

Biotech Enhancement and Natural Law

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New biotechnologies promise to revolutionize human existence—not only by delivering therapeutic treatments and cures, but also by offering physical and mental “enhancements”: creating stronger bodies and more powerful minds for ourselves and for the children we will carefully select. Biotechnology will offer us the option of controlling our genetic composition in ways that were previously unimaginable, as we—in British bioethicist John Harris’s formulation—replace “natural selection with deliberate selection, Darwinian evolution with ‘enhancement evolution.’”

Those bioethicists who, like Harris, express great enthusiasm for our “post-human future” often dismiss the reservations of critics concerned about biotech enhancement—calling those reservations arbitrary, or irrational religious superstitions, or, as Dartmouth professor Ronald M. Green has put it, mere “status quo bias.” But as the President’s Council on Bioethics showed in its 2003 report *Beyond Therapy*, it is in fact possible to make a reasoned case against certain enhancement technologies.

In this essay, we attempt to formulate a natural law theory for appraising possible biotechnological enhancements. We begin with a twofold account of the nature of the human person. The first part is descriptive: human persons must be shown to be human animals—bodily organisms of the species *Homo sapiens*. The second part is normative: a reflective critical account of the practical horizons of human wellbeing, an account that grounds an understanding of human benefits, harms, and moral obligations. We then seek to address the questions of enhancement in three steps. First, the *means* of enhancement must be scrutinized to determine whether they respect the truths—descriptive and normative—about the human person. Second, the *ends* of enhancements must then be investigated: Do these ends threaten our nature, as descriptively and normatively understood? Finally, more general questions of *culture and prudence* must be raised: What sort of a people is it desirable for us to be, and how is it desirable for us to become such a people?

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The Human Animal

Proponents of enhancement argue that biotechnology will make human life better, and that all people share an ethical obligation to avoid harm and promote benefit—so it is reasonable to begin an evaluation of biotechnology with an analysis of what human persons are, and thus what truly counts as a benefit or harm. It is precisely because so many bioethicists have anemic accounts of what human persons are, and what they ought to be, that they arrive at equally anemic conclusions regarding new biotechnologies.

Philosophies of the human person fail in two ways: by presenting inadequate theories of personal identity, and by advocating thin, subjective theories of the human good. Consider the question of personal identity. Are you, the reader of this essay, a human *being*—that is, a bodily animal, albeit one who shapes and directs his own life by acts of reason and will? Or, are you something other than a human animal—a soul or a spirit, a center of consciousness, or merely a brain—that is somehow associated with a human body? Thinkers such as Plato, Descartes, and Locke, and, in our own day, philosophers and bioethicists like Peter Singer, Jeff McMahan, and Lynne Rudder Baker, have been so impressed by the personal qualities that human beings exhibit (self-awareness, reason and will) that they have sought to identify the subject of these personal attributes as something distinct from the subject of the biological attributes of the human animal. The result is that the entity that thinks and speaks, has desires and decides to take action to fulfill those desires, is described as a “person”—yet this “person” is something other than a bodily animal, something other than a human being.

It is easy to see where this takes us. Dualism inevitably separates what seem to be integrated aspects of our lives into alienated parts. With such a separation, explaining how we acquire knowledge of the external world becomes very problematic. If I am a mind, then the impact of the external world on my body is not an impact made by the world on me. So the effect made by the world upon the body must then in turn be made upon the mind by the body. But it is not clear how substances of such different natures as minds and bodies can have causal impacts on one another; and it is equally problematic—on the dualist’s account—to assume that whatever mental representation I have of the world as a result of the body’s causation really is accurate to the world. For the Cartesian dualist, the mind is at such a distance from the world that knowledge begins to seem impossible, and skepticism looms.

These are just the beginnings of the problems for dualistic theories of personhood. Such theories have grasped one crucially important aspect

of our identity—our rationality—but they have neglected an equally important aspect—our animality. For most people, it is quite natural to think that we are human beings, animals of the species *Homo sapiens*. Our animality is special, for we are *rational* animals, but we are animals all the same. This is not simply a bit of metaphysical speculation; it is true to how we experience ourselves, and how we experience our relations to other persons and to the world. On a daily basis—in our bodily movements, interactions with others, and sense of ourselves as perceivers and knowers in a particular physical space—we experience ourselves as bodily beings. For these and other reasons, the human person is best understood as a rational *animal*, a bodily person.

Like all other animals, the human animal exists through time. All organisms lead temporal lives, and the nature of those lives can only be understood by looking, not at a snapshot, but at the characteristic way in which such lives unfold in time. Dogs are not, from their beginnings, capable of chasing cats, eating meat, or following their masters; but they are by their nature feline pursuers, carnivores, and man's best friend. This truth about what dogs are is appreciated only by looking at the way dogs' lives unfold temporally. Having experienced dogs over the course of their lifespan, we can be confident that a newborn pup has the capacity to chase cats and that given time the pup will develop and exercise that capacity. In the meantime, however, no one believes that the pup—prior to chasing a cat—isn't really a dog.

The same is true of humans. Humans in the fetal stage do not talk or walk. Neither, of course, do newborns. Parents wait anxiously for their child to speak his first word and take his first step. Yet even before performing these characteristically human actions, a human being's life is unfolding. That is, most capacities for most complex organisms take time to develop. So it would be a mistake to assume that the organism doesn't *really* exist until it can perform all of its characteristic activities.

But if all of this is true—if human persons are fundamentally animal organisms, if their identity persists across time, and if most human capacities take time to develop—then it is clear that human persons come into existence when the animal organism comes into existence. When is that? Any honest reading of the scientific data shows that human organisms come into existence at conception—when a sperm penetrates an oocyte and gives rise to a new, genetically distinct and complete organism. Though this organism can't talk or walk—and doesn't yet have a brain—it is clear that this is the same biological entity that will develop through a self-directed process to more mature stages of human life. The same

human organism at different stages of its life is described as an embryo, a fetus, a newborn, an infant, a toddler, an adolescent, a teenager, an adult, and a senior citizen. Throughout this span of time the human being will develop various new capacities, but it is *the human being* who develops these new capacities, and it is a human being throughout its entire lifespan.

