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# BEYOND HUMANITY?

## THE ETHICS OF BIOMEDICAL ENHANCEMENT

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distribution of intelligence or emotional well-being, or will they make existing inequalities worse? Will the pursuit of enhancements become an endless quest for perfection and make us unappreciative of what we already have?

These are some of the questions explored in this volume. The approach to them is distinctive in several ways. For one thing, my approach takes evolutionary biology seriously. I argue that much of the opposition to biomedical enhancement rests on a gross misunderstanding of evolution. An understanding of evolution is necessary, both to see how beneficial enhancements could be and to appreciate their real risks and to pursue them in a responsible manner. For another, I go beyond the deadlock of exchanging "pros" and "cons" regarding enhancement and move on to what should be the next stage of the debate: trying to figure out effective, realistic institutional responses to the challenges of enhancement.

## CHAPTER ONE

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### The Landscape of the Enhancement Debate

Biotechnologies already on the horizon will enable us to be smarter, have better memories, be stronger, quicker, have more stamina, live longer, be more resistant to diseases, and enjoy richer emotional lives. To some of us, these prospects are heartening; to others, they are dreadful. The following statement is typical of those who greet the prospect of enhancement with trepidation.

For the first time, human biology and even the human genome itself can be shaped by human action. But the human organism is a finely balanced whole, the product of eons of exacting evolution. It is irresponsible to tamper with the wisdom of nature, the handiwork of the Master Engineer of evolution, in order to be better than well. Our situation at present is not perfect, of course, but it is clearly satisfactory; so it is a mistake to risk it for the sake of improvement. Those who seek biomedical enhancement desire perfection; they crave mastery. But such attitudes are incompatible with a due appreciation of the given, a sense of gratitude for what we have.<sup>1</sup>

This way of framing the enhancement issue may be initially appealing. Unfortunately, it happens to be dead wrong. More precisely: *each and every sentence in the passage in quotes above is false* and in the remainder of this book I will demonstrate that this is so. Here, a preview of my findings will suffice. Human action has shaped human biology and altered the genome as long as there have been human beings: a series of non-biomedical enhancements of human capacities, from the agrarian revolution, to the emergence of cities and political institutions, to

advances in transportation technologies, has triggered processes of natural selection and mixed previously isolated gene pools. The human organism is not a finely balanced whole, because evolution does not create harmonious, "complete" organisms; instead it produces tentative, changing, perishing, cobbled-together *ad hoc* solutions to transient design problems, with blithe disregard for human well-being. Nature is not wise (or unwise) and evolution is not like a Master Engineer; it is more like a morally insensitive, blind, tightly shackled tinkerer. The situation of millions of human beings is *not* satisfactory, and both to improve their lives and to preserve the well-being of the most fortunate among us it may be necessary to undertake biomedical enhancements. To solve problems we have created—such as environmental pollution, over-population, and global warming—human beings may have to enhance their cognitive capacities and perhaps their moral capacities as well. The pursuit of biomedical enhancements is not the pursuit of perfection; it is the pursuit of improvement. To desire to enhance certain human capacities in order to increase human well-being or to preserve the well-being we now enjoy is not the same as desiring to achieve total mastery. A proper appreciation of the given is compatible with the pursuit of improvement and may require enhancement, if enhancement is needed to preserve what is valuable in the given.

The debate about biomedical enhancements is one of the most exciting and frustrating controversies of our time. Exciting, because it raises the most enduring questions: about what it is to be human, about individuality, about our relationship to nature, and about what sort of society we should strive to have. Frustrating, because the quality of the debate is low, in five respects.

### 1. *Murky rhetoric masquerading as argument*

First, perhaps more so than in any other area of ethical controversy, some of the most prominent figures in the debate persistently substitute high-sounding rhetoric for reasoning. This is not a peripheral annoyance. As I shall show, it infects the central "arguments" of some of the most prominent critics of enhancement—those who appear to reject enhancement *as such*, rather than merely rejecting *some* enhancements, in some circumstances, when undertaken for certain reasons or as the expression of certain values. To my knowledge, there is no other part of

the Practical Ethics literature in which academic writers continue, in the face of articulate, fair, and powerful criticism, to deploy grand-sounding, but deeply ambiguous catchphrases and slogans at the heart of their views, and never take the trouble to try to translate them into sound arguments. For example, some writers claim that the pursuit of enhancement betrays a character that is deficient in the virtue of "gratitude" for "the given,"<sup>2</sup> without even considering that, properly speaking, gratitude is appropriate only in response to a benefit conferred by an agent, and, in particular, a benefit that is intentionally conferred. Nonetheless, these writers claim that the "argument from gratitude" does not rely on the assumption that "the given" is a gift from God.<sup>3</sup> They claim that considerations of "gratitude" provide a powerful objection to enhancement even if the debate is restricted to a public discourse that is accessible to the nonreligious as well as the religious.<sup>4</sup> One might well feel *fortunate* that the contingencies of evolution have produced a world in which there is so much color and beauty, but a person who was *grateful to evolution* would be confused.

The most serious problem with the appeal to gratitude, however, is not its careless inaccuracy. It is the yawning gap between the truism that one should recognize that much of what is good in life is not the result of our efforts, on the one hand, and any practical guidance as to how to face the challenges of enhancement, on the other.

Even if one ought to be appreciative of the good things one has and aware that many of them are unearned, it doesn't follow from this that one should refrain from ever trying to improve one's life or the life of others. For one thing, "the given" includes some pretty dreadful items: ghastly diseases, the deterioration of mental and physical capacities that is part of the "normal" aging process, and human propensities toward violence and exploitation. Why is it permissible to *not* resign ourselves to "bad givens" like horrible diseases? If the answer is that it is permissible to change those "givens" that are departures from "normal functioning" but not others, then another question immediately arises: why is "normal functioning" morally privileged, or off-limits to improvement?

Anyone who knows a bit about evolutionary biology and admits that our thinking about "the natural" should at the very least be consistent with evolutionary science will have serious reservations about the assumption that normal functioning is sacrosanct.<sup>5</sup> Normal functioning, from the standpoint of evolutionary biology, is simply functioning that

is typical of the organism as it happens to be now, as a result of the highly contingent path its species has traversed so far. It is not optimal functioning, and need not be harmonious functioning, good functioning, or even satisfactory functioning—from the standpoint of what we *rightly value*. The italicized qualifier is crucial: all that evolution can be expected to increase, and then only approximately and fleetingly, is reproductive fitness. Fitness in biology refers to the ability to survive and reproduce, a propensity that is not aimed at or in any way indexed to human good. This distinction is of crucial importance. Survival and reproduction might be achieved in a situation where vast numbers of human beings live miserable lives, hovering just above subsistence, under conditions of gross over-population. To confuse human good with what evolution delivers is to miss the point of the Darwinian revolution in biology and to revert to the very teleological view of nature it overthrew.

Given that appreciation of “the given” cannot mean we should never enhance, we need to know which sorts of enhancements, for whom, in what circumstances, undertaken for what reasons, are compatible with this virtue. We also need to know why we should *assume* that appreciation of the given is so overwhelmingly important that we should forgo all of the benefits that enhancements might bring, in order to avoid any deficiency in that virtue. We should also consider the possibility that the contours of a virtue may be determined in part by consideration of such benefits—in other words, that *proper* appreciation of the given must take into account the benefits that would be lost if we were to remain content with “the given” and forgo improvements.

How, exactly, are we supposed to get from the importance of the virtue of gratitude or a proper appreciation of the given to an “argument” against enhancement? It is remarkable that those who make the idea of gratitude central to their criticism of enhancement do not even attempt to answer this question. Instead, they leave us with the impression that their appeal to gratitude enables us to draw a line that excludes enhancements generally from the realm of the ethical. Profound-sounding rhetoric about the virtue of gratitude, acceptance of “the given,” or “openness to the unbidden” is no substitute for reasoning to a conclusion about what we should do.

