2003 Leon R. Kass, M.D., Ph.D., Hertog Fellow in Social Thought, American Enterprise Institute, Washington, D. C., *Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection*

Thank you very much, Dr. Margolis. Thank you ladies and gentlemen for your attention this afternoon. It is a great pleasure to be here at the Medical School at the University of Michigan and a great honor to be invited to give the Waggoner Memorial Lecture. I too am honored by the presence of the Waggoner family and have very much enjoyed meeting you these last two days. I spent the last hour sort of collecting my thoughts before coming down here in Dr. Greden's conference room staring the portrait of Dr. Waggoner in the face and trying to see what lay behind that wise appearance and that marvelous smile. I wish I had known him. I am honored at least in this small way to be connected.

The talk I'm going to give is a kind of overview of the topic of beyond therapy, which in fact has been a concern of the President's Council on Bioethics for about a year and a half and was just issued last month in a report published by the Council called, *Beyond Therapy – Biotechnology and the Pursuit of Happiness*. Slightly different from the pursuit of perfection, but not actually unrelated. Two commercial houses have in fact produced it -it's now in bookstores. This one from Harper Collins. This is much better than what you are going to hear from me today. Regard this talk as a kind of introduction to the subject. The things that are in the report

are much more carefully and thoroughly done, but this is I think to whet your appetite to the subject and to at least try to persuade you there is something here worth thinking about.

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 disease, 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 we ain't seen nothing yet. Yet not withstanding these blessings, present and projected, we also have seen more than enough to make us a little concerned. For we recognize the powers made possible by biomedical science can be used for non-therapeutic purposes serving ends that range from the frivolous and disquieting to the offensive and perdiscious. These powers are available as instruments of bioterrorism. For example, genetically engineered drug resistant bacteria or drugs that would obliterate memory. Where as agents of social control, for example, drugs that tame rowdies and dissenters or fertility blockers for welfare recipients. Or as means of trying to improve or perfect our bodies

and minds and those of our children. For example, 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 not only about what other people might do to us, but also 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 lecture I want to discuss only the last and most seductive of these disquieting prospects, the use of biotechnical powers to pursue perfection, both the body and of mind. I do so partly because I think this is the most neglected topic in public bioethics. Yet it is, I believe, the deepest source of public anxiety represented in concerns about man playing God or about the brave new world or about a post-human future. It raises weighty questions about the ends and goals of the biomedical enterprise, the nature and meaning of human flourishing and the intrinsic threat of the humanization or the promise of super humanization. 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 narrow preoccupation with the life issues of abortion or embryo destruction, important though they are. To deal with what is genuinely novel and worrisome in biotechnical advance. Not the old crude power to

kill the creature made in God's image, but the 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, temperament and attention through psychoactive drugs, and to prolong, not just the average, but also the maximum life expectancy.

The technologies for altering our native capacities are mainly those of genetic screening and genetic engineering, drugs, especially psychotropic 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 human beings.

Now it should bear 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 or reversing disabilities. Even the bizarre prospect of machine brain interaction and implanted nano-technological 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 incredible 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 new powers were no friends to brave new world. Once here, techniques and powers can produce desires where none existed before and things often go where no one ever intended.

How to organize our reflections. We should resist the temptation to begin with the new techniques themselves 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; better children, superior performance, ageless bodies, happy souls, a more peaceful and cooperative society, etcetera. These are, by the way, the principles of organization in the Council's report with four chapters on the first four of those items.