At the same time, we remain the same individual even if we *lose* certain capacities that we once enjoyed. If we went blind, we would not cease to be. Likewise, if we were to lose the use of our limbs, or could not swallow food and had to be fed through a tube, *we* would still be the subjects of these events and would remain fully human (though disabled). The capacities that we can immediately exercise at any given moment do not define the type of creature we are. Rather, it is because we are certain types of creatures that we have certain basic, natural capacities—even if these capacities are underdeveloped or disabled. No disability to these capacities would mark the ending of our lives: We do not cease to be until our biological lives come to an end with the cessation of integrated organic functioning (that is, death).

Stressing the fact that we are animals does not undermine our natural understanding of ourselves as persons. While we are animals, we are animals of a very special sort, animals that have the basic, natural capacities for personal acts—rational thought and free choice. While other animals may be sentient and conscious, it is only human animals—persons—who engage in acts that demonstrate an ability to grasp arguments and act for reasons. We are, in short, human persons from the first moment of our existence and remain persons throughout our entire animal existence.

Human Self-Constitution

Precisely because the nature of human beings involves deliberation and choice, human persons are in part self-constituting. This means that what human beings are is in part a function of what they choose—what they *can* choose—to be; human nature includes not just what is given in human existence, but also the horizon of *reasons* that orients human agents to what they can become.

A sound natural law theory seeks to identify the horizons of reasonable human self-constitution—the *reasons* for action that human beings should respond to. These foundations for human action and self-constitution are to be found in the wellbeing and fulfillment of human persons and communities. Further, this human fulfillment—the human good—is variegated. There are many irreducible dimensions of human wellbeing and flourishing; there are thus a variety of reasons that make intelligible

action possible for human persons, and thus multiple goods that ground the action-guiding aspect of human nature.

This is not to deny that human nature is determinate; rather, it is to affirm that our nature, though determinate, is complex. We are animals, but rational. We are individuals, but social. We both know and transform reality. The multiplicity of human goods which constitute the basic aspects of human wellbeing reflects this complexity of our nature; we could not be fulfilled if we were attentive to just one dimension of our wellbeing.

The most fundamental dimensions of our wellbeing may be called “basic goods.” They are goods, obviously, because they are good for us, fulfill us, lead us to human flourishing. But they are basic because they give reasons for us to act that do not need grounding in some further reason. In this respect, basic goods are unlike other goods, which are pursued because they help us to attain or achieve something else. No one takes medicine just for its own sake, or pursues money just in order to have it. Money and medicine are instrumental goods; they are pursued for the sake of something else. The basic goods, by contrast, are those pursued for their own sake; they fulfill us in certain respects as human persons. Moreover, such goods perfect and fulfill all human persons. So it is possible to act for the sake of a human good not just for one’s own sake, but for the sake of others; and one has good reason to do so because friendship and concern for others is itself an aspect of human wellbeing (a basic good).

The search for and identification of basic human goods—fundamental and irreducible aspects of authentic human fulfillment—is largely ignored in contemporary bioethics. Having identified the human person as a locus of self-consciousness, bioethicists go on to argue that human fulfillment consists in pleasure, the satisfaction of desire, or autonomy. That is, so long as a person is acting of his own volition to fulfill his own desires (whatever they may be), there are no further considerations of what makes for a good life.

But human persons are capable of reasoning about the various activities and states of affairs that make for a flourishing life. By means of such reflection, we identify the following as among the basic human goods, intelligibly choice-worthy for their own sakes.

As animate, bodily creatures, our lives and our health are fulfilling and perfective of us: we can act simply in order to promote or preserve life, in our own person or in others.

As rational creatures, knowledge is a good perfective of our lives to be pursued for its own sake; human beings are better off knowledgeable than ignorant. Similarly, enjoying works of art and pursuing aesthetic experience for its own sake make our lives better.

Human beings not only can know but can transform their world through action. They do this in skilled work and in play, which, when pursued as forms of excellence of performance, are humanly fulfilling.

We pursue fulfillment not only as individuals, but also in community. The goods of community include friendship, marriage, and societies of justice and peace: all are intrinsically desirable to us.

Two other goods complete our list. One's intellect and will should be harmonized, first, with whatever source or sources of transcendent meaning exist in the universe (if any exist), and, second, with those aspects of one's self that can conflict with one's judgments, choices, and actions. People really are better off and truly do flourish by acting in a practically unified way—and this will be the case not merely because it helps them achieve other goods, but because achieving harmony in their lives fulfills them as such.

How should our practical pursuit of this multiplicity of goods be organized? Where contemporary bioethicists suggest that desire plays the foundational role in ordering an agent's life, we recognize that our action should be governed by *reason*, and that reason's fundamental orientation is that of an openness toward genuinely fulfilling goods and human fulfillment considered integrally. Practical reason reveals that certain actions are incompatible with human flourishing. This is where moral norms and ethical principles begin to enter into the story. The rational appeal of these basic goods taken together (their integral directiveness) generates principles of right action.

So, for example, people grasp that certain ends (the basic goods) are good for them and for other creatures that are essentially like them, creatures that share their basic rational nature. The basic goods do not come with proper names attached to them; they are basic *human* goods, goods for all people. Therefore, if you know that life is good for you and anyone essentially like you, then you also know that attacking the life of another fails to show proper care for the good of his life. In attacking another's life you act unreasonably since the truth that you know (his life is a good to be promoted) and the action that you perform (damaging his life) are at odds. Precisely, then, because of the integral directiveness of the basic human goods, people should always act in a way that is open to and respectful of all of the human goods in all people.

While there is room for reasonably favoring oneself or members of one's own family or community in seeking fulfillment (that is, when there is an *intelligible reason* to do so, and where one would have others do the same), it is *unreasonable* to treat others, or to treat people who

do not belong to one's own group or community, in *radically* different ways—differently than you would have them treat yourself. Likewise, if life, health, and knowledge truly perfect you *and anyone essentially like you*, then it is unreasonable—and hence immoral—for you to deliberately deprive someone else of life, health, or knowledge.