The tendency to substitute rhetoric for argument is not confined to American anti-enhancement writers. The famous German philosopher

Jürgen Habermas simply asserts that one cannot regard oneself as free if one is the “product” of one’s parents’ genetic engineering. He solemnly declares that

...interventions aiming at enhancement...violate the fundamental equal status of persons as autonomous beings...insofar as they tie down the person concerned to rejected, but irreversible intentions of third parties, barring him from the spontaneous self-perception of being the undivided author of his own life.<sup>6</sup>

This passage contains a numbing *non sequitur*. The fact that the parents’ intentions to design the genotype of an embryo cannot be reversed after they have been implemented does not imply that the phenotypic characteristics they wished to create by designing it cannot be avoided or reversed. To think otherwise is to indulge in the crudest sort of genetic determinism. If Habermas’s assumption is that designing the genotype of an embryo means determining all the characteristics of the individual who develops from that embryo, then he has overlooked entirely the influence of the environment and other important developmental factors, including the fact that at a certain stage of development humans can shape the environment they find themselves in or, in some cases, choose to place themselves in another environment. On this interpretation, Habermas has conflated designing the genotype of an embryo with designing a person. If, instead, his claim is that any significant genetic designing of a human embryo (even if it does not fully determine a person’s characteristics) is incompatible with that person *regarding* herself as free, then this is a highly ambiguous statement. It could mean that such an individual could not, as a matter of psychological fact, *regard* herself as free—that thinking of herself as free, if she knew she had developed from a “designed” embryo, would be beyond her capacity. Or it could mean that she could not *correctly* regard herself as free—that she would not *be* free, if she so developed. On the first interpretation, the claim is an example of outmoded, armchair psychology that too often occurs in anti-enhancement writing: in this case, this amounts to simply asserting a vast empirical generalization about what people are and are not capable of thinking, without a shred of evidence to support it. On the second interpretation, it is a philosophical claim that is obviously false. Whether an individual is free doesn’t depend upon how she came to be; it depends upon what she is

like, whether she has the capacities that make one free. An individual who develops the normal capacities that persons have is a person, regardless of whether the genotype of her embryo was designed or came to be in the old-fashioned way; and if persons are free, then she is free. Given how implausible the philosophical claim is, the psychological claim is pretty demeaning: It amounts to the assertion that people are so rigidly attached to genetic determinism, in spite of its rejection by genomic science and developmental biology, that they are unable to understand that whether one is free depends upon what one is like, not upon how the embryo from which one developed came about. If in fact people are such genetic determinists, then the proper course of action would be to help them shed this false belief, and devoting considerable effort to doing so might be warranted if the benefits of genetic interventions in embryos were great enough. Habermas does not even consider possible benefits, however. Instead, he rests content with the bare assertion that if one develops from a genetically designed embryo, one cannot be (or cannot regard oneself?) as free. When it is not backed up with sound reasoning, profound-sounding rhetoric about freedom is just as unhelpful as profound-sounding rhetoric about gratitude.

Sometimes, the rhetoric refers to human nature or the natural, as when we are told that enhancement endangers human nature or shows a mistaken (and morally deficient) orientation toward the natural world.<sup>7</sup> Surprisingly, such assertions are oblivious to the fact that the concepts of human nature and the natural are deeply contested and, since the Darwinian revolution in biology, deeply problematic.<sup>8</sup> Here we come to a second source of frustration: the enhancement debate doesn't take evolutionary biology seriously.<sup>9</sup>

## 2. *Ignoring evolutionary biology*

To the extent that one relies on claims about human nature to support a position either in favor of or against enhancement, what one says shouldn't contradict the fundamentals of evolutionary biology. This modest stricture, I shall argue in Chapter Four, is routinely violated by influential anti-enhancement writers.

In the twenty-first century, there is no excuse for any moderately well-educated person to regard the concept of human nature as anything but highly problematic.<sup>10</sup> Above all, one ought to be very skeptical about the

very idea that the concept of human nature that can do any significant work in the enhancement debate or any other serious moral controversy.

One reason the coherence and usefulness of the concept of human nature is so problematic is that it has traditionally been understood against the background of a naïve and simplistic dichotomy between Nature and Nurture that has now been wholly discredited by a better understanding of the complex relationships between genes and environment and between genotype and phenotype.<sup>11</sup> Another is that there is a vigorous, sophisticated contemporary debate about which widely shared characteristics are "cultural" and which are "biological," or, more accurately, about the extent to which explanations of these characteristics require reference to cultural, as opposed to biological causes. This debate is not new of course, but for the first time it is scientifically informed, by work in comparative psychology, neuroscience, anthropology, evolutionary psychology, and genomics. If human nature means the biologically given, the ongoing dispute about what is cultural and what is biological makes appeals to human nature problematic. Under these conditions, relying on an unexplicated, undefended conception of human nature to support a contested position on enhancement is like using a house of cards to shore up the shaky foundations of a skyscraper. Just as important, given our growing knowledge of the reciprocal influences between biological and cultural evolution,<sup>12</sup> the claim that our nature is our biology is both misleading and, to the extent that it is true, less important.

Prominent participants in the enhancement debate also ignore something that every serious student of Ethics now knows: that it is highly problematic, to put it mildly, to try to derive substantive moral conclusions from any concept of human nature.<sup>13</sup> To the extent that we can make sense of the concept of human nature, and do so in a way that is at least compatible with what we know about evolution, we may be able to say that our nature provides some *constraints* on what could be a defensible morality or a good life for beings like us. Put more positively, our nature no doubt contributes something important to the *general shape* of morality and of the good life for us. It is quite another matter to think that an appeal to human nature can tell us whether we should undertake this or that enhancement or to avoid enhancements altogether. To do that, a concept of human nature would have to reveal quite a lot

about the *content* of morality, but there is no reason to believe it can, and a number of good reasons to believe it cannot.

So far as the enhancement debate revolves around claims about human nature and the natural, it reflects a pre-Darwinian view of nature and our place in it. For example, as I shall argue later, when the most vociferous critics of enhancement, including former President Bush's Council on Bioethics, invoke the idea of evolution, they mangle it: they attribute a goodness, harmony, and stability to "the natural" that Darwin went out of his way to repudiate. Darwin's conception of evolution and of the natural as the product of evolution was much darker, as the following quote from his letter to Joseph Hooker indicates: "What a book a Devil's Chaplain might write on the clumsy, wasteful, blundering low and horribly cruel works of nature!"<sup>14</sup>

In Chapters Five and Six, I argue that both the risks and the benefits of enhancement look quite different, depending upon whether one's view of human beings is informed by an accurate understanding of evolutionary biology. If one grasps even the most basic elements of evolutionary biology, one will be much more skeptical about talk of "the wisdom of nature," and less inclined to think that the risks of "interfering with nature" are so great as to rule out all enhancements. Whether the proper analogy for evolution is that of a Master Engineer or that of a blind, morally insensitive, tightly shackled tinkerer makes a considerable difference as to how one thinks about the risk of unintended consequences in the case of inheritable genetic modifications. I will argue that the tinkerer analogy is more apt, but that no analogy can take us far in answering questions about the ethics of biomedical enhancement. Instead, we need to use the scientific knowledge we have about the specific causal relationships that might be disrupted by our interventions in deciding whether or not to pursue a particular enhancement.