In this talk I want to leave aside the production or the pursuit of optimum children or superior performance or better citizens to concentrate on the strictly personal goals of self-improvement. To 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 for better health and 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, Francis Bacon and Rene Descartes. Flawlessly healthy bodies, unconflicted and contented souls and freedom from the infirmities of age perhaps indefinitely. Here then are some of the technological innovations that in varying degrees can serve the purposes. With respect to the pursuit of ageless bodies, we can already replace worn out parts with organ transplantation, and we look forward to the prospect of regenerative medicine where decayed tissues are replaced with new ones produced from stem cells. 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. These powers, by the way have already been used to produce Mighty Mouse and Super Rat and they are soon going to be clinically tested for the treatment of muscular

dystrophy and muscular weakness in the elderly, but as Dr. Sweeney at Pennsylvania who is doing this research, reported to us also of interest immediately, the football and wrestling coaches and to the hoards of people presumably who spent two hours daily pumping iron and sculpting their bodies.

Most radically, we can try to retard or stop the entire process of biological senescence. We should keep in mind recent discoveries in the genetics of aging that have shown how the maximum--a 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 trance euphoria. We can engineer more permanent conditions of good cheer, optimism, self-esteem, and contentment. We should therefore keep in mind, and this is a field in its infancy, drugs now available that if administered promptly at the time of memory formation, may blunt markedly the painful emotional content of newly formed memories of traumatic events; the so-called memory blunders, a remedy which is being pursued to try to prevent post traumatic stress disorder. We should keep in mind second, the simple euphoria's like Ecstasy, the forerunner of Huxley soma widely used on college campuses. And finally, the powerful, yet seemingly safe antidepressant and mood brightening drugs like Prozac, wonderful for the treatment of major depression and other psychiatric

disorders, but that are also capable in some people who don't have clinical disease, of utterly changing their outlook on life from that of Eeyore to that of Mary Poppins.

The analysis proceeds in five parts. The first part of which is called, Problems of Description, Limitations of the Therapy Enhancement Distinction. 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 first introduced this distinction hoped by this means to distinguish between the acceptable and the dubious or unacceptable uses of biotechnical 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 athlete is not. Health providers and insurance companies, by the way, have at least for now bought into this distinction paying for treatment of disease but not for enhancements.

This distinction is perfectly useful as a point of departure. Everybody distinguishes between restoring to normal and going beyond the normal.

But if you look at it more closely, it proves finally inadequate for the moral analysis. Enhancement even as a term is highly problematic. Does it mean more or better? And if better, by what standards? Can both improve memory and selective erasure of memory, both by enhancements? If enhancement is defined as an opposition to therapy, one faces further difficulties with the definition of healthy and impaired, normal and abnormal, and hence, super normal, especially in the area of behavioral and psychic functions and activities. Some psychiatric diagnoses are notoriously vague. The boundary between shyness and social anxiety disorder, the boundary between spiritedness and some forms of hyperactivity disorder, between mark independence and oppositional disorder.

Furthermore, in many human qualities, from height to IQ that distribute themselves normally over a normal distribution curve, 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. This by the way has just been approved by the FDA earlier this year.

Needless arguments, therefore, about whether something, whether or not something is or is not an enhancement gets in the way of the more proper question. What are the good and bad uses of biotechnical power? What

makes a good use good or even just acceptable? It does not follow from the fact that a drug is being taken solely to satisfy ones desires that it is objectionable. In conversely certain interventions to restore a normal functioning, for example, to enable post-menopausal women to bear children or 60 year old men to keep playing professional ice hockey, might well be seen to be dubious uses of biotechnical power. The moral meaning and assessment are unlikely to be settled by the term enhancement anymore than they are by the nature of the technological intervention itself.

My last observation points to the deepest reason why the distinction between healing and enhancing is going to be finally insufficient, both in theory and in practice. For the human sole whose healing is sought or accomplished by biomedical technology, 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 finest--sorry, even at its fittest, the fatigue able 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. As it is 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.

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 particularly, the limitations of body 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 by Nathanial Hawthorne, the short story with which the President's Council of 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 dream of human perfection. Like Achilles, the major beneficiaries of modern medicine are less content than they are worried well and we regard our remaining limitations with less equanimity to the point that dreams of getting rid of them all together become 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 never unhappy souls, and excellent human achievement with diminished effort or toil.

