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## ENHANCEMENT AND THE ETHICS OF DEVELOPMENT

### *Why all the fuss about enhancement?*

To enhance is to make better, so how could anyone object to enhancing anything, especially our own, notoriously flawed selves? One might reply that enhancement *if successful* is unobjectionable (after all, better is better), but that efforts to achieve betterment may go seriously awry. The best is the enemy of the good, so the saying goes.

The most vocal critics of the enhancement of human beings by the application of biomedical technologies have a deeper concern.<sup>1</sup> Their worry is not that those who pursue enhancements will fail to achieve their goals but that they will succeed. Jurgen Habermas, Michael Sandel, Francis Fukayama, and Leon Kass advance arguments to show that there is something deeply wrong with achieving the enhancement of human beings.<sup>2</sup> They also believe, not surprisingly, that attempting to enhance is wrong.

### *Reframing the debate*

My aim in this essay is not to evaluate the many arguments for and against enhancement. Nor will I undertake the daunting task of trying to determine which of the enhancements discussed in the debate are likely to become available or when.<sup>3</sup> Instead I want to clear a path for more fruitful thinking about the ethics of enhancement by showing that two false framing assumptions have seriously distorted the debate.

The first framing assumption, call it FA1, is that the most significant risks of enhancement are serious unintended *social or collective harms*, while the most significant benefits, again very broadly conceived, are *private or personal goods*, that is, advantages to the persons who are enhanced (or to their parents). Different writers emphasize different possible social or collective harms, from the destruction of ‘(truly) human reproduction’ (Kass) or the loss of the sense of “giftedness” (Sandel), to an exacerbation of existing unjust inequalities, to the loss

of our species' fitness for survival. Discussions of the benefits of enhancement often focus on the exercise of choice and the satisfaction of aesthetic or preferences to excel in competition.<sup>4</sup>

According to this first framing assumption, the key public policy decision is whether the private benefits that enhancements would confer are worth the risk of social harms that they may produce. In addition, especially so far as the critics of enhancement are concerned, there is a tendency to focus on cases where the enhancement of some will disadvantage those who are not enhanced—to assume that enhancement is likely to be largely a zero sum affair.<sup>5</sup>

I will argue that this first framing assumption is false, because some enhancements, including those that are most likely to garner the resources needed to make them widespread, will have the potential to bring broad social benefits that cannot be reduced to the gains for those who are enhanced (or their parents). I will also argue that it is mistaken to focus on situations in which enhancements will have zero sum effects. My critique of the first framing assumption will rest on two key theses: (a) that some enhancements will increase human productivity very broadly conceived and thereby create the potential for large-scale increases in human well-being, and (b) that the enhancements that are most likely to attract sufficient resources to become widespread will be those that promise increased productivity and will often exhibit what economists call *network effects*: the benefit to an individual of being enhanced will depend upon, or at least be greatly augmented by, others having the enhancement as well. When these two points are appreciated, it becomes clear that we must take the potential social benefits of enhancements—and hence *the social costs of forgoing* enhancements—much more seriously than the current debate has done. Once we attend to the productivity-increasing effects of enhancements and their network effects, it also becomes clear how misleading it is to think of enhancements as zero sum. I will argue, then, that FA1 is not only false, but pernicious, because it skews the debate toward the rejection of enhancement by overlooking some of the most powerful reasons for enhancement.

The second framing assumption, FA2, is that because of the near universal condemnation of eugenics, enhancements will be a matter of personal choice, not state action, at least in liberal societies (Frankel 2003, p. 32; Fukuyama 2002, p. 86; Paul 2005, p. 124). When combined with FA1, it implies that *the* key ethical problem, in liberal societies, is that of avoiding or ameliorating the social harms that are likely to result from the pursuit of enhancements by individuals in a market for enhancements.

