessings, present and projected, we have also seen more than enough to make us anxious and concerned. For we recognize that the powers made possible by biomedical science can be used for non-therapeutic or ignoble purposes, serving ends that range from the frivolous and disquieting to the offensive and pernicious. These powers are available as instruments of bioterrorism (e.g., genetically engineered drug-resistant bacteria or drugs that obliterate memory); as agents of social control (e.g., drugs to tame rowdies or fertility-blockers for welfare recipients); and as means of trying to improve or perfect our bodies and minds and those of our children (e.g., genetically engineered super-muscles or drugs to improve memory). 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 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.

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*Leon R. Kass is the Hertog Fellow in Social Thought at the American Enterprise Institute and Addie Clark Harding Professor in the Committee on Social Thought and the College at the University of Chicago (on leave). He is also chairman of the President's Council on Bioethics. This essay represents his own views, not those of the Council.*

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The last and most seductive of these disquieting prospects—the use of biotechnical powers to pursue “perfection,” both of body and of mind—is perhaps the most neglected topic in public and professional bioethics. Yet it is, I believe, the deepest source of public anxiety about biotechnology, represented in the concern about “man playing God,” or about the Brave New World, or a “post-human future.” It raises the weightiest questions of bioethics, touching on 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 superhumanization). It compels attention to what it means to *be* a human being and to be active *as* a human being. And it gets us beyond our often singular focus on the “life issues” of abortion or embryo destruction, important though they are, to deal with what is genuinely novel and worrisome in the biotechnical revolution: not the old crude power to kill the creature made in God’s image, but the new science-based power to remake him after our own fantasies.

This is, to be sure, a very difficult topic and one not obviously relevant to current public policy debate. Compared with other contemporary issues in bioethics, the questions connected with biotechnological “enhancement” seem abstract, remote, and too philosophical, unfit for political or other action. The concerns it raises are also complicated and inchoate, hard to formulate in general terms, especially because the differing technologically based powers raise different ethical and social questions. Finally, bothering oneself about this semi-futuristic prospect seems even to me precious and a touch self-indulgent, given that we live in a world in which millions are dying annually of malaria, AIDS, and malnutrition for want (in part) of more essential biotechnologies, and when many of our fellow Americans lack basic healthcare. Yet this push toward bio-engineered perfection strikes me as the wave of the future, one that will sneak up on us before we know it and, if we are not careful, sweep us up and tow us under. For we can already see how the recent gains in health and longevity have produced not contentment but rather an increased appetite for more. And, from recent trends in the medicalization of psychiatry and the study of the mind, it seems clear that the expected new discoveries about the workings of the psyche and the biological basis of behavior will greatly increase the ability and the temptation to alter and improve them. Decisions we today are making—for instance, what to do about human cloning or sex selection and genetic selection of embryos, or whether to get comfortable prescribing psychotropic drugs to three-year-olds, or how vigorously to pursue research into the biology of senescence—will shape the world of the future for people who will inherit, not choose, life under its utopia-seeking possibilities. It is up to us now to begin thinking about these matters.

### **The Marvels of Biotechnology**

What exactly are the powers that I am talking about? What kind of technologies make them possible? What sorts of ends are they likely to serve? How soon

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will they be 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, and attention through psychoactive drugs; and to prolong not just the average but also the maximum human life expectancy. The availability of some of these capacities 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. They have been produced largely for the purpose of preventing and curing disease, and of reversing disabilities. Even the bizarre prospect of machine-brain interaction and implanted nanotechnological devices starts 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 non-therapeutic 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.

So how are we 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 likely ends that these powers and techniques are destined to serve: ageless bodies, happy souls, better children, a more peaceful and cooperative society. Leaving aside the pursuit of optimum babies or better citizens, I will concentrate on the strictly personal goals of self-improvement: those efforts to preserve and augment the vitality of the body and to enhance 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. It is perhaps worth remembering that it was these goals, now in the realm of possibility, that animated the great founders of modern science: flawlessly healthy bodies, unconflicted and contented souls, and freedom from the infirmities of age, perhaps indefinitely.