Why should anybody be worried about these prospects? What could be wrong with efforts to try to improve upon human nature to try to help, with the help of biomedical technology, to gain ageless bodies and happy souls?

In Part two I begin with some familiar sources of concern. Not surprisingly, the objections usually raised to the beyond therapy used of biomedical technologies reflect the dominant values of modern America, health, equality, and liberty.

First, health issues of safety and bodily harm. In our health-obsessed culture, the first reason given to worry about any new biotechnical 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 the purpose of self-perfection will ever 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, they choose to run them if they care enough about what is to be gained thereby.

If the interventions are showed to be highly dangerous, many people will later if not sooner avoid them and the FDA 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 and tradeoff 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 what to think about the perfected powers assuming that they might be safely used.

Second, then equality, issues of unfairness and distributed 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. Still even if everyone had equal access to brain implants or genetic improvement of muscle strength or mind enhancing drugs, a deeper disquiet that would still remain. Besides, not all activities of life are competitive. It would matter to me if she said she loves me only me because she is high on erotogenine , some new brain stimulant that mimics perfectly the feeling of falling in love. It matters to me when I go to a class 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

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 expenditures 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 surely an important consideration. But once again, the equality of access does not remove our disquiet to the thing itself. And it is to say at the least, paradoxical in discussions of 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, a member of the privileged class? Even an elite can be dehumanized. Even an elite can dehumanize itself. The central matter is not the equality of access, but the goodness or badness of the thing being offered.

Third, questions of liberty; questions of freedom and coercion overt and subtle. This comes closer to the mark especially with uses of biotechnical power exercised by some people over other people, whether for social control, say in the pacification of a classroom of Tom Sawyer's or for their own punitive improvement, say with genetic selection of the sex or sexual orientation of a child to be. The problem will of course be much worse in tyrannical regimes, but there are always dangers of desperatism within

families as parents already work their wills on their children with insufficient regard to a child's independence, needs, or childly wellbeing. To the extent that even partial control over genotype, say to take a relatively innocent example, musician parents selecting a child with perfect pitch. To the extent that even this partial control adds to existing social instruments of parental control and its risks of despotic rule, this matter will need to be attended to. And one of the arguments, I think against human cloning among other reasons, it is the charge of the genetic despotism of one generation over the next that this would make possible.

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. At a point subtler still, some critics complain that as with cosmetic surgery, Botox and breast implants, the enhancement technologies of the future will likely to 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 us call it the problem of conformity or homogenization, is I believe, rather serious. We are right to worry that the self selected non-therapeutic uses of new powers, especially

were they to become widespread, will be put in the service of the most common human desires, moving us towards 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, but 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 users 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 affects of such choices widely made could lead to the tragedy of the commons where genuine and sought for satisfactions for individuals might be nullified or worse owing to the social consequences of granting them to everyone. And I myself will make such an argument toward the end with respect to the choice for ageless bodies. As Aldous Huxley suggested in Brave New World, "Biotechnical powers to produce contemptment in accordance with democratic tastes threaten the character of human striving and diminish the possibility of human excellence." In his world, the best thing to be hoped for was the preservation of pockets of difference as on the islands to which

excellent were sent with 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 political issue, it does not settle the question regarding individuals. What if anything can we say to justify or disquiet over the individual uses of performance enhancing genetic engineering or mood brightening drugs for reasons 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 I think go to 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 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, even our own particular instances of it?

It is very difficult to put this disquiet into words. Initial repugnance's are hard to translate into sound and moral arguments. We are probably repelled by the idea of drugs that would erase our memories or that change our personalities or that interventions that would enable 70 year olds to bear children or play professional sports or to engage in some wilder imaginings of mechanical implants that might enable men to nurse infants or computer

body hookups that would enable us to download the Oxford English Dictionary. But is there any wisdom in this repugnance? Taken one person at a time with a properly prepared set of conditions and qualifications, it is going to be very hard to say what is wrong with any biotechnical intervention that could give us more ageless bodies or make it possible to live more happily. If there is a case to be made against these activities, for individuals, we sense that it might have something to do with what is natural, or what is humanly dignified, or what is the attitude that is properly respectful of what is naturally and humanly dignified? I will try to come with these essential causes of concern for three directions. The goodness of the ends, the fitness of the means, and the meaning of the over arching attitudes seeking to master control and even transform one's given nature.