My critique of the first framing assumption will reveal that the second is false as well. That argument can be previewed as follows. Historically, governments have shown a keen interest in increasing productivity. They have often invested heavily in education and public health, not out of regard for the good or the rights of individuals, but because they wanted to “build a stronger nation” (in the case of Bismarck’s Germany, for example) or to promote “economic growth.” Given this historical fact, it is naïve to assume that the state will abstain from encouraging the development and utilization of enhancements that promise significant increases in productivity. And if this is the case, then focusing exclusively on the problem of how to restrain individual choice in a market for enhancement may leave us unprepared to cope with crucial issues regarding the role of the state.

Finally, building on the point that enhancements can increase productivity very broadly construed and thereby have the potential to provide large-scale gains in human well-being, I will suggest a more profound framing shift in how we conceive of the ethics of enhancement: We ought to view it as one important dimension of *the ethics of development*. I will argue that what is misleadingly called the history of economic development (as if it concerned only the development of the economy) is largely the story of human enhancement. My conclusion here will be that participants in the current debate about enhancement either fail to understand that enhancement is an ancient and characteristic human endeavor or mistakenly assume that there is a moral distinction between *enhancing human capabilities* and *enhancing human capabilities by the application of biotechnologies*.<sup>6</sup>

## **I. Human Enhancement, Productivity, and Development**

### ***The ubiquity of enhancement***

In the broadest and most straightforward sense, to enhance human beings is to expand their capabilities—to enable them to do what normal human beings have hitherto not been able to do. Understood in this way, enhancement is ubiquitous in human history. Literacy and numeracy are among the most impressive human cognitive enhancements to date.<sup>7</sup> Literacy increases our communicative abilities and our ability to commit ourselves to future actions (as in the case of complex planning of actions undertaken with others, written contracts, and treaties). It enables us to understand the past through written records and augments our capacity not just to remember but also to reflect on and find meaning in our experiences. Numeracy is at the heart of the scientific enterprise, and the application of science to practical matters has extended our capacity for agency in myriad ways. Taken together, literacy and numeracy are profound and far-reaching cognitive enhancements. Computers, building on the platform of literacy and numeracy, extend human cognitive capacities even farther.

Agriculture was a momentous enhancement. It enables large numbers of people to live together in one location year-round, which was a necessary condition for a complex and persisting division of labor, including the rise of a class of individuals who do ‘mental’ rather than physical work, and for the rise of cities and the emergence of political institutions. When agriculture became efficient enough, it created surpluses that could be exchanged and thereby increased humans’ capability for engaging in peaceful relationships with strangers. The agricultural revolution that began in England around 1760 had dramatic positive effects on human physical well-being through better nutrition, which in turn meant greater resistance to disease and greater longevity (Fogel 2004).

Institutions are remarkable enhancements. They increase our capability for coordinated interactions and hence for achieving the many important goods that depend on coordination.

They augment the physical and even the moral powers of individuals and groups. Legal systems are a salient example of how institutions can augment our moral powers: they can enable individuals to behave justly toward one another, in part by providing an authoritative specification of rights. By enforcing rules of peaceful interaction, legal institutions also increase our capacity for restraining our aggressive impulses and provide us assurance that others will not take advantage of our restraint.

***Avoiding biomedical enhancement exceptionalism***

It would be a mistake to object that the forgoing accomplishments are not enhancements in the sense relevant to the current debate about the ethics of enhancement because they are *external* or *environmental* changes rather than changes *in us* and hence do not qualify as the enhancement of human beings. The better nutrition provided by the agricultural revolution of the mid-18<sup>th</sup> Century significantly changed human beings' bodies by overcoming the stunting effects of under-nutrition and their minds by facilitating neurological development. In addition, there is evidence that literacy actually changes the brain (Pontius 1982). It would also be a mistake to say that computers are not really enhancements, not improvements of normal human cognitive capabilities. Computers overcome many of the biological limitations of the human brain's information processing and calculating functions; they improve our cognitive powers in a perfectly straightforward sense. Similarly, the ability to engage in coordinated activities with large numbers of others that institutions create and the myriad cultural developments based on numeracy, literacy, and science have helped make us who we are. They have profoundly changed our conception of ourselves and our world; they have helped to define our most basic social relations. To call the great historical enhancements merely external or environmental, is tantamount to denying that culture plays a significant role in our individual and collective identities.