With respect to the pursuit of “ageless bodies,” we can replace worn out parts, we can improve upon normal and healthy parts, and, more radically, we can try to retard or stop the entire process of biological senescence. With respect to

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the first biotechnical possibility, we must keep in mind organ transplantation and the prospect of regenerative medicine, where decayed tissues are replaced with new ones produced from stem cells. With respect to the second possibility, we must consider precise genetic modifications of muscles, through a single injection of a growth factor gene, that keep the transformed muscles whole, vigorous, and free of age-related decline (a practice already used to produce mighty mouse and super rat, and soon to be available for treatment of muscular dystrophy and muscle weakness in the elderly, but also of interest to football coaches and to the hordes of people who spend two hours daily pumping iron and sculpting their “abs”). And with respect to the last possibility, we need to keep in mind recent discoveries in the genetics of aging that have shown how the maximum lifespan of worms and flies can be increased two- and three-fold by alterations in a *single* gene, a gene now known to be present also in mammals.

With respect to the 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, and contentment. Already, there are drugs available that, administered promptly at the time of memory formation, dull markedly the painful emotional content of the newly formed memories of traumatic events (so-called “memory blunting,” a remedy being sought to prevent post-traumatic stress disorder). There are simple euphorants, like Ecstasy, the forerunner of Huxley’s “soma,” now widely used on college campuses; and, finally, there are powerful yet seemingly safe anti-depressant and mood brighteners like Prozac, capable in some people of utterly changing their outlook on life from that of Eeyore to that of Mary Poppins.

### **The Problem of Terminology**

Accurate description is crucial to moral evaluation. One should try to call things by their right names. One should not encumber thought by adopting fuzzy concepts. And one should not try to solve the moral question by terminological sleight of hand—the way that some scientists today try to win support for cloning-for-biomedical-research by denying that the cloning of embryos is cloning or that the initial product is an embryo. In this area especially the terminological question is crucial, but also hard. And, I confess at the start, although I have tried to find one, I have no simple solution: I see no clear way of speaking about this subject using simple, trouble-free distinctions.

Among the few people who have tried to address our topic, most have 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 (whether by drugs, genetic engineering, or mechanical/computer

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implants into the body and brain). 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. Health providers and insurance companies, by the way, have for now bought into the distinction, paying for treatment of disease, but not for enhancements.

But this distinction, though a useful shorthand for calling attention to the problem, is 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. “Mental health” is not easily distinguished from “psychic well-being” or, for that matter, from contentment or happiness. And psychiatric diagnoses—“dysthymia,” hyperactivity, “oppositional disorder,” and other forthcoming labels that would make Orwell wince and Soviet psychiatry proud—are notoriously vague. Furthermore, in the many human qualities (like 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 a very 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 question: What are the good and bad uses of biotechnical power? What makes a use “good,” or even just “acceptable”? It does not follow from the fact that a drug is being taken solely to satisfy one’s desires that its use is objectionable. Conversely, certain interventions to restore what might seem to be natural functioning wholeness—for example, to enable postmenopausal women to bear children or 60-year-old men to keep playing professional ice hockey—might well be dubious uses of biotechnical power. The human meaning and moral assessment are unlikely to be settled by the term “enhancement,” any more than they are settled by the nature of the technological intervention itself.

This last observation points to the deepest reason why the distinction between healing and enhancing is of limited ethical or practical value. For the human whole whose healing is sought or accomplished by biomedical therapy is by nature 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 real-

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ize, 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 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. Conversely, 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.

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. Dreams of human perfection—and the terrible consequences of pursuing it—are the themes of Greek tragedy, as well as (by the way) “The Birthmark,” the Hawthorne short story with which the President’s Council on Bioethics began its work. 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. Like Achilles, the major beneficiaries of modern medicine are less content than worried well, and we regard our remaining limitations with less equanimity, 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 realize 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 worried about 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? A number of reasons have been offered, but looked at closely, they do not get to the heart of the matter.

### Three Obvious Objections

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

In a health-obsessed culture, the first reason given to worry about any new biological intervention is safety, and that is certainly true 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

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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, the body being a highly complex yet integrated whole in which one intervenes partially only at one's peril. 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 FDA or tort liability will constrain many a legitimate purveyor. It surely makes sense, as an ethical matter, that one should not risk basic health trying to make oneself "better than well." 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. Yet, in the end, the big issues have nothing to do with safety; as in the case of cloning children, the real questions concern what to think about the perfected powers, assuming that they may be safely used. And the ethical issue of avoiding risk and bodily harm is independent of whether the risky intervention aims at treating disease or at something beyond it.