### 3. *Sweeping empirical claims, without evidence*

A third source of frustration in the enhancement debate is that it is often breathtakingly naïve, from a methodological point of view. The problem is not simply that bare assertions are offered where reasoning from premises to conclusion is needed, but also that there often seems to be no awareness of the need for empirical evidence. For example, as I shall argue later, critics of enhancement such as Michael Sandel and Leon

Kass repeatedly make vast empirical generalizations about the psychology of those who pursue enhancement. They assert that to try to enhance is to strive for total mastery of the conditions of human existence and to aim obsessively for perfection, and that those who want to extend human life lust for immortality.<sup>15</sup> Sandel, for example, views genetic engineering as "the ultimate expression of our resolve to see ourselves astride the world, the masters of our nature." But, he contends, our quest for mastery is flawed because it "threatens to banish our appreciation of life as a gift, and to leave us with nothing to affirm or behold outside our own will."<sup>16</sup> These authors try to discredit enhancement *in toto*, rather than just some enhancements under some circumstances, by attributing unseemly motivations to all who want to enhance. In doing so, they show no awareness either of the *prima facie* implausibility of such claims or of the need for evidence to support them. In addition, these writers tend to make sweeping generalizations about the effects of enhancement on social institutions—for example, that they will lead to an extreme stratification of society, undermine solidarity, and erode the commitment to distributive justice.<sup>17</sup> In this regard, the enhancement literature is one of the last academic strongholds of *a priori* psychology and sociology. One would think that one was in living in the eighteenth century, when serious intellectuals still believed they could formulate interesting and controversial generalizations about human behavior or the workings of human society from the armchair.

Consider, for a moment, the claim that all, or even most people, who desire enhancement are motivated by a yearning for total mastery, or perfection, or immortality.<sup>18</sup> To treat this claim as self-evident, which is precisely what those who assert such claims do, is naïve in the extreme. How could anyone deny that some may seek an enhancement in order to be *better* in some particular way without thereby desiring to achieve total mastery of the conditions of life or to be perfect? And why would we think that people cannot desire to live *longer* without craving immortality? Surely the burden of empirical evidence is on those who deny the commonsense notion that the desire for betterment is different from the desire for perfection and that the desire for a longer life is different from the desire to live forever.<sup>19</sup>

Similarly, some anti-enhancement writers simply assert sweeping empirical generalizations about human relationships. For example, they declare that if enhancement through genetic interventions in

human embryos becomes widespread then valuable relationships will be seriously damaged or destroyed. Such writers predict that the parent-child relationship will be undermined or distorted because children will come to be (or be regarded as?) manufactured items.<sup>20</sup> They also proclaim that if reproductive cloning is used in the service of enhancement, then the boundary between generations "will become confounded."<sup>21</sup> It is hard to know what to make of such evocative, but vague, rhetoric, but this much is clear: these are very ambitious predictions about what the effects of certain kinds of enhancements will be. But causal predictions are empirical claims and they require evidence. None is provided. Instead, they are apparently regarded by those who make them as self-evidently true, which they clearly are not.

#### 4. *Fundamental unclarity: what's your bottom line?*

Perhaps the greatest problem with the rhetoric of the harshest critics of enhancement is that it is so murky that it makes it very hard to tell exactly what they are arguing for or against. If critics like Sandel, Kass, and Fukuyama are arguing against those who hold that all enhancements, under all conditions, are a good thing, or that our society should plunge headlong, and uncritically, into the pursuit of enhancements, then they are arguing against the flimsiest of strawmen, because no one holds that view. If they are arguing against the view that some enhancements, under some conditions, are permissible—that is, if they are rejecting enhancement across the board—then they are committed to some extraordinarily implausible claims: that everyone, or almost everyone, who desires some particular enhancement is motivated by the desire for total mastery, perfection, or immortality, or that all enhancement is destructive of valuable human relationships or threatens to destroy what is valuable in human beings.

Sometimes, anti-enhancement writers, after indulging in passionate rhetorical exercises that seem to be blanket condemnations of enhancement as such, retreat rather meekly to much weaker and thoroughly uncontroversial claims. For example, quite late in his scathing indictment of enhancement, *The Case Against Perfection*, Michael Sandel abruptly switches to a much more plausible but also much less exciting position in the following passage.

Nor do I claim that people who bioengineer their children or themselves are necessarily motivated by a desire for mastery, and that this motive is a sin no good result could possibly outweigh. I am suggesting instead that the moral stakes in the enhancement debate are not fully captured by the familiar categories of autonomy and rights, on the one hand, and the calculation of costs and benefits, on the other.<sup>22</sup>

Given its context in *Against Perfection*, this passage is astonishing. It amounts to a retraction of his claim that he has offered an "argument against enhancement" as opposed to some considerations about character that should be taken into account in the complex task of deciding what to do about enhancement. It also places Sandel on the horns of a dilemma: either he should stick to his guns and expunge this passage to make it consistent with the general tenor of his book, namely, that the pursuit of enhancements is so morally tainted by its roots in character deficiencies that we should forgo it altogether; or he should admit that he has not provided an "argument against enhancement," but instead has only made the uncontroversial point that considerations of character should be taken into account in deciding what to do about enhancement, while also admitting that he has done nothing to fill the yawning gap between making this point and providing any practical guidance about when we ought and we when ought not to pursue enhancements.<sup>23</sup>

#### 5. *Stuck at the "pros and cons" stage*

A fifth frustrating characteristic of the current state of the enhancement debate is that it has stalled: after more than 20 years, there is still a torrent of articles and books advancing the pros and cons of enhancement, as if it made sense to be either "for enhancement" or "against enhancement." I shall argue that being for enhancement or against enhancement makes as little sense as being pro-globalization or anti-globalization or, for that matter, being pro-technology or anti-technology. In all three cases, we are faced with a complex but undeniable fact: something momentous is happening on an increasingly large scale, there is every reason to believe it will continue, it is impossible to make sweeping claims about whether its effects are or will be good or bad overall, and there is no realistic prospect of stopping the development in

its tracks. Instead, the task is to try to understand the phenomenon in all its complexity, to resist the tendency toward sweeping condemnation or praise, and, above all, to start thinking hard about practical responses that are ethically sensitive, true to the complexity of the phenomena, and realistic. For fairly obvious reasons, effective responses to enhancement (and to globalization and technological innovation) will have both an individual and an institutional component: as individuals we will need to put our values in order, but we will also need to devise policies, and in some cases perhaps new institutions, to help ensure that those values are realized.

The most acerbic opponents of enhancement too often simply point out what they take to be the dangers of enhancement, leaving the reader with the impression that the solution is for us to strengthen our moral fiber, pull up our moral socks, and just say "no." Those who take a more positive stance toward enhancement acknowledge that there are serious risks, but they typically say too little about how we should mitigate them. For example, Jonathan Glover, one of the founders of modern Practical Ethics and one of the most astute writers on enhancement, says that we should make sure that our efforts to enhance our children do not express or worsen "ugly attitudes" toward those with disabilities.<sup>24</sup> His advice is sound, but doesn't say how we are to achieve the needed moral restraint.

The emergence of enhancement technologies is an institutional phenomenon: so far biomedical enhancements have appeared within a framework of research and regulatory institutions that are geared toward the treatment and prevention of disease, not toward enhancement. There is every reason to believe that morally sound and effective responses to it will have an institutional component. For one thing, individuals, acting without the coordination that institutions provide are unlikely to have either the knowledge or the power to resist the institutional forces which promote the development and use of enhancements. If this is so, then we should begin to try to move from the exchange of pros and cons to a constructive discussion of how we can cope, institutionally, with the challenges of enhancement. In Chapter Eight I argue that one of the central problems of justice that enhancement raises will require a global institutional response, and I explore what such a response might look like.

### *Positions on enhancement*

The chief division in the literature on enhancement is not between "pro-enhancement" and "anti-enhancement." It is between "anti-enhancement" and "anti-anti-enhancement." By the "anti-enhancement" stance I mean the view that enhancement as such and across the board ought to be avoided. By the "anti-anti-enhancement" stance I mean the view that enhancement is sometimes permissible.

Although, as I have already suggested, it is sometimes hard to determine exactly what their bottom-line conclusion is, harsh critics of enhancement such as Kass, Sandel, and President Bush's Council on Bioethics seem to be opposed to enhancement across the board, not just some enhancements or some enhancements in some circumstances. One reason to think that they are opposed to enhancement across the board is that the types of objections they raise to enhancement seem to be highly general. If the pursuit of enhancement as such betrays a desire for perfection or total mastery, or a failure to appreciate that our good depends on the naturally given, then presumably every effort to enhance will be morally tainted.