Compared to the great historical enhancements, the changes that are likely to be brought about by biomedical enhancements, including germline interventions to increase intelligence or

physical strength or even longevity, may turn out to be rather puny. At the very least, the comparison debunks the common assumption that biomedical enhancements are inherently more profound and for that reason more morally problematic.

Whether an enhancement involves a modification of the human body does not seem to be of any moral significance in itself. Because of past enhancements, we are born into a world in which literacy is a prominent feature of life for most people, in which tens of millions of people have computers, and in which social interaction increasingly occurs in institutionally-structured environments that extend far beyond the boundaries of kinship groups. These enhancements surely affect our lives more deeply than would the routine implantation of tiny computers or genetically engineered tissue in our brains to increase the speed of our neural processing or the insertion of genes in embryos to increase resistance to infectious diseases.

The changes that the great historical enhancements have wrought are not only internal in the sense that they are changes in us, improvements in *our* capabilities, not merely modifications of our environment or artifacts that are external to us; they are also, for practical purposes *irreversible*. Given how much we benefit from literacy and numeracy and how foundational these cognitive enhancements are in modern society, any attempt to abandon them would surely fail, not in the least because of familiar barriers to the collective action that would be required for such an astonishing project. Retreating to a hunting and gathering mode of existence would require a vast reduction in the human population, not to mention the loss of all the human goods that depend upon agriculture. Thus it is quite misleading to say that it is only now, in the age of molecular biology, that human beings are able to change themselves irreversibly.

Further, the observation that the great historical enhancements have affected the biology of human beings, by facilitating better physical and cognitive development through increased nutrition and reductions in the burden of disease, and in some cases by altering the brain, is to underestimate their effects on our biology. They have also contributed to the evolution of the human genome. The most obvious effect on the human genome is that human beings are

surviving to reproduce who otherwise would not; to that extent the great historical enhancements have to greater genetic diversity in our species. In addition, technologies of transportation have facilitated the mingling of gene pools that were previously isolated.

At this point it might be objected that the momentous historical developments I have listed are not really enhancements because enhancements are improvements of the capabilities that are *normal* for human beings, and that writing, living in large-scale institutions, etc., are all normal for human beings. This objection is implausible. We *now* consider literacy, the use of computers, and the ability to engage in large-scale coordinated, complex activities through the functioning of institutions to be ‘normal’ capabilities for human beings, but for most of the time in which human beings existed they were not. Of course, the great historical enhancements would not have occurred if human beings had not shared certain biological characteristics, but that is a different matter, and besides, the same is true of biomedical enhancements. The point of pursuing biomedical enhancements is to improve human capabilities and whether doing this is a good idea or not cannot be settled by stipulatively defining ‘enhancement’ in a way that excludes the most dramatic and far-reaching improvements of human capabilities that have occurred so far.

Nor would it be plausible to say that the great historical improvements are not enhancements because they do not extend our abilities beyond what is *natural* for human beings. If ‘natural’ here means ‘in accordance with the laws of nature (that is, not super-natural), then both the historical improvements in human capabilities and the most radical biomedical enhancements are natural, and on the definition of an enhancement as an improvement beyond what is natural for human beings *neither* would count as enhancements. If ‘natural’ instead means ‘fitting or proper’, then to say that the historical improvements are natural but that biomedical improvements are not is simply to beg the question of whether there is some morally important intrinsic difference between the two. So, regardless of whether one defines ‘enhancement’ as improvement on normal or natural human abilities, the great historical

enhancements I have listed have as much claim to be called enhancements of human beings as biomedical enhancements do.