A second obvious objection to the use of personal enhancers, especially 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, and so on. Still, even if everyone had equal access to brain implants or genetic improvement of muscle strength or mind-enhancing drugs, a deeper disquiet would remain. 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 psychedelically out of their right minds.

The related question of distributive justice 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. As a public policy matter, this is truly an important consideration. 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?" It is true that Aldous 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 (the privileged caste)? Even an elite can be dehumanized, and

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even an elite class can dehumanize itself. The central matter is not equality of access, but the goodness or badness of the thing being offered.

A third objection, centered around issues of freedom and coercion, both overt and subtle, comes closer to the mark. This is especially the case 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 real needs. Even partial control over genotype—say, to take a relatively innocent example, musician parents selecting a child with genes for perfect pitch—would add to existing social instruments of parental control and its risks of despotic rule. This is indeed one of the central arguments against human cloning: the charge of genetic despotism of one generation over the next.

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, failure to provide them for your child might 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. 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 non-therapeutic 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. (This is Tocqueville's concern about the leveling effects of democracy, now augmented by the technological power to make them ingrained and perhaps irreversible.) 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.

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 for a mood-brightened way of life that would make the individual more cheerful and less troubled by the world around him. Yet the aggregated social effects

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of such choices, widely made, could lead to the 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. (I will later argue such a case with respect to the goal of increasing longevity with ageless bodies.) And, as Huxley strongly suggests in *Brave New World*, biotechnical powers used to produce contentment in accordance with democratic tastes threaten the character of human striving and diminish 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 for 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 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 in the human body and mind not to ameliorate disease but to change and (arguably) 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 attempts to improve upon human nature, or even our own particular instance of it?

It is difficult to put this disquiet into words. We are in an area where initial repugnances are hard to translate into sound moral arguments. We are probably repelled by the idea of drugs that erase memories or that change personalities; or of interventions that enable 70-year-olds to bear children or play professional sports; or, to engage in some wilder imaginings, of mechanical implants that 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 happier souls. If there is a case to be made against these activities—for individuals—we sense that it may have something to do with what is natural, or what is humanly dignified, or with the attitude that is properly respectful of what is naturally and dignifiedly human.

I will come at this question from three directions: the goodness of the ends, the fitness of the means, and the meaning of the overarching attitude of seeking to master, control, and even transform one’s own given nature. Three human goods will figure prominently in the discussions: modesty and humility, about what we know and can do to ourselves; the meaning of aging and the human life

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cycle; and the nature of human activity and human flourishing, and the importance of exercising the first and seeking the second through fitting means. My aim here is only to open the questions, starting with the matter of proper attitude.

### **The Attitude of Mastery**

A common man-on-the-street reaction to these prospects is the complaint of “men playing God.” An educated fellow who knows Greek tragedy complains rather of *hubris*. 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 God-like powers, but doing so in the absence of God-like knowledge: the mere playing at being God, the hubris of acting with insufficient wisdom.

The case for respecting Mother Nature, and the critique of rushing in where angels fear to tread in order to transform her, has been forcefully made by environmentalists. They urge upon us a precautionary principle regarding our interventions into all of nature—usually, by the way, with the inexplicable exception of our own nature. Go slowly, they say, you can ruin everything. The point is certainly well taken. 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 already noted, but also the question about the unqualified goodness of our goals—a matter to which I shall return.

But for now, I would observe that this matter about the goodness of the goals is insufficiently appreciated by those who use the language of “mastery,” or “mastery and control of nature,” to describe what we do when we use knowledge of how nature works to alter its character and workings. Mastery of the means of intervention without knowing the goodness of the goals of intervening is not, in fact, mastery at all. In the absence of such knowledge of ends, the goals of the “master” will be set rather by whatever it is that happens to guide or move his will—some impulse or whim or feeling or desire—in short, by some residuum of nature still working within the so-called master or controller. To paraphrase C. S. Lewis, what looks like man’s mastery of nature turns out, in the absence of guiding knowledge, to be nature’s mastery of man. There can, in truth, be no such thing as the *full* escape from the grip of our own nature. To pretend otherwise is indeed a form of hubristic and dangerous self-delusion.