Our human nature thus emerges as having two crucial aspects. First, it is an animal nature: we are not human spirits, essentially disembodied, but human animals—notable for being spiritual animals in a way that others are not, but animals nonetheless. Second, our nature is practical: we are not automata controlled by external forces or sub-rational instincts. Rather, we grasp reasons for action and seek to act according to the dictates of reason—seek to act morally. In this sense, our nature is specified by our practical possibilities, in particular, by those principles of practical reasonableness and the basic goods that constitute the horizon of our possible flourishing.

This horizon, though deep and broad, is not infinitely plastic. That is, although any particular human good—life, knowledge, or play, for example—offers a vast number of ways of pursuit, promotion, and participation, the core list of the basic goods is nevertheless finite, relatively small, and permanent. There are many ways of pursuing the good of life: doctors, lifeguards, law enforcement officials, and the drafters of the Clean Air Act all pursue this good, and even among these, there are, for example, many ways of being a doctor. But the status of life as a basic human good is inflexibly essential to our nature; death will not make us flourish.

Our animal nature is of course tied up with our practical nature in a wide variety of ways: it is our bodily life that is a good in itself, not simply the life of our soul or mind or consciousness. It is through our senses that we come to know facts about the world, and it is through our physical communion with others that we play, marry, raise children, and so on. Art is experienced through our bodily senses; integrity is a matter not just of doing, thinking, or willing one thing, but also of feeling in accordance with the dictates of reason. In short, our animal nature pervades our practical nature, and vice versa. Any attempt to understand what we are that ignores or downgrades one or the other of these aspects fails to capture the full reality of human nature.

Yet it is also crucial to a sound account of human nature to recognize that these possibilities for fulfillment must be brought about for us by our own action. It is true that some of these goods benefit us whether we choose them or not: We are simply better off for being alive, whether or not we have deliberately acted to sustain or promote our lives. We just

are better off knowing the truth than knowing falsehoods, regardless of whether we acted to acquire the knowledge. Nonetheless, our given nature is largely one of capacities that require our action to be brought to actuality. Our life must be a life of deliberation, choice, commitment, and action if it is to be a good and flourishing life. We do not want our lives to be lives of merely passive benefit, of induced experiences, but lives of action, lives of which we are agents and authors. This realization lies behind the deep value we accord to autonomy, and our strong requirement of informed consent in medicine and research.

Of Means and Men

In light of the considerations raised so far, proposed biotechnology must demonstrate that the means by which human enhancement is to be achieved respects human beings as subjects of moral worth, and respects human flourishing and the various goods constitutive of it. If enhancement technologies are to be ethical on a natural law theory account, then at the very least the methods they employ must do no harm.

But as these technologies exist today, many do cause harm. Worse still, the technological advances that some advocates seek will do even greater harm. This harm is located in two general areas: human life itself (often for nascent human beings) and marriage (including reproduction and family life). Consider, first, threats to human life itself. Respect for the life of human beings can be trampled by the means of biotechnological progress in two ways. First, the means used for making progress in research might be insufficiently respectful of the life and bodily integrity of human beings. Embryonic stem cell research is probably the most familiar example of an instance in which a human being is used solely as source-material for scientific research. A human being in the embryonic state is harvested for parts (as its blastocyst cells are removed), destroying the organism. This same basic ethical problem can occur to humans at other stages of development—particularly to the old, debilitated, and those who have lost “higher” brain functioning (where it becomes tempting to harvest organs). But human beings must be treated as research subjects, not research materials, and the research must not cause direct harm (or death) or pose undue risk. Because most mature humans can speak out in their own defense, the most pressing concern is that embryonic (and debilitated) human beings will be exploited for raw materials.

Human beings can also be *created* as subjects of experimentation. That is, they might be brought into being just to test pre-fertilization genetic

engineering. So, for example, germline cells (sperm and egg) can be altered and then brought together to create a new human being, a human being brought to life solely to see what effect the genetic alteration has on the resulting life. Likewise, to perfect cloning techniques, many human beings will have to be brought into existence as the results of cloning experiments. Many of these human beings will be physically defective, a necessary result of bringing a procedure to perfection through trial and error. And most, if not all, human beings created as test subjects will be destroyed before being fully gestated.

Clearly, at least some of the research that is envisaged as necessary to make possible enhancements to human nature will require experimentation on early human embryos. But if we are human beings who begin as embryos, then such research, much of which is destructive of the embryo, and all of which, clearly, takes place without the embryo's consent and is not directed toward the embryo's betterment, is immoral.

So the *research* necessary to perfect enhancement techniques will go wrong if it does not adequately respect human life. But many of the proposed *techniques* for enhancement themselves treat human beings as mere means, disposable materials, or objects of consumer choice. Consider the widespread practice of preimplantation genetic diagnosis, where human embryos that carry markers for genetic disease or disability are frequently "discarded." The same technique might someday be applied to create "designer" embryos with the right sex, hair and eye color, and muscle type. As a result, disrespect for human life may not be merely a side effect of enhancement research, but may serve as the very selection factor for enhancement—with "lesser" human beings paying the price.

These procedures disregard the fact that all human beings at all stages of life are persons whose lives are to be respected and promoted. Experiments we would not think to perform on mature subjects, whose objections we would take as definitive, we are blithely performing on immature humans. It violates the basic norms of justice, fairness, and equality to use immature human beings in ways that we would never countenance for mature human beings. If moral worth and dignity spring forth from the type of creature that we are—not the talents, skills, and capacities we can immediately exercise—then we cause direct and irreversible harm to subjects of profound value when we treat them in these ways.

Moreover, we damage ourselves and corrupt our own moral ecology and society when we establish institutional practices (the widespread use of these biotechnologies throughout laboratories across the country) that cavalierly disregard the wellbeing of our fellow human persons. Inasmuch

as we write them off as “not really human” or “not really lives of value,” we narrow the circle of humanity, cheapen the value of human life, and set our own wills in opposition to the authentic good of other persons. As such, regardless of what the ends of biotechnology may promise, if the means require us to disregard the humanity of our fellow persons, they will not make us better off.

Of Means and Marriage

Biotechnology’s methods pose threats not just to human life itself, but also to the central social institution of human life: marriage and family. An important aspect of human fulfillment is social, and in particular, the unique combination of friendship, sexual union, and reproduction that is marriage. Any biotechnology that would weaken the bonds of marriage or corrupt its contours will diminish human flourishing.