Others, such as George Annas and Jürgen Habermas, may not be opposed to enhancements as such, but are unreservedly opposed to all enhancements that involve germline genetic interventions in human beings—changes that can be passed on to the next generation. In contrast, there seem to be no prominent participants in the debate who are accurately described as "pro-enhancement," if this means they endorse enhancement as enthusiastically and as completely as Sandel and Kass reject it. For example, Jonathan Glover, Julian Savulescu, Nicholas Agar, Dan Brock, Nick Bostrom, David DeGrazia, Anders Sandberg, Eric Juengst, Thomas Murray, Bonnie Steinbock, and myself all reject the anti-enhancement view, yet we all have serious reservations about some enhancements in some circumstances. Further, unlike Habermas and Annas, none of this second group of writers advocates a permanent, blanket prohibition on enhancements involving human germline genetic interventions, although all appreciate the risks of this mode of enhancement and none thinks it is permissible at present. So, here is a striking asymmetry in the debate: there are some prominent writers who roundly condemn enhancement, but none who roundly endorse it.



For reasons I have already indicated in my analogy with globalization, I think that neither a "pro-enhancement" nor an "anti-enhancement" stance makes sense. But since there are prominent participants in the enhancement debate who take the "anti-enhancement" stance, I will provide a detailed critique of it. Finding out exactly what is wrong with the anti-enhancement view will also help us to appreciate what is valuable in it. I shall argue that some of the concerns voiced by anti-enhancement writers are serious, once they are stripped of hyperbole, and that a sound response to the challenges of enhancement must take them into account.

The reasonable alternative to the "anti-enhancement" stance is not the "pro-enhancement" stance but rather "anti-anti-enhancement"—the rejection of the admonition to forego enhancement entirely. The "anti-anti-enhancement" view is not monolithic: it includes some who are enthusiastic about a rather wide range of enhancements and some who are much more cautious and skeptical.

The division between "anti-enhancement" and "anti-anti-enhancement" is not the same as that between "conservatives" and "liberals." Some "liberal" writers (or who at least some would describe themselves as liberal) have strong reservations about enhancement, or even flirt with the "anti-enhancement" stance, because they believe that enhancements will generally only be available to the rich and worry that this will only worsen existing unjust inequalities. They believe this because they assume, rather than argue, that enhancements, or those enhancements that can have a negative impact on justice, will exclusively be market goods, available only according to ability to pay, *and* that they will be so expensive as to be unaffordable to many. In Chapter Two I challenge this assumption, which frames much of the current debate. I argue that whether or not a particular enhancement is treated simply as a market good or instead as a social good to which citizens have entitlements may depend on whether the State comes to regard it as a technology whose wide diffusion would contribute to national productivity. Here a historical perspective is useful: direct state action, in the form of public education, has played a major role in the diffusion of the most powerful cognitive enhancement technology to date, literacy. That cognitive enhancement has not been a purely market good and the fact that basic education has been treated as an entitlement has significantly limited inequalities in access to education that would otherwise have

existed. I also argue that whether, or for how long, an enhancement is affordable only to the rich will depend upon a number of factors, some of which are within our control.

Those who adopt the "anti-anti-enhancement" stance—those who disagree with the wholesale rejection of enhancement—do so in part because they find unconvincing various arguments that purport to show that enhancement is immoral as such or always too risky unconvincing. But they are also impressed with the potential benefits of enhancement. In contrast, for those who adopt the "anti-enhancement" stance, the benefits pale in comparison to the risks, in part because they tend to see enhancements solely or chiefly as vanity goods, unseemly efforts to master the human condition or to achieve perfection, or as attempts to gain a competitive advantage for oneself or one's children. In Chapter Two, I challenge this understanding of the value of enhancements by showing how some enhancements, especially those that improve our cognitive capacities and our capacities for cooperation, could, under the right circumstances, provide much broader, more morally respectable benefits.

As I have already noted, those who reject the "anti-enhancement" view, while more appreciative of the potential benefits of enhancement than their opponents, do not deny that there are serious risks. The risks they acknowledge are diverse, including the worsening of social injustices and the risk of unintended bad biological or psychological consequences. But those who reject the "anti-enhancement" position have too often rested content with unsatisfyingly vague acknowledgments of the problem of risk. With a few notable exceptions, they have not offered much more than platitudes—go slow, proceed with caution, constrain the development of enhancements by the demands of distributive justice, etc.—without providing much guidance on *how* to reduce the risks.<sup>25</sup>

In Chapters Six and Eight, I begin to remedy this deficiency in the anti-anti-enhancement position. Chapter Six offers a set of cautionary heuristics for what many regard as the riskiest mode of enhancement, the genetic modification of human embryos. Chapter Eight outlines an institutional proposal for addressing one of the most serious issues of justice—the possibility that highly beneficial enhancements may not become available to the worst off or may do so too slowly, where this would result in a worsening of unjust inequalities.

*The idea of the enhancement enterprise*

Because I find the "anti-enhancement" view both morally implausible and unrealistic (like saying "no" to globalization) and the "anti-anti-enhancement" view unsatisfyingly vague, it is incumbent on me to propose a better alternative. My proposal is to try to reconfigure the enhancement debate in a more fruitful way by examining the following question: Is it ethically permissible for a reasonably liberal and democratic society to embark on *the enhancement enterprise*? A society embarks on the enhancement enterprise if, through its regular political processes, it (1) allows considerable freedom to individuals and organizations to develop and choose to use enhancement technologies, including biomedical enhancement technologies, and also (2) devotes significant public resources (a) to research that can be expected to result in enhancement technologies, (b) to creating a vigorous and informed public debate about the benefits and risks of such technologies, and (c) to developing effective and morally sensitive policies and institutions for coping with the challenges of enhancement.

A society that engages in the enhancement enterprise recognizes the *legitimacy* of biomedical enhancement, as one mode of enhancement among others, both as a personal aim that individuals may permissibly pursue and as one permissible policy goal among others with which it must compete, through the political process, for public resources. In its public policy, such a society rejects the view that biomedical enhancement as such, either because it is *enhancement*, rather than the treatment or prevention of disease, or because it uses *biomedical* technology or involves biological changes, is off-limits. By recognizing enhancement, including biomedical enhancement, as a legitimate aim, it implicitly rejects the ill-founded, sweeping generalization that the pursuit of enhancement betrays morally unacceptable motivations or bad character.

When a society undertakes the enhancement enterprise it thereby rejects the anti-enhancement position, the view that biomedical enhancements are to be avoided altogether. More positively, it commits itself to developing the moral and institutional resources needed to pursue enhancements responsibly.

The decision to recognize that enhancement is a legitimate aim for individuals and for social policy makes a great deal of difference. It changes the way deliberations about biomedical enhancements are

framed. One of the most important framing shifts is that it signals that biomedical enhancement must compete fairly and openly with other legitimate social goals in the process of allocating resources. In contrast, in a society in which biomedical enhancement comes in through the backdoor, piggy-backing on the treatment and prevention of disease, ever-greater amounts of social resources may be devoted to it, but without any opportunity for democratic, scientifically informed decisions about its comparative worth. Regarding biomedical enhancement as legitimate takes the "no enhancements" alternative off the table, so far a social policy is concerned, but in doing so it *increases* our ability to say "no" to particular biomedical enhancements, either by prohibiting their use or by refusing to support their development with public funding.

A final point about the notion of legitimacy is worth making. Regarding biomedical enhancement as a legitimate social aim does not imply that all individuals are expected to agree that it *is* an appropriate aim for social policy, much less that all must regard it as something they ought to undertake for themselves or their children. In any pluralistic society, there will be some legitimate social policy aims that are rejected by some citizens. Engaging in the enhancement enterprise, as I said earlier, means giving individuals considerable freedom to pursue enhancements if they choose, but also to *not* do so. At some point, however, the implementation of a social policy aimed at achieving widespread use of a particular biomedical enhancement may come into conflict with some individuals' beliefs about what ethical procreation or parenting is or with their own personal preferences about how they ought to act. This is nothing new, of course: educational policies and policies regarding medical care for children also conflict with parental preferences and values.