Although this is not the time and place to develop this point further, it is worth noting that attempts to alter our nature through biotechnology are different from both medicine and education or child-rearing. It seems to me that we can more-or-less distinguish the pursuit of bodily and psychic perfection from the regular practice of medicine. To do so, we need to see that it is not true, as some allege, that medicine itself is a form of mastery of nature. When it func-

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tions to restore from deviation or deficiency some natural wholeness of the patient, medicine acts as servant and aid to nature's own powers of self-healing. It is also questionable to conflate child-rearing and education of the young with the attitude that seeks willful control of our own nature. Parents do indeed shape their children, but usually with some at least tacit idea—most often informed by cultural teachings that have stood the test of time—of what it takes to grow up to live a decent, civilized, and independent life. The multiplicity of such cultural teachings should, of course, make us modest about the superior wisdom of our own way. But in any decent society, the rearing of children would seem to be closer to teaching young birds to fly than to training an elephant to tap dance.

So how, returning to the problem of “men playing God,” are we to understand this particular form of disquiet about biotechnology? Michael Sandel, in a working paper prepared for the President's Council on Bioethics, has offered a very interesting version of the hubris objection. The problem with biotechnological efforts at enhancement and re-creating ourselves is what he calls “hyper-agency, a Promethean aspiration to remake nature, including human nature, to serve our purposes and to satisfy our desires.” The root of the difficulty 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.

As a critique of the Promethean attitude of the enhancers, Sandel's suggestion is on target. For the manipulator, appreciating that the given world—including his natural powers to alter it—is not of his own making could induce an attitude of modesty, restraint, humility. But the giftedness of nature also includes smallpox and malaria, cancer and Alzheimer's disease, decline and decay. And, to repeat, nature is not equally generous with her gifts, even to man, the most gifted of her creatures. Modesty born of gratitude 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 fiddled with and which should be left inviolate. The mere “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 mathe-

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matical 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—as we don’t need Kafka to show us—would be dehumanizing. To try to turn a man into more than a man might be so as well. 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 (and, by the way, also that of each of our fellow creatures).

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, does the “given” serve as a *positive* guide for choosing what to alter and what to leave alone. Only if there is something precious in the given—beyond the mere fact of its giftedness—does what is given serve as a source of restraint against efforts that would degrade it. When it comes to human biotechnical engineering, only if there is something inherently good or dignified about, say, natural procreation, human finitude, 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, 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. (It is for this reason why a richer bioethics will always begin by trying to clarify the human good and aspects of our given humanity that are rightly dear to us, and that biotechnology may serve or threaten.) We must move from the hubristic attitude of the powerful designer to consider how the 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

How do, and how should, the excellent ones become excellent? This is a notorious question, famously made famous by Plato’s *Meno* at the start of the dialogue bearing his name:

Can you tell me, Socrates, whether human excellence is teachable? Or is it not teachable, but to be acquired by practice (training)? Or is it neither acquired by practice nor by learning, but does it originate in human beings by nature, or in some other way?

Teaching and learning, practice and training: sources in our power. Natural gift or divine dispensation: sources not in our power. Until only yesterday, these exhausted the (sometimes competing, sometimes complementary) alternatives

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for acquiring human excellence, perfecting our natural gift through our own efforts. But perhaps no longer: biotechnology, a high art based on knowledge of nature, 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.

Some people, not thinking very hard, will object to these means because they are artificial or unnatural. But the man-made origin of the means cannot alone be the problem. Beginning with the needle and the fig leaf, man has from the start been the animal that uses art to improve his lot. By his very nature, man is the animal constantly looking for ways to better his life through artful means and devices; man is the animal with what Rousseau called “perfectibility.” Supplementing healthy diet, rest, and exercise, ordinary medicine makes extensive use of artificial means, from drugs to surgery to mechanical implants. If the use of artificial means is absolutely welcome in the activity of healing, it cannot be their unnaturalness alone that upsets us when they are used to make people “better than well.”