Consider, for example, research aimed at making us autonomous—*that is*, asexually—reproductive. Current technologies such as in vitro fertilization, and, to a greater extent, reproductive cloning, have already brought us part of the way towards such a state of affairs. The aim of such research is to remove from the sphere of sex, marriage, and family the act of creation of children—and indeed, to remove it from any necessarily interpersonal context at all. Forward-looking thinkers such as Ray Kurzweil predict that within one hundred years we will no longer reproduce sexually at all; sex will become recreational, and indeed, mostly virtual. Procreation, meanwhile, will be essentially technical.

One driving force behind this (although not the only one) is the desire to produce healthy children, free of disease, and perhaps even possessing an enhanced genetic composition. Assuming, for the moment, that this is a good state of affairs to pursue in the first place, there is reason to think that the means are woefully deficient. Although a world in which reproduction took place under the control of a laboratory might be taken by some to be a good thing, it is a different and a lesser thing than traditional procreation in the context of a marriage. It is precisely here, of course, that arguments become necessary but difficult.

Two considerations seem important. First, sex and marriage are other-related, interpersonal realities. And our human fulfillment and wellbeing seem essentially to require relation to others, particularly in such goods as friendship, marriage, and family. So to narrow our reproductive world in this self-focused way, by becoming autonomous procreators, seems reductive of our possibilities for wellbeing, by removing us from those others

with whom we would have had the potential for interpersonal communion. A world in which all reproduction became disjoined from sex would be deeply depersonalized, as Kurzweil's visions of virtual sex between avatars makes clear. Reproducing in the lab takes one aspect of what makes marriage perfective for us—procreation—and separates it *out of* the unique opportunity for interpersonal union. The result is a diminished version of the truly fulfilling activity of procreation when it is a part of the larger interpersonal good of marriage and marital union. We are met with an illusion of the real good to be found in conjugal union and childbearing.

Second, this reduction is especially apparent in the relationship one is forced to assume with the children that are created as the fruit of a technical process. Even today's assisted reproductive techniques, like in vitro fertilization (IVF), require their users to adopt—at least temporarily—an attitude toward another human person that is inconsistent with human dignity. At least initially, children created through technical means are, in the eyes of their creators, seen as artifacts of their will and design, rather than as persons. For a time, the parents-to-be think of their children as planned products. Any assisted reproductive technology that *replaces* conjugal union, rather than truly *assisting* it, fails to treat human beings in their origins as persons—ends in themselves. This arrangement would be further exacerbated in the case of future reproductive technologies that might altogether *eliminate* sexual reproduction—such as human cloning. Cloning parents will be the designers and manufacturers of their children, and thus alienated from them. So just as removing reproduction from sexual union diminishes the good of marriage, the relationship of cloners to their children will be stunted as well, leaving again a lesser scope in the relationship to basic goods. And once more, what would be true in cloning would be true on a greater scale were the envisaged changes in human reproduction to become part of our nature.

Now some will argue that we are overstating our case—that no one who conceives children through assisted, non-conjugal means like IVF actually looks at children as “artifacts” or as the products of manufacture. They will argue that parents who use assisted reproductive technologies can—and do—love their children just as much as parents who conceive children through conjugal union, that how children are conceived does not necessarily affect how we subsequently treat them.

To be sure. But this response misses the force—and true nature—of our argument. Our argument does not rely on the *consequences* of creating children in laboratories, but rather on the *actual act* of conceiving children in this way. We are not (primarily) concerned with subsequent

interactions, but with evaluating the mindset, intention, and orientation of the potential parents seeking to use assisted reproductive technologies to conceive a child. It is the very act of creation of this sort, we argue, that is the depersonalizing act. In fact, the point can be made by contrasting the two sets of attitudes parents take to their children in their creation, and in their subsequent relationship to them.

What parents, by any means, would consider their children *replaceable*? What parents would think, that is, that if a better version were available, they would be well advised to eliminate their present child, in order to upgrade to the better model? No parents we know, including, of course, those who have reproduced with technological assistance.

Yet the world of assisted reproductive technology is shot through with the language of “spares,” with the grading of embryos A through D, with the elimination of the lesser in favor of the better, with selective reduction of some for the benefit of others. In all these ways parents manifest the depersonalizing mindset of a process that seeks to create children according to the parents’ own specifications. As with any process of manufacture, refractory material is eliminated, faulty attempts are scrapped, and the drive to mastery over what is made is allowed full reign.

This is the hidden rational basis for the repugnance people sometimes feel at violations of human dignity. Most people rightly feel queasy about cloning human beings precisely because they have an implicit, though often unarticulated, understanding that human beings are persons—subjects of moral worth—whose dignity requires that we orient ourselves toward them in certain ways. The unease at cloning is based on reasons—reasons relating to the nature of marriage and the dignity of human beings-in-their-origins. Yet it takes us to such fundamental levels that it is often difficult to articulate precisely what is at stake because we reach bedrock: first principles. Think of it this way: Why is discriminating on the basis of race wrong? Even if the consequences were good (and somehow worked out to everyone’s benefit), the very act of racism is wrong precisely because it manifests an improper orientation toward another human being, equal in dignity, equal as a person. If we look for other, deeper reasons, we will founder—it is solely because the very act itself denigrates persons. The same is true of cloning and, we believe, other forms of assisted reproductive technology—the very act itself is denigrating.

Some may ask whether some spouses who conceive children through conjugal union don’t have the same intention—to create a child—but simply use sexual intercourse as the means. This is certainly a possibility.

But when spouses do this, they, too, damage their own orientation towards other human persons and human fulfillment (and, as it happens, toward themselves and their marriage). But spouses need not adopt this attitude. In fact, ideally, in sexual union spouses simply act to unite, to realize and embody their marital union, and they welcome—even hope for—children as a gift that supervenes upon their act. But in reproduction in a laboratory, the only intention and the only mindset adopted is one of producing a child as a means to an end. Adopting *this* attitude and relationship diminishes authentic human wellbeing as it stunts our relationship with our children in the very origins of their existence.