In my judgment, it will probably be quite a long time before we have biomedical enhancements that would be both powerful enough and safe enough for it to make sense to develop social policies to try to ensure their large-scale implementation. For the foreseeable future, pursuing the enhancement enterprise will largely consist of trying to make good decisions about how much resources ought to be devoted to research on various types of enhancements, how such research can be conducted safely and ethically, and on how to regulate and monitor the effects of enhancements that are being used, either as spin-offs from treatment and prevention of disease or explicitly as enhancements.

One aim of this volume is to try to determine whether the most serious worries about biomedical enhancement—even if they are insufficient to rule out enhancement across the board—give us good reason to refrain from embarking on the enhancement enterprise. My answer will be: no, not at present anyway. But I also hope to make the case for a more positive claim: there are powerful reasons in favor of a society like ours embarking on the enhancement enterprise, and no objections to enhancement that are sufficient to outweigh them, at least at the present time.

The reasons in favor of the enhancement enterprise are manifold. First, once we get beyond the dubious assumptions that enhancements will be predominantly zero-sum, competitive goods, or expressions of bad character, it becomes clear that the potential social benefits of pursuing the enhancement enterprise are great. Second, the risks of living in a society in which enhancements continue to come in through the backdoor, as new applications of treatment technologies, or through research conducted in countries with inadequate controls on human experimentation, are unacceptably high, given the alternative of pursuing the enhancement enterprise. A third advantage of pursuing the enhancement enterprise is that doing so would facilitate institutional efforts to control enhancements in the name of justice, such as proposal for a modification of intellectual property rights I explore in Chapter Eight. Fourth, recognizing the legitimacy of enhancement avoids inappropriate medicalization: once we recognize the legitimacy of enhancement as a familiar and admirable human activity, there is no need to pretend that biomedical interventions to achieve enhancement are treatments of diseases, thereby reducing the tendency to multiply diseases and disorders without good reason for doing so. At present, to get (legal) access to cognitive enhancement drugs, individuals must convince physicians (and perhaps themselves as well) that they have attention deficit disorder, narcolepsy, Alzheimer's dementia, or some other cognitive disorder. There is much to be said for being in a society in which efforts to improve our capacities do not require us to view every gap between the way we are now and the way we desire to be as evidence of disease. In a society in which enhancement was recognized as a legitimate human endeavor, there would be less risk of inappropriate *pathologization*.<sup>26</sup> Recognizing the legitimacy of enhancement would liberate not only individuals, but also the research enterprise from the constraints of the

medicalization/pathologization framework. The current regulatory framework for drug testing and approval is geared towards showing efficacy in the treatment of disease. Regulation for safety is needed, whether for enhancements or treatments, but shoehorning enhancements into the disease treatment regulatory framework is likely to increase the cost to the consumer and deter some potential researchers and producers.

Consider the case of drugs now being used for cognitive enhancement. Where enhancement is not recognized as legitimate, those with the money to pay black-market prices or the social connections and education to persuade physicians to prescribe Ritalin or other drugs "off label" will have access; others will not. Ironically, prohibiting enhancements out of fear that they will only be available to the rich may exacerbate the problem of injustice. In a society in which the legitimacy of enhancement is recognized, new regulatory institutions can be developed to facilitate the wider and more rapid diffusion of highly beneficial and safe enhancements, in part by eliminating the misplaced constraints of the pathologization model and the unnecessary costs they entail.<sup>27</sup>

### *How to proceed*

I have suggested that we ought to get beyond the pros and cons of enhancement and do the hard work of thinking how we can best respond, as individuals and institutionally, to the complex phenomena of enhancement. If that is the case, then why not devote the whole volume to such practical responses?

The reason is simple: before we can go very far in developing appropriate practical responses to the challenges of enhancement, we need to achieve greater clarity on what the real ethical issues are. To do this, we must first debunk the murky rhetoric and replace it with arguments that we can evaluate critically, stop acting as if evolutionary biology is irrelevant to the enhancement debate, face up to the fact that the history of attempts to solve substantive ethical issues by appealing to human nature is a story of unmitigated failures, and try to be more methodologically self-conscious, where this means recognizing when a conclusion depends on reliable empirical evidence and shouldering the responsibility for providing it. In brief, we need to do a better job of *framing* the ethical issues. That is my primary goal in this volume.

From what I have said so far, the reader might conclude that I think there is little of value in the enhancement literature. That is not the case. There is much to be admired. In what follows I hope both to acknowledge the best work on the topic and to build on it. I also believe, however, that this volume will go some distance toward remedying the deficiencies of the current debate listed above, and that if it does it will make a significant new contribution.

My approach to the ethics of enhancement is distinctive in several respects. First, thanks to the generous instruction of three philosophers of biology, David Crawford, Russell Powell, and Alex Rosenberg, it is more informed by an accurate understanding of evolutionary biology.

The second distinctive feature of my approach is the traction that is provided by examining the question of whether a reasonably liberal and democratic society may—or even ought to—embark on the enhancement enterprise. Keeping this question in mind will force us to keep repeating the query: “So what?” or, a bit more respectfully, “What does your argument (“for” or “against” enhancement) imply about what we should or shouldn’t do—what’s the bottom line?” The question of whether a society like ours may or should (provisionally) pursue the enhancement enterprise is the right question to ask, given that we will have enhancements no matter what any ethicist says and regardless of what political decisions are taken on enhancement. Instead of merely noting the various considerations in favor of or against enhancement, it is more fruitful to try to focus the debate by asking whether these pros and cons can support an answer to the question of whether we ought to undertake the enhancement enterprise.

Third, I believe that my approach is also more methodologically self-conscious than most contributions to the enhancement debate. I make a serious effort to ask when a claim is empirical and when it is conceptual, and if it is the former, whether there is good evidence to support it. I try to avoid reliance on unsupported, *a priori* psychological generalizations.

The majority of my examples of deficiencies in the enhancement debate have been drawn from those who hold “anti-enhancement” views. From this one might infer that I am “pro-enhancement.” Not so: I would put myself in the “anti-anti-enhancement” category. But I do want to say something more substantive and action-guiding than the claim that enhancement is sometimes permissible. Focusing on the question of the enhancement enterprise, which I conceive of in

institutional terms, and exploring a concrete institutional response to problems of justice, will help to achieve this goal. Thus, my approach is distinctive in a fourth and final way: it takes institutions seriously. To put the same point a bit differently: I operate as a political philosopher who recognizes the relevance for ethics of institutional design in the real world.

This volume does not purport to be a comprehensive treatment of the ethics of biomedical enhancement. I doubt that anyone could do that in a volume of reasonable length; but I am certain that I could not do it even if given unlimited space. Instead, my aim is to improve the enhancement debate, not to end it, by clearing obstacles from the path of progress and taking a few steps in the right direction. It is worth being more explicit about what I will not address in this volume. To do this, it is necessary to attempt an outline of a more comprehensive picture of the ethics of enhancement.

#### *Sorting out the issues*

The most important concerns about enhancement fall under eight headings: (1) character, (2) human nature and the natural, (3) the possibility that enhancements would produce beings with a higher moral status than persons, (4) unintended (bad) consequences, (5) justice, (6) research on enhancements, (7) abuses of enhancement technologies by governments (e.g., for unacceptable military applications or suppression of domestic dissent), and (8) the risk of a “new eugenics.” My focus is on the first five topics. It is not that I think the other topics are unimportant. I do think, however, that there is something to be said for concentrating on the first five, because unless considerable progress is made on them, one will lack essential resources for fruitfully exploring the last three. For example, how much risk to experimental subjects is permissible will depend, *inter alia*, on how valuable the enhancements one is trying to develop are. Further, if the enhancements in question are ethically impermissible, then presumably research to develop them would be impermissible as well. Similarly, if the benefits of certain enhancements are great enough (and there are no valid moral objections to trying to achieve them), then it may be reasonable to accept a somewhat higher risk that they will be misused by government than would otherwise be the case.