Three human goods will figure prominently in the discussions: Modesty and humility about what we know and can do to our selves, the meaning of aging and the life cycle and the nature of human activity and human flourishing and the importance of exercising the first and seeking the second through fitting means. Here I can only hope to open the questions starting first with the matter of the proper attitude.

Part three, Hubris or Humility. Respect for the Given. A common man on the street reaction to these prospects is the complaint of man 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 within sufficient wisdom. Now the case for respecting Mother Nature has been successfully made by environmentalists. They urge upon us a cautionary principle regarding our intervention in all of nature usually by the way, with the inexplicable exception of our own nature. Go slowly, you can ruin everything. The point is well taken. The human body and mind highly complex and delicately balanced as a result of ions of gradual and exacting evolution almost certainly is a 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, something to which I will return.

A very interesting version of the Hubris objection has been offered by one of my colleagues, Michael Sandel, in a working paper he prepared for the Council. What is wrong with biotechnological efforts and enhancement and recreating ourselves, is what Sandel calls, "Hyper-agency, a promethean aspiration to remake nature including human nature to serve our purposes and to satisfy our desires." The difficulty, Sandel suggests, seems to be both cognitive and moral. "The failure properly to appreciate and respect the giftedness of the world." I quote him. "To acknowledge the giftedness of

life is to recognize that our talents and powers are not wholly of our own doing or even fully ours, despite the efforts we expand 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. On the side of manipulator appreciating that the given world as well as his natural powers to alter it, are not of his own making, could induce an attitude of modesty, restraint, and humility. But the giftedness of nature also includes smallpox and malaria, cancer and Alzheimer disease, decline and decay. And to repeat, nature is not equally generous with her gifts, even to human beings, the most gifted of her creatures.

Modesty board of gratitude for the world's giftedness 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 and medication, and which oppose like the plague.

The word given has two meanings, the second of which Sandel's account omits. Given does mean bestowed as a gift, but given as in mathematical proofs means something granted, something definitely fixed and specifies. Most of the given bestowed of nature have their species specific given natures. They are each and all of the given sort. Cockroaches and human beings are equally bestowed, but differently natured. To turn a man into a cockroach would be dehumanizing. To try to turn him into more than a man might be so as well. To avoid this therefore, we need more than a generalized appreciation for nature's gifts. We need a particular regard and respect for the special gifts that belong to our own given nature.

In short, only if there is a human giveness 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 hubristically degrade it.

Coming then to the human biotechnical engineering, only if there is something inherently good or dignified about say, natural procreation human finitude, the human life cycle, 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, teachers and learners, leaders and followers, agents and bakers, lovers and friends, parents and

children, and as seekers of our own special excellence and flourishing, in whatever areas to which we are called, only then can we begin to see why those aspects of nature need to be defended.

I move then from this hubristic attitude of the powerful designer to look at the proposed improvements as they impinge upon the nature of the ones being improved. But the question of human nature and human dignity in mind, I move to the question of the means and then to the ends.

Part four, Unnatural Means. The Dignity of Human Activity. How do and how should the excellent ones become excellent? This is a notorious question made famous by Plato's Meno at the start of the dialogue baring his name. "Can you tell me Socrates, whether human excellence is teachable, or is it not teachable, but be it to be acquired by practice or 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 complimentary alternatives for acquiring human excellence perfecting our natural gifts by our own efforts. But perhaps no longer. Biotechnology now 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 sign forth. The insertion of the growth factor gene into the muscles of rats and likes, 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, unnatural. But the manmade origin of the means cannot be the problem. Beginning with the needle in the fig leaf, man has from the start been the animal that uses art to improve his lot. 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 there 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 is until now been achieved only by discipline and effort, the attainment of those achievement by means of drugs, genetic engineering, or implanted devices looks to many people to be cheating or cheap. We believe or until 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 that deceptably appears to be effortless, we admire those who overcome obstacles and struggle to try to achieve the excellence of the former who serves at the object of the latter's aspiration and effort and the standard for his success or failure.