Again, we have no doubt that parents who conceive children through the use of assisted reproductive technologies love the children they produce. Likewise, we believe that most parents who would use biotechnology to create so-called “designer babies” would, by and large, love their children. That said, there is evidence that these technologies do perpetuate the manufacturer-manufactured relationship. In addition to the indicators we have cited, we could point to the practices of hyper-ovulation, multiple-fertilization, sperm-sorting for sex selection, and preimplantation genetic diagnosis. Lastly, the entire industry that has sprung up around assisted reproductive technologies—the anonymous sperm “donors,” the laboratory technicians who create life in petri dishes, the thousands of embryonic humans suspended in frozen animation—demonstrates the impersonal way that artificially-produced humans are treated. All of these measures fail to treat the newly conceived child humanely as they replace the filial relationship between the generations with that of producer to product.

Goals and Goods

Enhancement technologies as such need not threaten human life or sexual reproduction. While many of today’s proposed enhancements seem to implicate attacks on these basic goods, technology is always improving, and, as Ronald M. Green notes in his book *Babies by Design*, “possibilities that were almost unthinkable just a few years ago are now routinely being deployed in laboratories around the world.” If that is the case, then there is reason to think that science will be able to develop methods of delivering biological enhancement that will not, at the level of means, compromise our wellbeing.

But whether or not the *methods* of enhancement are shown to be acceptable, we need to ask whether the *goals* of enhancement will truly enhance

our lives. To do so, two criteria will be of particular importance: enhancements must instantiate more deeply, completely, or thoroughly one of the basic human goods without either intentionally damaging other goods or providing us with mere illusions of fulfillment; and enhancements must allow *us* to instantiate these goods rather than replace our agency with genetic, pharmaceutical, or mechanical alternatives.

Some of the changes enhancement technology might make to our bodies would be such as to rupture our relationship to certain basic goods. To imagine a far-out example, suppose that our bodily senses were gradually eliminated in favor of computer navigation systems implanted in our brains, with some sort of device for environmental input. One purpose of this might be to increase our ability to respond in common to certain stimuli, for example, among soldiers in war. Would this radically diminish our capacity for enjoyment of the arts of music or painting? To sacrifice these capacities for new abilities of a purely instrumental value would seem a violation of the goods of the person. Similarly, perceptual enhancers that put us at an increasing distance from our tactile, bodily connection to the world threaten to reduce our sense of ourselves as bodily beings, and our practical understanding of the way our physical nature enters into goods such as work, play, friendship, and even worship.

Or consider the range of possible enhancements that can best be described as “cosmetic.” Biotechnology promises a host of cosmetic therapies that will make plastic surgery as we know it today seem primitive. How should we evaluate these cosmetic enhancements? Sometimes, improving one’s physical appearance is a reasonable response to age, injury, or natural condition, especially when such improvement enables one better to participate in basic goods. Some people, in legitimate lines of work, rely on their looks for success in their jobs; it can be, we think, permissible to maintain that appearance through the use of surgery and even genetic interventions.

Still, these goods are, for the most part, instrumental, not basic. So, when pursued not to facilitate morally permissible work or important interpersonal relations but as ends in themselves, cosmetic enhancements tend to provide merely illusory goods; to think that a perpetual appearance of youth, for example, is good just as such is like thinking that the accumulation of wealth just as such is humanly fulfilling. Such errors can lead to shallow, barren lives, in which a horizon of physical perfection is always pursued, but no genuine goods are ever attained. (Doubts on this score may be assuaged by contemplating the celebrity and fashion magazines in the supermarket checkout line.)

Virtual Virtue

Such illusory possibilities suggest the second criterion for judging the ends of enhancement. Various enhancements can pose a risk when they are intended to substitute for the labor of making ourselves more disciplined, harder working, more in control of our emotions, more capable in our relationships to others, more able to hit a baseball or run a race, and so on. The use of Prozac and Ritalin, not by those whose capacities are impaired, but by those who simply wish to perform better, or the use of steroids by athletes, among other things, makes us increasingly passive in our pursuit of wellbeing. The threat here may be brought out by a brief account of Robert Nozick's famous "experience machine" thought experiment.

Nozick's thought experiment centers on a machine that promises the experience of a fully meaningful life. Plug yourself into the machine, and you will be provided the experience of creating great art, pursuing valuable relationships, and thinking great thoughts. In his 1968 book *Anarchy, State, and Utopia*, Nozick describes it in this way:

Suppose there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel you were writing a great novel, or making a friend, or reading an interesting book. All the time you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's desires? ... Of course, while in the tank you won't know that you're there; you'll think it's all actually happening. Others can also plug in to have the experiences they want, so there's no need to stay unplugged to serve them. (Ignore problems such as who will service the machines if everyone plugs in.) Would you plug in? *What else can matter to us, other than how our lives feel from the inside?*

Nozick's intuition, shared by most philosophers, is that plugging in would be supremely undesirable, regardless of what form of life we would therein experience. For what the machine ultimately offers with regard to any of the various aspects of a meaningful life is a mere appearance; but what human beings desire, what matters, is a reality that is available to us through genuine action.

What characterizes the difference between the experience of some activity and the reality? Some capacity of the human being must be actualized in genuine action that is not actualized in the mere *experience* of performing that action. In the experience machine, it seems that what is missing is any act of the will. On Nozick's own understanding, the

experience machine renders us utterly passive. We are unable to act; the machine acts on us. Since there is an experiential aspect even to acts of the will, the machine does, in the course of providing us with the experience of a meaningful life, provide us also with the experience of genuine activity. But confronted with the experience machine, we distinguish between willing something and the experience of willing something, between performing an action and experiencing that performance.

The experience machine should help us to get a handle on what is disturbing about the use of Ritalin or Prozac in the healthy. To the extent that, as Nozick's thought example reveals, our active self-constitution is what we want, rather than merely external satisfactions or successes, the use of drugs and other enhancers to accomplish what we should accomplish through our own labor is actually diminishing, not enhancing.

Two caveats are necessary here. First, many of these enhancers have other legitimate uses—to treat depression or hyperactivity, or to provide therapy to those suffering from muscular disorders, for example. Second, Ritalin, Prozac, memory aids, steroids, and so on are far from removing from us *every* aspect of control over our lives, even in some limited domain. Although the healthy student who takes Ritalin to do better on his exams both provides himself with an advantage and, as it were, borrows that advantage from an external source, it is still the case that whatever knowledge is displayed by the student is largely the student's own. He has not completely surrendered his active participation in his own self-constitution. So, while recent reports of academics using the stimulant Adderall to gain a professional advantage seem morally suspect, the moral wrong seems less that of cheating others than of cheating oneself; the opportunity to become, as much as possible, a self-constituting agent in regards to the core values and projects of one's life is, to a certain extent, being bypassed.