It is trivially true that the historical enhancements I have listed are not *biomedical enhancements* if by the latter one means *interventions that directly improve human capabilities by the application of technologies to the human body or to human gametes or embryos*. However, to say that only biomedical enhancements (thus defined) count as the enhancement of human beings is not only arbitrary, but also smacks of a crude reductionism that identifies human beings with their biological characteristics. Nor is there any reason to think that biomedical enhancements so defined are as such any more morally problematic than enhancements of other sorts. The *means* by which we pursue enhancements may, of course, matter morally; for example, enhancements that are imposed on those who do not wish to have them would be wrong. But that is not to say that the biomedical *mode* of enhancement is in itself distinctively problematic.

To summarize: It is mistaken to assume that only biomedical enhancements deserve the title of enhancements of human beings, or are irreversible, or result in changes in our biology or our genetic make-up, or are as such especially morally problematic. What I have called the great historical enhancements share these features and they are genuine enhancements and momentous ones. Given that this is so, it is reasonable to try to place the prospect of biomedical enhancements in the historical context of human development. I shall presently argue that doing so is illuminating.

### ***Enhancement, productivity, and well-being***

Theories of economic development are misnamed: Although they focus on the conditions for economic growth, they help to explain much more than the development of the economy. Such theories accord a central role to increases in productivity and to the dependence of large-scale increases in well-being on increases in productivity.<sup>8</sup> ‘Productivity’ in the broadest sense *is how good we are at using existing resources to create things we value*.



Productivity should not be confused with various *proxies* for productivity, such as earning potential or with something much narrower, namely, efficiency in the production of *economic* goods, i.e., commodities for exchange. Most academics and writers would correctly say that their computers make them more productive, better able to use the resources they have to achieve their goals; yet most would sincerely deny that their sole or even primary goal is to produce marketable goods. They rightly value their computers as cognitive enhancements that increase their ability to realize their goals and therefore as contributors to their well-being, whether or not they increase their economic productivity.

Increased productivity does not guarantee increased well-being, because sometimes what we value turns out not be good for us. It is more accurate to say that increases in productivity often create the potential for increases in well-being that are not likely to be possible without it, while acknowledging that whether that potential is realized depends upon a number of factors.

Increased productivity has historically been a necessary condition of major increases in human well-being. Increases in productivity have generally resulted from the development of technologies (such as agriculture) and institutions (including that of the market and the state) that are properly regarded as enhancements, as the augmentation of human capabilities. Historically, the link between the enhancement of human capabilities and increases in well-being is strong.

Given that this is so, it behooves us to ask whether future enhancements are likely to increase productivity and hence provide the potential for large-scale increases in well-being. Remarkably, the mainstream debate on enhancement has not asked that question. The productivity-increasing effects of enhancements have been largely ignored.

What sorts of future biomedical enhancements might significantly increase productivity and hence create the potential for large-scale increases in human well-being? As a first cut, the following sorts of enhancements seem most likely to fill the bill: (1) enhancements of the present cognitive capabilities of human beings (for example, increases in attention, alertness, the speed with which information is processed by the human brain, and improvements in memory), (2)

enhancements that extend the duration of our lives, (3) enhancements that compress morbidity and disability near the end of life, and (4) enhancements of the human immune system. A reason for thinking that these enhancements will produce increases in productivity is that similar enhancements have done so in the past.

The potential of cognitive enhancements for increasing productivity is straightforward: Other things being equal, with enhanced cognitive abilities we will be able to do what we now do more quickly and efficiently and we also may be able to do some new things we will value. Just as adequate nutrition now allows people to function better cognitively than our malnourished ancestors did (and than malnourished people in less developed countries do now), so the right combination of diet, drugs, vitamins, and perhaps even engineered tissue or cybernetic implants, may improve cognitive functioning still further. To the extent that we rightly value the things that cognitive enhancements allow us to do, cognitive enhancements will increase our well-being.