This matter of character, the merit of discipline and dedicated striving, though not the deepest basis of one's objection to biological shortcuts, is surely pertinent. For character is not only the source of our deeds, but also their product. People whose destructive 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 is 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, hardly because there are non-therapeutic interventions that may assist us in the pursuit of excellence without cheapening its attainment partly because so many of life's excellences have nothing to do with competition or adversity. Drugs that decrease drowsiness or increase alertness, sharpen memory or reduce distraction, they actually help people pursue their natural goals of learning or painting or performing their duties. Drugs to steady the hand of a neurosurgeon or to prevent sweaty palms in a concert pianist can't 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 perveriable 97 pound weakling helps him 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 one sense where the issue of naturalness of means matters. It lies not in the fact that the assisting drugs and devices are artifacts, but in their relation to the nature of human activity. 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 would work on the brain, come under grave suspicion as a possible violation or deformation of the deep character of natural human activity. In most of our efforts in 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 ends 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 produce self-command. The capacity to be improved is improved by using it. The deed to be perfected is perfected by doing it. 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, a reward and punishment, both the

teacher and the student can understand both the content of the means used and the relation to the conduct of the activity that they are meant to improve.

The further efforts of self-improvement spurred by praise and blame, will clearly be the students own doing.

In contract, biomedical interventions act directly on the human body and mind to bring about their affects on a subject who is not merely passive, but who plays no role at all. In addition, he can at best feel their affects without understanding their meaning in human terms. Thus, a drug that brightened our mood would alter us without our understanding how and why it did so. Where as 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. Not only would this be true about our states of mind, all our encounters with the world, both natural and interpersonal would be mediated, filtered, and altered. Human experience under biological interventions becomes increasingly mediated by unintelligible forces and vehicles separated from the human significance of the activity so altered. The relations between the knowing subject and his activities and between his activities and their fulfillments and pleasures are threatened with disruption. The importance of the human effort and human achievement now is properly acknowledged. The point is less the exertions of good character against hardship, but more the manifestations of an alert and self-experiencing agent

making his or her deeds flow intentionally from his or her willing knowing and embodied soul.

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 by the telephone and the Internet. And one can met a case that there are changes in our souls and dehumanizing losses that accompany the great triumphs of modern technology. But so long as those 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 with very great effort. However, once they work on us, we are as it were passive subjects of what might as well be magic. The same point--well, let me skip this and go to the end.

In a word, one of the major truples of biotechnical improvers is that they produce changes in us by disrupting the normal character of human being at work in the world. What Aristotle called the activity of the 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.

Finally, the last section, Partial Ends, Full Flourishing. In this concluding section I want to raise briefly some questions about the ends that we have isolated for consideration, ageless bodies, happy souls. What do we think about these goals? 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 let this be an opening.

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 ability, the elimination of feebleness, frailty, and fatigue, all seem to be conducive to living fully as a human being at the top of ones 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 in our youth, the 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 not only adding extra life to years, but extra years to life, who would refuse it? And 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 let me suggest that it is not. Because this argument is so counterintuitive, we need to begin not with the individual choice for an ageless body, but to look at what an individual's life would look like in a world in which everybody made the same choice. We need to make the choice universal to 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 us 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 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 is 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 was not 40, but 80. And might not even a more moderate prolongation of lifespan with vigor lead to a prolongation in the young a functional and maturity of the sort that is arguably already accompanied the

great increase in average life expectancy experienced in the last century? One cannot think of enhancing the vitality of the old without retarding the maturation of the young.