There are, however, aspirations on the part of some to more or less completely bypass such activity. It will be helpful to divide the discussion at this point into a consideration of two different sorts of goods in relation to which we might become artificially passive.

Consider, for example, drugs or surgical techniques that could be developed to make us professional-class athletes, without the need for workouts, diets, or weight-lifting; or memory "downloads" that would provide us with knowledge of places we had never been, or expertise in fields we had never studied. There can be little doubt that the persons who took such drugs or received such downloads would in fact be healthier and more knowledgeable than those who had not. In that way, such people would indeed be better off than their less-advantaged peers. Life

and knowledge are substantive goods—our participation in such goods contributes to our wellbeing even apart from our having chosen so to participate. But here, cheating oneself is also accompanied by a cheating of others, insofar as these activities occur in typically competitive contexts.

More threateningly, consider the good of friendship. Suppose that technologies became available that would create in two people the belief that they were friends, *à la* Nozick's experience machine. Similar technologies would enable us to download virtues, or even biographies, constructed according to our desires. If we wished to be braver or more temperate, we could download a character change, becoming virtuous without pain. Or perhaps we dislike not simply our character, but the entire life that has brought it to be as it is. We could then download a new identity, in the so-called narrative sense—a new history for ourselves that we would now take to be real. Or perhaps we are unhappy with our integrity: our feelings, choices, and reasons for action might often fail to cohere. Reconfiguration of our identity might solve precisely this problem.

Hollywood notwithstanding, such scenarios are of course extremely farfetched. But, on the one hand, they seem to be just extensions of the notions propounded by some proponents of new technologies to rid the world of crime by making people more social and altruistic, less aggressive and self-centered. And, on the other hand, while there seems little reason to think such techniques are around the corner, there is certainly research oriented toward their discovery. Perhaps such research is a colossal waste of time; is it also morally suspect?

What we should note about reflexive goods such as friendship, virtue, good character, integrity—any form of harmony—is that they require, in order to be genuine, acts of the will. True friendship cannot be downloaded, uploaded, or installed, for true friends make mutual commitments to one another's goods, and no genuine commitment can be made by anyone except the agents in question. Two people may be forced to marry, but they can never be made to love one another. So unlike the cases involving substantive goods like knowledge or health, when techniques or drugs become available that will make us more virtuous, that will create virtual friends, that will eliminate crime, that will create new biographies for us, and so on, these techniques will in no sense make us better off with respect to the goods being sought. They will, indeed, bypass those goods altogether by removing necessary conditions for their reality: human choices and commitments.

Any such “enhancement” thus poses a very serious threat to our well-being and to our practical nature. Likewise, there does not seem to be any

legitimate uses of such technologies that would not involve exactly the same “moral bypass,” an end run round our ability to constitute ourselves. Such technologies would be morally wrong, so all research aimed at discovering ways to download character traits or biographies, or to genetically eliminate crime or hostility (insofar as these are not consequences of unwilled pathologies), should likewise be viewed as morally misguided. The prospect of a world in which everyone acts morally is only a promising prospect if it is genuinely a world in which everyone truly *acts*.

What, though, about the substantive goods, which really do make us better off even when we participate in them through no choice of our own? Here too, we think, we should see a significant value to our own self-constituting activity. Although it is good to be healthy or knowledgeable, whether we have actively pursued health or knowledge or not, we should find it more desirable to have become healthy or knowledgeable through our own activity. Health and knowledge do not simply benefit us in the obvious way, namely by making us healthy and knowledgeable; they also help to define who we are. The bodybuilder or long-distance runner has defined himself in a certain way as a healthy person; the philosopher has similarly defined himself as a seeker of wisdom. Such self-definition as a person for whom one or another of the goods is significant is possible only because we choose, actively, to pursue these goods, to cultivate them and own our participation in them. All this would be lost if there were a pill for bodily strength, or wisdom, or ability, and so on.

There may well be possible therapeutic uses to drugs or surgical techniques aimed at health or perhaps knowledge. All bodies and minds grow ill and decay, some sooner than others. It is reasonable to hope for cures for muscle wastage or Alzheimer’s, but critical to remember the importance of self-constitution even here. So while research and development in such areas cannot be ruled out, as it can where reflexive goods are concerned, still there must be concern for the uses to which new enhancers are put, and a determination to encourage and allow for the self-constitution of human agents. As a general rule, medical advances stay on safer ground insofar as they are concerned with the protection, restoration, and enhancement of our *capacities*, rather than with providing us *directly with the object* that someone with functioning capacities and an active will could achieve.

Yet there is one capacity that scientists should be particularly protective of when considering alterations: human rationality. The human brain has been fine-tuned through a process of evolution over the course of millennia. Of all known living creatures, humans are the only ones with brains that provide the physical substratum necessary for rational thought

and free choice. So we must be careful not to alter the physical makeup of human beings in a way that will damage or diminish these capacities. Changes to the brain could erode the necessary physical conditions that make the essentially immaterial capacities of reason and will possible.

And other bodily changes could no doubt also make it more difficult for us to be self-constituting agents. While we think the ability to make choices is not merely a bodily ability, it is an ability deeply conditioned by the existence and experience of our animal body. Besides changing the substratum for the mind, new technologies might allow us to change other aspects of the body in ways that would affect our freedom, rendering us less able to act autonomously. Imagine, for example, a change that made us *more* susceptible to physical pleasure than we are already. Such a change might be considered attractive in our hedonistic society. But such a change would make temperate choices more difficult and would reduce our scope for truly human action.

Manmade Evolution

These threats—to our relationship to certain goods and to our ability to judge and choose—are the *only* real threats to our human identity and wellbeing. Insofar as bodily changes could be brought about that would not negatively bear either on our relationship to the basic goods, or our ability, as free and rational, actively to pursue them, such changes would not constitute *any* genuine damage to our flourishing as human beings.