The risk of a “new eugenics,” is really two distinct concerns. The first is fear of a resurgence of *state-driven coercive* eugenics: discriminatory, and grossly unjust government policies such as compulsory sterilization, augmented by powerful technologies that the eugenicists only dreamed of, including genetic interventions in human embryos. The second is the worry that even if there is no state-driven eugenics, there will a “laissez-faire eugenics”: private choices in a market for enhancements will lead to the same attitudes and results that characterized the old, state-driven eugenics. Most participants in the academic debate about enhancement appear to believe that the risk of a new state-driven eugenics is relatively low, at least in democratic countries with well-entrenched civil and political rights, including reproductive rights. They assume that the rights culture in such countries is sufficiently developed and stable enough—and the “lesson” of the old eugenics sufficiently vivid—that a new state-driven eugenics is unlikely.<sup>28</sup> They focus, instead, on the ethical issues that will arise if enhancements are largely treated as market goods. I have already said why I think this line of thinking is dubious and may lull us into an unwarranted complacency: the state may take an interest in the development and diffusion of those enhancements that promise greater productivity. To that extent, I address the concern about a new state-driven eugenics and take it *more seriously* than is usually the case. One point I make in this regard is worth previewing: in the case of enhancements that promise increased productivity, the worry, at least in states with a deeply rooted “rights culture,” may not be *coercive* state action (compulsory sterilization or compulsory genetic selection or engineering of human embryos), but rather state subsidies for and encouragement of individual’s choices to undertake enhancements.

Such a “softer,” noncoercive state-driven eugenics would build upon other forces that encourage recourse to enhancements. The combination of state encouragement, vigorous private marketing, and the herd-like impetus of popular culture might result in a situation in which individuals had more choices, but were worse off. For example, even if the state did not force people to use technologies to produce “better” embryos, many people might feel compelled to do so, in the face of government subsidies and social pressure to avoid having “substandard” offspring.

Such concerns clearly should not be dismissed, but it is important to recognize that they are extremely speculative. At present we simply don’t

know enough either about how the state will regard various enhancements or whether individual values and social norms will develop in such a way as to exacerbate or mitigate dangerous state policies regarding enhancement. It is safe to say that we should be on the alert for such developments, but at present the best strategy may be to concentrate on the first five concerns about enhancement. Working out a reasonable response to them may well be a necessary step toward mitigating the risk of a “new eugenics.”

### *Why bother with debunking bad arguments and murky rhetoric?*

If some of the anti-enhancement “arguments” are as flimsy or confused as I say they are, why bother with criticizing them? There are two reasons. First, sometimes there is a valid concern to be extracted from the verbal thicket (or to be found in its general vicinity). Second, bad arguments can be quite influential. If the aim of Practical Ethics is to make things better (or at least to prevent them from getting worse), morally speaking, then practical ethicists have an obligation to address bad arguments, if they think they are influential.<sup>29</sup> I will focus special attention on debunking bad arguments that could be seen as ruling out embarking on the enhancement enterprise.

### *Enhancement and well-being*

To enhance is to improve, augment, make better. There is considerable controversy about how exactly to define “biomedical enhancement” in the way that is most fruitful for exploring the ethical issues. To avoid wasting space that is better allocated to substantive issues, I will operate with a relatively uncontroversial definition: a biomedical enhancement is a deliberate intervention, applying biomedical science, which aims to improve an existing capacity that most or all normal human beings typically have, or to create a new capacity, by acting directly on the body or brain.

One advantage of this definition is that it helps us to avoid a simple mistake: thinking that an enhancement by definition makes one better off. Enhanced hearing, in a noisy environment, might make an easily distracted person worse off. Enhanced memory, unless accompanied by enhanced capacities to control the activation of memories or the management of their psychological effects, might also be problematic.

The attempt to enhance a capacity can go wrong in at least two ways, then: it can fail to achieve its goal; or it can achieve its goal but make us worse off.

Another advantage of the above definition of biomedical enhancements is that it makes clear the fact that there can be important enhancements that are not biomedical. For example, literacy is an exceedingly powerful cognitive enhancement. Depending on how one looks at what literacy enables us to do, one might say either that it greatly improves the cognitive capacities that humans had before the invention of writing or that it gives us new cognitive capacities. Either way, the point is that literate human beings can perform cognitive tasks that illiterate ones can't and that (some of) these tasks are extremely valuable. Literacy does not count as a *biomedical* enhancement, according to our definition, because teaching people to read and write is not an intervention that applies biomedical science to improve existing capacities by acting directly on the brain or body. As it turns out, learning to read and write *does* change the brain, but that is not the aim of teaching people to read and write and, at least until recently, teaching literacy has not relied on biomedical science. Similarly, institutions tremendously enhance human capacities for cooperation and coordination, but they are not biomedical enhancements.

Literacy and institutions, although not biomedical enhancements, have had profound impacts on the human genome: they have laid the groundwork for developments that have brought together formerly isolated various human populations, allowing genetic combinations that would not otherwise have occurred. The agrarian revolution and the development of cities that it made possible have also changed the human gene pool, by subjecting human beings to diseases that have selected for disease resistant genes. Qua enhancement, what matters is that literacy improves cognitive functioning; the fact that it does so without biomedical interventions is irrelevant to its being an enhancement. Whether cognitive gains are achieved by learning to read and write or by implanting a microchip in the brain is irrelevant; the term "enhancement" is equally applicable to the two cases.

The examples of literacy and institutions illustrate three important points to keep in mind in our exploration of the ethics of biomedical enhancement. First, enhancement is not new. To a large extent, human history is the history of enhancement. Second, at this point in the

development of biomedical science, there is no reason to believe biomedical enhancements will be the most profound or morally problematic enhancements. Every major enhancement has created moral and physical risks. (The awesome collective cognitive enhancement we call science has created the risk of a nuclear holocaust, for example.) Third, some non-biomedical enhancements produce biological effects, including changes in the human genome. So, if biomedical enhancements are morally problematic, it cannot be because they are enhancements or because they raise moral issues or because they involve biological or genetic effects.

### *Types and modes of enhancement*

Five types of enhancement are widely discussed in the literature on the ethics of biomedical enhancement: improvements in physical characteristics such as speed, strength, and endurance; improvements in cognitive capacities, such as various aspects of memory, information-processing, and reasoning; improvements in affect, emotion, motivation, or temperament; improvements in immunity or resistance to diseases; and increased longevity. In principle, each of these types of enhancement could be achieved by a plurality of *modes* of enhancement—different biomedical means for bringing the desired improvement about.

The number of modes of biomedical enhancement is increasing as biomedical science rapidly advances. It would be unwise, therefore, to try to provide an exhaustive list. Instead, I will simply indicate what some of the more promising existing or realistically anticipated modes of biomedical interventions are ones that can reasonably be expected to be harnessed for the pursuit of some or all of the types of enhancement listed above. These include (1) selection of embryos for implantation according to genotype (if genotypes associated with "better than normal" phenotypes could be reliably identified); (2) genetic engineering of embryos, by insertion of human or nonhuman animal genes or artificial chromosomes; (3) administration of drugs (e.g., cognitive enhancement drugs); (4) implantation of genetically engineered tissue or organs; and (5) brain-computer interface technologies, using nanotechnology to connect neural tissue with electronic circuits.

With the possible exception of genetic engineering of embryos, it is hard to discern any morally relevant differences among these different



biomedical modes of enhancement. It is interesting to note that for the most part the concerns about enhancement apply, not just across a wide variety of modes of biomedical enhancement, but to nonbiomedical enhancements as well. In fact, as I have already noted, the harshest criticisms of biomedical enhancement appear to apply to enhancements *per se*, whether biomedical or not. This striking generality ought to make us wary of what I described earlier as the anti-enhancement position—the rejection of biomedical enhancements as such—because it means that if we accept that view, we would not only have to reject cognitive enhancement drugs, but must also regard literacy, institutions, and the agrarian revolution in a highly unfavorable light as well.