I have tried elsewhere to make a rational case for the blessings of finitude in an essay called, *L'chaim and Its Limits, Why Not Immortality?* It is a chapter in my book, *Life, Liberty, and the Defense of Dignity*. I suggest there that living with our finitude is the condition for the possibility of many of the best things in human life, engagement, seriousness, a taste for beauty, a possibility of sacrifice and virtue, the ties born of procreation, the quest for meaning. Though the arguments there are made against the case for immortality they have some weight even against the modest proengation of the maximum lifespan, especially in good health that would permit us to live as if there were always tomorrow. And what I take to be the most important argument 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 ones own improving agelessness is finally incompatible with accepting the need for procreation and human renewal. A world of longevity is increasingly a world inhospitable to children.

What would be needed to complete this argument about the pursuit of ageless bodies would be an attempt to say something about the goodness of

the natural life cycle, roughly three multiples of a generation, a time of coming of age, a time of flourishing, ruling, and replacing of one's self, a time of savoring and understanding, but still sufficiently and intimately linked to one's descendents to care about their future and to take a guiding and supporting and sharing role. People who think about life extension think about time the way the physicists do as simply a continuum in which each part is identical. That is not live time, which is choreographed time, shape time. It has a beginning and a middle and an end and the question is whether that shape has a kind of meaning and whether adding more years to the continuum could deform that meaning. A long question, I don't have the answer.

Finally, what about as pharmacologically assisted happy souls? Painful and shameful memories are disquieting, guilty consciences disturbs 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 the risks of hangover or cirrhosis when celebratory occasions fail to be jolly. For, let us be clear, if it is imbalances of neurotransmitters, a modern equivalent for 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 accepted guiltlessly to correct for an absence of insulin or thyroid hormone. An attempted answer to this question comes in three parts.

First, I would suggest that there really is something wrong with the pursuit of utter psychic tranquility with 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, they are also appropriate responses to horror, disgraceful conduct, and injustice. Once again, the point is the fitness of awareness and emotional response. Witnessing a murder should be remembered as horrible. Doing a beastly deed should trouble one's soul. Righteousness and indignation and injustice depends on being able to feel injustice's sting. An untroubled soul in a troubling world is a shrunken human being. Or fundamentally to deprive oneself of one's memory in its truthfulness also a feeling is to deprive oneself of one's own life and identity.

Second, the positive feeling states of soul, though perhaps accompaniments of human flourishing are not in fact the essence of human flourishing. Pleasure or feelings of self-esteem are not the real McCoy. They are at most but shadows divorced from the links to the underlying human activities that are the essence of flourishing. Not even the most doctrinaire hedonist wants to have the pleasures that come 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 to feel good and to feel good about themselves, but only as a result of being good, doing good, and experiencing what is fine.

Finally, there is a connection between the possibility of feeling deep unhappiness and the prospects for genuine happiness. If one cannot grieve, one has not loved 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." 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 beings of longings and attachments.

To sum up then, I have tried to make a case for finitude and even graceful decay 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 activities. The first argument resonates with Homeric and Hebraic intuitions; the second, with Greek philosophers. One would like to think that they might even be connectable, that the idea of genuine human flourishing is rooted in this aspiration that is born of the kind of deficiencies that come from our being limited and imperfect bodily beings.

To close then, let me suggest that a flourishing human life is not a life lived with an ageless body or untroubled soul. But rather a life lived in rhythm time mindful of times 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 experience 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 towards some fulfillment toward 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 worshiping. 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 Spur's aspiration. And fine aspiration acted upon, is itself the course of happiness, not the agelessness of the body nor the contentment of the soul or even the list of external achievements and accomplishments of life that fill out a curriculum vitae, but the engaged and energetic being at work of what nature uniquely gave to us is what we need to treasure and defend against the devilish promise of technological perfection.

Thank you for your attention and patience.