It seems possible that adaptive pressures could cause, at least over the very long run, significant changes in the human body. It would be a mistake to think of such changes as changes in our nature, so long as we remained free, rational animals, whose horizon of flourishing was constituted by the basic goods we have already identified. But if evolution by a process of *natural* selection could change us without essentially changing our natures, could we not *deliberately* bring about such changes in our animal bodies without transgressing moral boundaries?

Some such deliberately pursued and achieved “evolution” might, within certain bounds, be ethical. Various positive advantages can be envisaged to many conceivable changes—advantages to health, for example, to our perceptual abilities, or to our bodily configuration. Some such changes might genuinely result in new opportunities to pursue the same human goods in creative ways.

Consider some examples. A change to our bodily configuration along the lines of increased lung capacity could allow a person to better

participate in a host of fulfilling activities, from athletics (with longer underwater swimming, deeper breaths during races) to music (playing a wind instrument or singing long phrases in one breath) to work (physical exertion and manual labor). All of these activities, in which lung capacity and breath size play an important role, could allow us to willfully participate in fulfilling goods. (Obviously the above considerations on steroids or Ritalin apply here as well—something will be lost when a passage of music that used to require breath-control to play correctly now can be executed with ease due to larger lungs.) But it certainly seems plausible that augmenting the size and capacities of other organs might (and we stress *might*) lead to new possibilities for human persons to act for themselves to more deeply instantiate aspects of flourishing.

Likewise, we might be able to deliver new capacities to existing organs. Many musicians report that perfect pitch is a purely gratuitous ability—one either has it or one doesn’t, one can’t really work to develop it (though one can work to improve relative pitch); perfect pitch appears to be something one is born with and at an early age experiences. But what if scientists could discover the mechanism for this and develop a way to give aspiring musicians perfect pitch? This seems to be delivering a new capacity to participate in the good of play and aesthetic experience, without substantially undermining human agency or leading to a mere illusion of flourishing. Yes, the work on ear training that many musicians do now would be reduced (if not eliminated), but being able to identify pitches and intervals seems more like a means, a technical skill, to the artistic end of producing beautiful music. Having perfect pitch does not make one a good musician anymore than having perfect eyesight makes one a good painter. Given the nature of perfect pitch and its role in making music, this enhancement seems more akin to enhancing a capacity, not producing the end good itself.

An enhancement of our perceptual abilities, perhaps inserting micro-chips into our brains so we could connect to the Internet or make telephone calls without using any “external” machinery, likewise could provide us with a developed capacity to use in pursuing fulfilling action. From desktops to laptops and now to BlackBerrys, we have seen the usefulness of digital devices that provide us with communication, news, directions, and more. It seems odd to think that using the machinery on one’s desk, lap, or hand is acceptable, but that accessing it via a brain prosthetic—without the mediation of one’s fingers—would not be. Such implants could open up new possibilities for how humans access the world’s wealth of information, and these possibilities could be for the better. A caution: while these possibilities could be for the better and these technologies would

not be, in principle, wrong, it is worth remembering that modern technology—even while making communication easier than ever—has led to social isolation, attention problems, and technology addictions. There is good reason to think that implants of the sort just described could lead to many vices, as well; it is easy to overvalue “instant access” to the detriment of real relationships and fully interpersonal communion with other bodily beings.

Life without End

Since the distinction between therapy and enhancement is notoriously hard to specify, many medical “enhancements” may seem indistinguishable, morally, from “therapy.” When these individual treatments are taken as a whole, they may have the effect of extending our lifespans beyond “normal”—a welcome development, within limits. But what about when these limits are pushed? The pursuit of immortality is unquestionably one of the most attractive possibilities to many futurists. Is it, in itself, a moral aspiration?

The quest for immortality is hardly new; nor are promises that the end of the quest is in sight. Empirical evidence suggests a natural cap on the length of the human lifespan, and the general course of the universe suggests a pattern of death, decay, and increased entropy hardly conducive to hopes for immortality. While not conclusive, these facts suggest that spending time and money on the pursuit of immortality—as opposed to more targeted research aimed at curing particular diseases, and increasing health along specific indices—is morally wrong because it is a waste of talent, time, and resources.

But is immortality as such undesirable? Is it morally wrong to hope for more, and indeed, unending life? Recall that the basic goods of human beings are our horizons of flourishing: they indicate the avenues of activity and pursuit through which we can become better off. Yet these goods seem essentially non-completable. There is no end (in the sense of a conclusion) to the pursuit of any of the goods, and from an agent’s standpoint, the horizon of goods-to-be-pursued must always be open, always promise something new and more than what has already been achieved. New knowledge, new and deeper friendships, more skilled play—these possibilities are intrinsically always available.

It is the openness of the horizon of goods that makes death an evil, and immortality both beckoning, and, in itself, something rightly desirable. Some religious traditions give witness to precisely this: the possibility

of eternally being able to pursue that horizon, as resurrected bodily beings, in the company of friends and God, is for many the promise of the kingdom of heaven.

But that kingdom is not available to us here on earth, even if *de facto* immortality were to be achieved. As long as we remain bodily creatures, the pain and suffering of disease and physical accident will be inevitable. As long as we remain free creatures, suffering, selfishness, hostility, failure, frustration—all these and more are likewise inevitable. And as long as we remain creatures with longings for the divine, that desire will never achieve fruition in this life. All these evils and failings—these inevitabilities of the current human condition—spread out across eternity would threaten to make our lives a misery. Pope Benedict XVI has recently reflected upon such considerations in his encyclical *Spe Salvi*, writing that “to continue living forever—endlessly—appears more like a curse than a gift.” We do not want to die, and in itself this is reasonable; but in this world, “neither do we want to continue living indefinitely.”

The aspiration to immortality *on this earth* thus seems not just an empirical impossibility but a radical mistake. It is not an acceptable end (in the sense of a goal) of the biotech revolution. Still, there seems no reason, in principle, why we should assume that our current lifespan is ideal. Given what we have said above about the open-endedness of human fulfillment in the various goods-to-be-pursued, we do not think research and medical enhancement aimed at *lengthening* our lives is necessarily wrong. In fact, adding five or ten healthy years to middle age could allow people added years for the pursuit of excellence in their chosen vocations and relationships. But if we were to contemplate the addition of decades to our average lifespans, then important questions about family, reproduction, and the relationship of the generations would become critical. These would have to be dealt with by considering the proportionality of accepting bad, but unintended, side effects, both seen and unforeseen. And if life extension began to approach the quasi-immortality of added centuries, then it appears to us that the considerations raised above about immortality in this world indicate that life so extended would more and more seem a curse.