Yet 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 be “cheating” or “cheap.” We believe—or until only yesterday believed—that people should work hard for their achievements. “Nothing good comes easily.” Even if one prefers the grace of the natural athlete, whose performance deceptively appears to be effortless, we admire those who overcome obstacles and struggle to try to achieve the excellence of the former, who serves as the object of the latter’s aspiration and effort and the standard for his success or failure. This matter of character—the merit of disciplined and dedicated striving—though not the deepest basis of our objection to biotechnological shortcuts, is surely pertinent. For character is not only the source of our deeds, but also their product. People 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, partly because there are biotechnical interventions that may assist in the pursuit of excellence without cheapening its attainment, partly because many of life’s excellences have nothing to do with competition or adversity. Drugs to decrease drowsiness or increase alertness, sharpen

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memory, or reduce distraction may actually help people interested in their natural pursuits 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. Even steroids for the proverbial 97-pound weakling help him to get to the point where, through his own effort and training, he can go head-to-head with the naturally better endowed.

Nevertheless, there is a sense that the “naturalness” of means matters. It lies not in the fact that the assisting drugs and devices are artifacts, but in the danger of violating or deforming the deep structure of natural human activity. In most of our ordinary efforts at self-improvement, either 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. Human education ordinarily proceeds by speech or symbolic deeds, whose meanings are at least in principle directly accessible to those upon whom they work. Even where the human being is largely patient to the formative action—say, in receiving praise and blame, or reward and punishment—both the “teacher” and the “student” can understand both the content of the means used and their relation to the conduct or activity that they are meant to improve. And the further efforts at self-improvement, spurred by praise and blame, will clearly be the student’s own doing.

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*. (Yes, so do alcohol and caffeine and nicotine, though 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.) 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. (By contrast, the intelligibility of a scientific account of the mechanism of action of

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the biological agent would not be the intelligibility of human experience.) 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 less the exertions of good character against hardship, but the manifestation of an alert and self-experiencing agent making his deeds flow intentionally from his willing, knowing, and embodied soul. 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.

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. 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). But once they work on us in ways beyond our ken, we are, as it were, passive subjects of what might as well be “magic.” It makes little difference to the point if we choose by ourselves to so subject ourselves: the fact that one chooses to drink alcohol or to take a mood-brightening drug does not make one the agent of the change that one thereby undergoes (though the law, with good reason, may hold us responsible).

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. “Personal achievements” impersonally achieved are not truly the achievements of persons. 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 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 life-long *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.

This is not merely to suggest that there is a disturbance of human agency or freedom, or a disruption of activities that will confound the assignment of personal responsibility or undermine the proper bestowal of praise and blame. To

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repeat: most of life's activities are non-competitive; 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. In these activities, there is at best no goal beyond the activity itself. It is the deep structure of unimpeded, for-itself, human being-at-work-in-the-world, in an unimpeded and whole-hearted way, that 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 will be at a loss to attest whether the resulting conditions and activities of our bodies and our minds are, in the fullest sense, our own as human. To the extent that we come to regard our transformed nature as normal, we shall have forgotten what we lost.

### Dubious Ends

But now we must step back yet again. By considering first the questionable means for pursuing excellence, we have put the cart before the horse. Socrates, you may recall, refuses to answer Meno's question about how excellence is acquired because, he says, he is ignorant of the answer to the prior question: what human excellence itself really is? The issue of good and bad means must yield to the question about good and bad ends.

How are we to think about the goals themselves—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 initial 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, as they say, 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 a genetic enhancement of our muscles in our youth that would not only prevent the muscular feebleness of old age but would empower us to do any physical task with 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

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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 want to suggest that it may not be—that there are in fact many human goods that are inseparable from our aging bodies, from our living in time, and from the natural human life cycle by which each generation gives way to the one that follows it. Because this argument is so counterintuitive, we need to begin not with the individual choice for an ageless body, but with 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 30-year-old? Would it be good if each and all of us lived like light bulbs, burning as brightly from beginning to end, 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 little and had no reason to think of retiring—if Michael could play until he were not forty but eighty? 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.