To appreciate this point, let us focus for a moment on literacy. The spread of literacy and its integration into the fabric of our lives undoubtedly has made serious encroachments on the domain of “the unbidden” or “the given,” such as by introducing a higher degree of coordination and predictability in human affairs, and by enabling the development of science that can be used to control and shape many aspects of our environment, including medical treatments that significantly reduce uncertainties regarding health and illness. I, for one, am *grateful* (to our ancestors) that appreciation of “the given” or “openness to the unbidden” did not prevent them from developing this powerful cognitive enhancement.

Some participants in the enhancement debate have tried to rely on a distinction between therapy (understood broadly as including the treatment and prevention of disease) and enhancement. There are some contexts in which the distinction can be clearly drawn, and some in which the line is blurry. The chief point, however, is that when the distinction can be drawn it is of limited if any use from the standpoint of moral guidance. The mere fact that an intervention is an enhancement rather than a therapy does nothing to show that it is impermissible, or even morally problematic. Numeracy, literacy, and computers are all cognitive enhancements, but that doesn’t count against them at all, morally speaking. Some biomedical enhancements, perhaps many, may turn out to be no more morally problematic than these historical enhancements. Of course, there may be moral objections to the use of cognitive enhancement drugs in certain contexts or for certain purposes; but it is not the fact that they enhance normal cognitive performance rather than treat or prevent disease that makes them problematic. After

all, caffeine is a cognitive enhancement drug, but it would be unreasonable to say that people should be able to get access to it only if they have a prescription and suffer from a disease, such as narcolepsy.

On some accounts, “the ends of medicine” are restricted to treating and preventing disease, restoring normal functioning, and offering comfort and care for those who are ill or disabled. Talk about the “ends of medicine” is essentialist talk and as such it ought to be regarded with a good deal of skepticism, especially when applied to medicine. As I show in Chapter Two, essentialist talk often disguises highly controversial moral claims as factual claims and this is hardly conducive to fruitful ethical analysis. Instead of contending that medicine *is* this or is *that*, we should be asking whether we should have this or that sort of institution or this or that sort of profession, no matter what we call it. It might turn out that there is something to be said for having an institution or a profession that we call medicine and that focuses on treatment, prevention, restoration of normal functioning, comfort, and care, rather than on enhancement. That is perfectly compatible, however, with also saying that we should recognize different professional roles that encompass the provision of enhancement. The key point is that even if one accepts the controversial view that enhancement is not a “proper” end of medicine, that tells us nothing about whether enhancement is morally permissible. Nor does it even exclude the medical profession from playing an important role in the enhancement enterprise. Whether or not biomedical enhancement is regarded as being part of medicine, medical expertise will be needed to assess its safety and monitor its effects, during the course of research and when the technology is deployed.

In my reflections on biomedical enhancement, I will not spend much time on the enhancement/therapy distinction. Instead, I will meet the critics of enhancement on their own terms, arguing that even if certain biomedical interventions are clearly enhancements and not therapies, this fact about them is of no moral significance and that they must be assessed on other grounds.

In much of this volume, I will concentrate on enhancement drugs more than on other modes of biomedical enhancement, for two reasons. First, pharmaceutical enhancements are on the way, if not already here. On some accounts, performance-enhancing drugs, if they have not already done so, will before long extend the upper bound of normal human physical strength, speed, and stamina. Several widely available

drugs, including Ritalin, Adderall, and Provigil, improve cognitive functioning in normal individuals, and there is reason to expect that much more powerful cognitive enhancement drugs will soon be developed. Focusing on enhancement drugs, rather than on more exotic interventions such as nanotechnology-enabled microcomputer brain implants reduces the risk of exceeding the bounds of reasonable speculation. Second, pharmaceutical enhancements are likely to be less expensive (especially after the drugs go "off patent") than other modes of biomedical enhancement, so focusing on them increases the likelihood of engaging issues that will be important to many people.

### *The plan of this volume*

The present chapter sketches the landscape of the enhancement debate, identifies its deficiencies, and previews my efforts to improve the quality of the debate. Chapter Two places biomedical enhancements squarely in the context of a long history of enhancements and argues that it is illuminating to view the ethics of enhancement through the lens of the *ethics of development*. ("Development" here is used in the economists' sense, not as in texts on the biological development of individual organisms, i.e., ontogeny.) The key to achieving this framing shift is to recognize that some enhancements—especially those that improve cognition—should not be seen solely, or even primarily, as zero-sum. This chapter then goes on to make the case for the plausibility of the proposal that in a reasonably liberal and democratic society it is morally permissible to pursue the enhancement enterprise. The same reasons that support the conclusion that embarking (provisionally) on the enhancement enterprise is morally permissible also do a good deal to support the stronger conclusion that it is ethically obligatory to do so.

Chapter Three articulates and evaluates the claim that the pursuit of enhancement is an expression of defective character, or in more traditional terms, a symptom of vice or at least of the lack of virtue. I argue that once we puncture the inflated rhetoric, serious concerns remain, but that they do not support anything approaching a blanket rejection of biomedical enhancement—not even in the case of what some regard as the most radical biomedical enhancement of all, the genetic engineering of human embryos. Nor do they amount to a cogent case against pursuing the enhancement enterprise.

Chapter Four examines a cluster of worries about enhancement that are framed in terms of human nature or the natural. The chief conclusion of this chapter is that appeals to human nature and the natural cannot illuminate the most difficult issues concerning biomedical enhancement, that anything of value that can be framed in these terms can be better framed without recourse to them, and that they are so confused that we should avoid them altogether in grappling with the ethical issues of enhancement.

Chapter Five explores the possibility that the mainstream of traditional Conservative thought in the tradition of Edmund Burke provides a better vantage point from which to argue against the enhancement project than the work of contemporary conservative bioethicists such as Fukuyama, Sandel, and Kass. I conclude that mainstream traditional Conservative thought provides no conclusive reasons against pursuing the enhancement project and—surprisingly—supplies a powerful reason *in favor* of pursuing it. A central Conservative thesis is that human nature includes cognitive imperfections that doom efforts to achieve large-scale improvements in the human condition. I argue that this central conservative thesis speaks strongly in favor of enhancement, if these cognitive imperfections may be safely ameliorated through the use of biotechnologies. I also argue that, at present, there is no good reason to conclude that our cognitive imperfections are so severe as to rule out our significantly ameliorating them.

Chapter Six grapples with what I believe to be the most serious objection to embarking on the enhancement project: the risk of unintended bad consequences. Here I argue that the discussion of this risk has been distorted by a failure to appreciate the full range of the possible benefits of enhancement and by mistaken views about evolution. The simple but often neglected point here is that the assessment of risk is comparative. Building on the discussion of the potential benefits of enhancement in Chapter Two and on the basis of a more adequate understanding of evolution, I offer a set of cautionary heuristics that are designed to reduce the risk of unintended bad consequences in the case of what many regard as the riskiest type of enhancement: deliberate germline genetic modification.

Chapter Seven addresses a cluster of concerns that revolve around a fundamental, but obscure concept that lies at the heart of moral theory: moral status. I distinguish between the claim that biomedical



enhancements could eventually produce posthumans (beings of a different species from *Homo sapiens*) and the quite different claim that they could produce postpersons—beings with a higher status than that of persons. I also argue that the concern that enhancements may render the concept of human rights obsolete have either failed to distinguish between posthumans and postpersons or misunderstood what human rights are. Finally, I argue that even if there is little risk that enhancement will produce a morally bifurcated world of persons and postpersons, it could produce challenges to equality that cut deeper than the familiar worry about exacerbating existing unjust distributions of resources.

Chapter Eight continues the exploration of justice issues, focusing on the problem of inadequate diffusion: the worry that valuable biomedical enhancements may not be available or may only be available after an extended period of time, to the world's poorest people. In keeping with Chapter One's emphasis on the fact that enhancement is not new and that biomedical enhancement is not distinctively morally problematic, I situate this problem as one aspect of a the larger problem of inadequate diffusion of beneficial technologies, and offer a global institutional response to this larger problem. Thus, the volume concludes with an example of how to move beyond the exchange of pros and cons to a constructive, practical, institutional response to one of the major challenges of biomedical enhancement.