The relationship between increased life-span and the compression of morbidity and disability, on the one hand, and increased productivity, on the other, is equally straightforward. At present a one-year increase in life-expectancy increases labor productivity by 4%.<sup>9</sup> People who live to 90 and are close to the peak of their abilities until very near the end have greater capacity for being productive, other things being equal, than most people do now. They have more time to do what they value and are able to do it well for longer.

Whether we define ‘enhancement’ as something that improves the ‘normal’ abilities of humans or as an improvement on what most humans have hitherto been able to do, vaccination is an enhancement. Even if vaccination is properly described as the stimulation of the normal immune response rather than an enhancement of the normal immune system, it is nonetheless an improvement in the capability for combating disease that human beings normally have. This enhancement has already produced significant gains in productivity, even when productivity is measured only in narrow economic terms, in addition to improving well-being in more direct ways, by lessening the burden of disease.<sup>10</sup> At present our most effective tool for enhancing the

human immune response is vaccination. In the future, other modes of enhancing the immune response may be possible, for example through gene insertion, either in somatic tissue or embryos. Such alterations may qualify as enhancements not just of the immune response but of the immune system itself; yet it would be very implausible to say that this would make them more morally problematic than techniques, such as vaccination, that do not change the immune system.

### ***Network effects***

Literacy, numeracy, and computers are all productivity-increasing enhancements that are characterized by network effects: the value of these enhancements to the individual increases as more individuals have them. Where network effects are present, there is an obvious sense in which enhancement is not zero-sum: Because the value of an enhancement to the individual increases as others obtain it, each individual has an interest in others getting it. In zero sum situations, each individual has an interest in others not getting the good in question, because what others get diminishes her share of the good. Much of the literature on enhancement focuses on enhancements that are “positional goods” or that would in some other way give those who have them a competitive edge.

The standard example of a positional good is being tall. It takes little capacity for inference to conclude that widespread enhancements of this sort would be futile if they were uniform. (If everybody’s height increases by X%, the tall are still, that is, taller than most). It is also clear enough that in the right sort of competitive setting (e.g., a basketball game) some being taller than others benefits the former and disadvantages the latter. But it is misleading to focus exclusively on the ways in which enhancements may function as positional goods or create competitive advantages and overlook the fact that some of the most-talked about enhancements, including cognitive enhancements, may be characterized by network effects. Large numbers of individuals with increased cognitive capabilities will be able to accomplish what a single individual could not, just as one can do much more with a personal computer in a world of many computer users.<sup>11</sup>

Network effects are one departure from the zero-sum paradigm that has tended to dominate discussions about enhancement, but there are others as well. Enhanced immunity is a good example. If others are immunized, you benefit even if you aren't, because your risk of being exposed to the infection is reduced—this is the phenomenon of herd immunity. Interventions that would bolster the immune system itself would also exhibit the herd immunity phenomenon.

Herd immunity is only one example of an enhancement that produces a positive externality. Generally speaking, increases in productivity are characterized by positive externalities; they tend to benefit not only the producer but others as well, at least where there are opportunities for reasonably efficient exchange. Depending upon the social context, A's having an enhancement when B doesn't may give A an advantage in some zero sum interaction that may occur between A and B (e.g., competition for a job), but it is myopic to focus on this possibility alone, without considering the ways in which A's and B's interests may be not only compatible, but congruent. We should recognize that enhancements that increase productivity carry the potential for positive-sum effects and we should take this into account in deciding whether to pursue them.

None of this is to say that all enhancements will increase productivity or be characterized by network effects or positive externalities. Some enhancements might function largely as pure positional goods, some may be mere vanities, and some may produce harms that outweigh their positive externalities. The point is that a balanced consideration of the pros and cons of enhancement should take seriously the fact that some of the most-discussed kinds of enhancements will create the potential for increases in the well-being of very large numbers of people.