I have tried in the past to make a rational case for the blessings of finitude. In an essay entitled "*L'Chaim* and Its Limits: Why Not Immortality?," I suggest that living with our finitude is the condition 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 lifespan, especially in good health, that would permit us to live as if there were always tomorrow. In what I take to be the two most important arguments of that essay, I argue that the pursuit of perfect bodies and further life-extension will deflect us from realizing more fully the aspirations to which our lives naturally point, from living well rather than merely staying alive. And I argue that a concern with one's own improving agelessness is finally incompatible with accepting the need for procreation and human renew-

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al: a world of longevity is increasingly a world hostile to children. Moreover, far from bringing contentment, it is arguably a world increasingly dominated by anxiety over health and the fear of death. In this connection, Montaigne suggests why it is only decline and decay that enable us to accept mortality at all:

I notice that in proportion as I sink into sickness, I naturally enter into a certain disdain for life. I find that I have much more trouble digesting this resolution when I am in health than when I have a fever. Inasmuch as I no longer cling so hard to the good things of life when I begin to lose the use and pleasure of them, I come to view death with much less frightened eyes. This makes me hope that the farther I get from life and the nearer to death, the more easily I shall accept the exchange ... If we fell into such a change [decrepitude] suddenly, I don't think we could endure it. But when we are led by Nature's hand down a gentle and virtually imperceptible slope, bit by bit, one step at a time, she rolls us into this wretched state and makes us familiar with it; so that we find no shock when youth dies within us, which in essence and in truth is a harder death than the complete death of a languishing life or the death of old age; inasmuch as the leap is not so cruel from a painful life as from a sweet and flourishing life to a grievous and painful one.

In other words, even a modest prolongation of life with vigor, or even only a preservation of youthfulness with no increase in longevity, could make death less acceptable and would exacerbate the desire to keep pushing it away.

Those who propose adding years to the human lifespan regard time abstractly, as physicists do, as a homogeneous and continuous dimension, each part exactly like any other, and the whole lacking shape or pattern. Yet, the "lived time" of our natural lives has a trajectory and a shape, its meaning derived in part from the fact that we live as links in the chain of generations. For this reason, our flourishing as individuals might depend, in large measure, on the goodness of 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.

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.

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And yet, there seems to be something misguided about the pursuit of utter psychic tranquility, or the attempt to eliminate all shame, guilt, and painful memories. Traumatic memories, shame, and guilt, are, it is true, psychic pains. In extreme doses, they can be crippling. Yet they are also helpful and fitting. They are appropriate responses to horror, disgraceful conduct, and sin, and, as such, help teach us to avoid 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. More fundamentally, to deprive oneself of one's memory—including and especially its truthfulness of feeling—is to deprive oneself of one's own life and identity.

Second, these feeling states of soul, 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 shadows divorced from the underlying human activities that are the essence of 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.

Finally, there is a connection between the possibility of feeling deep unhappiness and the prospects for achieving genuine happiness. If one cannot grieve, one has not loved. To be capable of aspiration, one must know and feel lack. As Wallace Stevens put it: Not to have is the beginning of desire. There is, in short, a double-barreled error in the pursuit of ageless bodies and factitiously happy souls: human fulfillment depends on our being creatures of need and finitude and hence of longings and attachment.

I have tried to make a case for finitude and even graceful decline of bodily powers. And I have tried to make a case for genuine human happiness, with satisfaction as the bloom that graces unimpeded, soul-exercising activity. The first argument resonates with Homeric and Hebraic intuitions; the second resonates with the Greek philosophers. One suspects that they might even be connectable, that genuine human flourishing is rooted in aspirations born of the kinds of deficiencies that come from having limited and imperfect bodies. To pursue this possibility is work for another day.

A flourishing human life is not a life lived with an ageless body or 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 born of experienced lack, of the disproportion between the transcendent longings of the soul and the

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limited capacities of our bodies and minds. It is a life that stretches towards 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. The pursuit of an ageless body is finally a distraction and a deformation. The pursuit of an untroubled and self-satisfied soul is deadly to desire. Finitude recognized spurs aspiration. Fine aspiration acted upon *is itself* the core of happiness. Not the agelessness of the body, nor the contentment of the soul, nor even the list of external achievement 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 perfection is at best a passing illusion, at worst a Faustian bargain that will cost us our full and flourishing humanity.