The World Remade

The criteria we have proposed above serve to determine whether particular biotechnologies are ethical or not in principle. Our general response to new biotechnologies is positive: provided they truly enhance our

capacities to participate in genuinely fulfilling goods, enhancements can be, in principle, good for us. As we have noted, we must be attentive to the ways that new technologies could violate the basic respect owed to every member of the human family. The benefits that biotechnologies promise must not be bought at the expense of degrading entire classes of our fellow man. Are we willing to countenance the deliberate destruction of the most vulnerable or neglect the needs of the most impressionable?

But these precise injustices and their immediate victims are not the end of the story. The biotechnologies we accept, the practices we embrace, and the policies we adopt will have profound impacts on the type of people we become. Biotechnology will not just lead us to particular instances of embryo destruction, experimentation and cloning, or cosmetic enhancement, designer babies and gene therapy. No, biotechnology will fundamentally alter our culture: shaping our understanding of the meaning and purpose of life, human fulfillment and human goods, the dignity and worth of human beings, the connectedness of the generations, families and community as a whole. New biotechnologies will send cultural messages. And these messages will change our outlook on life. What type of a people will we become if sexual procreation within marriage is replaced by technical manufacture inside laboratories? How will we view human flourishing when more of our lives are controlled by pharmacists and geneticists, when more of our thinking is the result of chemicals we've ingested?

None of us lives in a vacuum, and once certain biotechnologies become commonplace, all of us—including future generations—will reap the consequences, both positive and negative. No one enters life with pre-formed beliefs about human fulfillment. Rather, we are formed by families, at schools, in society as a whole. As biotechnology changes our self-understanding, new lessons will be passed on to future generations about what living the good life entails. In fact, new biotechnologies could redefine what it means to be human and decimate the social structures that shape our outlook on life.

This is particularly true when one considers the basic claim underlying many biotechnologies—an unspoken claim that both drives the new biotech as a premise, and emerges as a conclusion to the use of that technology: man's ultimate fulfillment lies in material perfection. If we could only eliminate suffering (or at least eliminate those who suffer); if we could only find cures for degenerative diseases (even if that means destroying nascent human beings and harvesting them for parts); if we could only produce better babies (even if that means treating them as things, not people); if we could only enhance our nature, become bigger, stronger and faster, think

more clearly and enjoy more pleasant sensations (even without effort); and if we could only find a way to live longer (even if we no longer understand the point of living at all), then we would truly be happy.

Lost in this picture is the wisdom that has been passed down from ancient Jerusalem, Athens, and Rome: that the truly happy life lies not in material wellbeing but in moral perfection and virtue. In fact, insofar as biotechnology directly attacks the weakest in our society—via embryo-destroying research—it prevents us from exercising virtues of authentic compassion and love as we seek our own material wellbeing. But this isn't the only, or even primary, way that biotechnology threatens to make human life less humane. As life is seen as a series of material problems to be met by technical solutions, and the body as flawed and to be mastered, we face the prospect of forgetting that our true fulfillment involves friendships with real people; familial love between spouses and parents and children; the pursuit of knowledge and wisdom; the development of our skills; actions of justice and mercy toward others; the search for and conformity to religious truth.

These real avenues of fulfillment will be reduced (if not eliminated) if life is viewed less as a gift to be received than as a product to be manufactured. If we view our own lives not as gifts but as artifacts of our parents' will and now wholly subject to our own will—to our desires to remake ourselves in any way we see fit—lost will be any sense of the utter gratuity of life or the natural parameters that give structure to our choices. Harvard political philosopher Michael Sandel puts this well in his book *The Case Against Perfection* when he describes the gifted quality of life to mean “simply that the talent in question is not wholly the athlete's or the musician's own doing; whether he has nature, fortune, or God to thank for it, the talent is an endowment that exceeds his control.”

It won't just be our own lives that change, but our relationships with others. If our children are viewed less as gifts to be received and more as designer goods to be fashioned, then before we know it, we will be not just free to design our children if we want but obliged to plan in advance every aspect of their lives. Parents in some cities already compete to place their children into the best elementary schools; why shouldn't they offer their children the best genes? Our disposition toward the less than perfect, the diseased, the disabled, and the slowly declining elderly may change as well.

The Gift of Life

Our attitude towards the human struggle for perfection and against imperfection is precariously balanced. Of course human beings are

right to better their condition, to seek more perfect forms of fulfillment, individually and in communities. And of course they are right to strive to minimize their failings, both moral and material. But the lives that they thereby seek to better are not mere material over which they are sovereign masters, material to be manipulated at will for good or ill. Here again, we run up against Sandel's emphasis on giftedness. The aspiration to reject all giftedness where perfection is concerned, to render all perfection subject to our scientific control, is matched by a similar attitude towards imperfection: to eliminate it, to subject it entirely to our mastery. And this has profound consequences for the negative parameters of human existence: if we reject what is gifted, we reject also suffering, which we now understand as only "gratuitous" and devoid of redemptive meaning. But it is unclear whether a society in which both gifts and suffering were rejected, and perhaps even, ultimately, eliminated, would be one that we could recognize or desire as human.

Such are the broader consequences of the push for biotech enhancement. Taken one by one, the ways in which human beings can go wrong in designing, requesting, and accepting enhancements are all temptations for individuals, whose own lives, and perhaps the lives of their loved ones, will be negatively affected by foolish choices. Taken together, the sum of these choices expresses and determines who we as a people are and will become. So the final moral hurdles of enhancement are matters of ethical culture: Can we sustain a cultural hold on conceptions of genuine human wellbeing, moral boundaries, and the limits of the human? Or are we destined rather, under the dishonest cover of "progress," to embrace a thin and unsatisfactory hedonism or relativism combined with a drive to domination and mastery? We advocate, rather, a "pilgrim's" progress, one in which we seek the good, the right, and the fullest sources of meaning and value by which to shape our future lives and culture.