### *Beyond humanity?*

The question posed by the title of this volume is deliberately ambiguous. On one interpretation, the question is whether biomedical technologies will enable us to go beyond humanity in the sense of overcoming limitations that human beings have always had to live with and that may be included in a reasonable concept of what it is to be human.

On a second interpretation, the title poses the question of whether enhancement is overreach: Does humanity, as it is now, have the wisdom and the character to face the challenges of enhancement, or is responsible enhancement beyond our human capacities? Both of these questions, I shall argue, are even more complex and more difficult to answer than they appear to be.

### *Notes*

1. The quoted passage combines common anti-enhancement views, each of which I carefully articulate, reference, and analyze as the argument of this book progresses.
2. See, for example, Michael Sandel (2007), *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Harvard University Press), pp. 99–100. Sandel suggests that “there is something appealing, even intoxicating, about a vision of human freedom unfettered by the given.” But he contends that our quest for mastery is flawed because it “threatens to banish our appreciation of life as a gift, and to leave us with nothing to affirm or behold outside our own will.” Ibid.
3. President's Council on Bioethics (2003), *Human Cloning and Human Dignity: An Ethical Inquiry* (Washington, DC: National Bioethics Advisory Commission), pp. 287–290; Sandel 2007, *supra* note 2.
4. Michael Sandel (2004), “The Case Against Perfection: What's Wrong With Designer Children, Bionic Athletes, and Genetic Engineering?” *The Atlantic Monthly* 292(3): 51–62; Michael Sandel (2007), *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Cambridge, MA: Harvard University Press) pp. 93–95.
5. Many philosophers of biology not only reject the natural-unnatural distinction (see Marc Ereshefsky (2007), “Where the Wild Things Are: Environmental Preservation and Human Nature,” *Biology and Philosophy* 22: 57–72), but also the notion of ‘normal function’, where the latter is not simply a statistical generalization, but rather a normatively infused one. See David Hull (1986), “On Human Nature,” in *Philosophy of Science Association*, vol. 2(A), Fine and P. Machamer (eds.) (East Lansing, MI: Philosophy of Science Association) pp. 3–13.
6. Jürgen Habermas (2003), *The Future of Human Nature* (Cambridge: Polity).
7. See Francis Fukuyama (2003), *Our Posthuman Future: Consequences of the Biotechnology Revolution* (Profile Books). Fukuyama views genetic enhancement technologies as a threat to human nature. He states (p. 172) as follows: “What is it that we want to protect from any future advances in biotechnology? The answer is, we want to protect the full range of complex, evolved natures against attempts at self-modification. We do not want to disrupt either the unity or the continuity of human nature, and thereby the human rights that are based on it.” See also George Annas (1998), “Why we should ban human cloning,” *New England Journal of Medicine* 339: 122–125; Leon Kass (1997), “The Wisdom of Repugnance,” *New Republic* 216(22): 17–26.
8. Allen Buchanan (2009), “Human Nature and Enhancement,” *Bioethics* 23(3): 141–150; see also Hull 1986, *supra* note 5.
9. For exceptions, see R. Powell (forthcoming), “The Evolutionary Biological Implications of Human Genetic Engineering,” *Journal of Medicine and Philosophy*; R. Powell, and A. Buchanan (2009), “Breaking Evolution's

- Chains: The Promise of Enhancement by Design," in *Enhancing Human Capacities*, Julian Savulescu (ed.) (Oxford University Press); N. Bostrom and A. Sandberg (2009), "The Wisdom of Nature: An Evolutionary Heuristic for Human Enhancement" in *Human Enhancement*, Julian Savulescu and Nick Bostrom (eds.) (Oxford University Press).
10. For a discussion, see Norman Daniels (2009), "Can Anyone Really Be Talking About Modifying Human Nature," in *Human Enhancement*, Julian Savulescu and Nick Bostrom (eds.) (Oxford University Press), pp. 25–42.
  11. See Matt Ridley (2003), *Nature Via Nurture: Genes, Experience, and What Makes Us Human* (New York: Harper Collins). The idea that there are traits whose development does not depend on the environment was completely undermined by the middle of the twentieth century, when it was shown that environmental variables are indispensable for the development of nearly all phenotypic traits. See D. Lehrman, "A critique of Konrad Lorenz's theory of instinctive behavior," *The Quarterly Review of Biology*, 28 (1953): 337–363.
  12. See, for example, Peter Richerson and Robert Boyd (2005), *Not By Genes Alone: How Culture Transformed Human Evolution* (Chicago, IL: University of Chicago Press).
  13. See Thomas Murray (2007), 'Enhancement', in the *Oxford Handbook of Bioethics*, B. Steinbock (ed.) pp. 491–515 (Oxford University Press); Allen Buchanan (2009), 'Human Nature and Enhancement,' *Bioethics* 23(3): 141–150; Bonnie Steinbock (2008), 'Designer babies: choosing our children's genes', *Lancet* 372(9646): 1294–1295.
  14. Cited in Richard Dawkins (2003), *A Devil's Chaplain: Reflections on Hope, Lies, Science, and Love* (Houghton Mifflin Harcourt) p. 8.
  15. Sandel 2007, supra note 2. See also Leon Kass (2003), "Ageless Bodies, Happy Souls," *The New Atlantis* 1: 9–28; Leon Kass (2004), "L'Chaim and Its Limits: Why Not Immortality?" in *The fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal*, Stephen Post and Robert Benstock (eds.) (Oxford University Press).
  16. Sandel 2007, supra note 2, pp. 99–100.
  17. See, for example, Michael Sandel (2007) *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Cambridge, MA: Harvard University Press) pp. 89–92.
  18. Leon Kass, "Ageless Bodies, Happy Souls," *The New Atlantis* 1 (2003): 9–28.
  19. It may be worth noting here that some of the world's major religions teach that it is a good thing to want immortality.
  20. See President's Council on Bioethics 2003, supra note 3, pp. 101–106; Kass 1997, supra note 7.
  21. See President's Council on Bioethics 2003, supra note 3, pp. 110–112.

22. Michael Sandel (2007), *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Harvard University Press), p. 96.
23. I characterize the point that the enhancement debate should take character into account as uncontroversial for two reasons. First, it is so obviously plausible as to be a truism. Second, contrary to what Sandel suggests, the debate has recognized that character is relevant for quite a long time. For example, at least since 2000 there has been a vigorous discussion in the scholarly literature as to whether biomedical enhancements of the characteristics of children expresses morally deficient attitudes toward people with disability. See Dan Brock (1995), "The Non-Identity Problem and Genetic Harms—The Case of Wrongful Handicaps," *Bioethics* 9(3): 269–275.
24. Jonathan Glover, *Choosing Children: Genes, Design, and Disability* (Oxford: Oxford University Press, 2003, p. 36).
25. See, for example, Julian Savulescu, who simply replies to the worry that enhancements might bring discrimination toward the unenhanced that "Discrimination is our choice—not written into our biology." Julian Savulescu (2006), "Justice, Fairness, and Enhancement," *Annals of the New York Academy of Sciences* 1093(1): 321–338. The question is this: how are we to make this choice effective?
26. See Anders Sandberg (forthcoming), "The Economics of Cognitive Development," in *Enhancing Human Capabilities*, Julian Savulescu et al. (eds.) (Oxford: Wiley-Blackwell).
27. Greely, Henry, Sahakian, Barbara, Harris, John, Kessler, Ronald C., Gazzaniga, Michael, Campbell, Philip, Farah, and Martha J. (2008). "Towards responsible use of cognitive-enhancing drugs by the healthy." *Nature* 456: 702–705.
28. Nicholas Agar (2004), *Liberal Eugenics: In Defence of Human Enhancement* (Wiley-Blackwell).
29. Allen Buchanan (2009), "Philosophy and Public Policy: A Role for Social Moral Epistemology." *Journal of Applied Philosophy* 26(3): 276–290.