### ***Rejecting the two framing assumptions***

We can now see why the first framing assumption is false and how it distorts the debate about enhancement. FA1 asserts that the chief benefits of enhancements will accrue to the

enhanced or their parents, whereas the chief risks will accrue to society as a whole. It omits consideration of the social benefits of those enhancements that will increase productivity and will be characterized by network effects or other departures from the zero-sum paradigm. Once we reject FA1, the risk/benefit picture looks quite different: we have to take seriously the social costs of *forgoing* enhancements.

The second false framing assumption is based on the first and falls with it. FA2 holds that (at least in liberal societies) the ill-repute of eugenics makes it highly likely that enhancements will be a private sector affair. But for enhancements that have productivity-increasing effects, this is not likely to be the case. The state may well take an interest in these enhancements and may even claim the right and indeed the obligation to foster them. Where network effect *thresholds* are present, that is, where the network effects occur only after a large number of individuals have the enhancement, the state may see its role as that of priming the pump, by providing subsidies, tax credits, or other incentives to encourage people to have the enhancement. It is crucial to understand that the justification the state would offer for these policies would not require the illiberal assumption that the state is to create perfect human beings; instead, it would appeal to the familiar and widely accepted idea that the state has a legitimate interest in fostering economic prosperity and increasing welfare. The justification offered would be indistinguishable from that which is used to justify education, immunization, and basic health care.

The argument thus far can now be summarized. Taken together, the first and second framing assumptions distort the debate about enhancement in two ways. First, they stack the deck against enhancement by overlooking potential major social benefits of enhancement (and potential major social costs of forgoing them). Second, they divert attention from a problem that should have a prominent place in the discussion: the possibility of state action for the development and diffusion of enhancement technologies. Focusing exclusively on the ethical problems of a private market in enhancements may blind us to even more serious perils.

***Reframing the issues of distributive justice***

One final feature of the rejection of the two false framing assumptions is worth pointing out. The likelihood that the state will take an interest in those enhancements that increase productivity is two-edged. On the one hand, it means that we cannot avoid thinking about the role of the state and restrict our ethical deliberations to the problems of a market for enhancements. On the other hand, if the state treats productivity-increasing enhancements the way it does other contributors to productivity such as basic education, immunization, and basic health care, then state action may actually impose *some limits on inequalities* in the distribution of these enhancements by ensuring that all have access to some “basic” level of them. If a particular enhancement had very strong productivity-enhancing effects, the failure of the state to ensure that no one lacks access to it might be as culpable as its failure to ensure that all citizens are literate or have access to immunization.

If we stick to the two false framing assumptions, we get one picture of the implications of enhancement for distributive justice and the role of the state. Taken together, the two false framing assumptions imply that the proper role of the state, from the standpoint of distributive justice, is only to constrain inequalities in the distribution of enhancements *so that the enhanced will not have an unfair competitive advantage over the unenhanced*. Focusing on the productivity-increasing dimension of the most-discussed enhancements gives a more complete picture, by recognizing an additional and perhaps more important role for the state, that of helping to ensure *that every citizen has the capacity to be an effective participant in social cooperation*.

Again the analogy with state support for education is illuminating. From the standpoint of justice, the chief argument for the state helping to ensure that all have access to basic education is not that this will prevent a situation in which the educated have an unfair advantage in competitions with the uneducated. (That could be prevented by depriving everyone of an education). Rather, it is that the state ought to ensure that all citizens have the productive assets

needed to be able to function effectively in the predominant forms of social cooperation in their society. Similarly, once we drop the two false framing assumptions and take seriously the idea that some enhancements will significantly increase productivity, there is a case for state action to achieve a more equal distribution of those enhancements from the standpoint of what I have elsewhere called the morality of inclusion (Buchanan 1996).

My point here is not to endorse such a role for the state. State action could be morally unacceptable or imprudent for a number of reasons. For example, the state might encourage the mass use of a memory-enhancing drug by allowing it to be sold without a prescription and it might later turn out that the drug damages other aspects of cognition or causes psychiatric disorders.<sup>12</sup> I simply want to indicate how changing the framing assumptions of the debate about enhancement transforms our thinking about issues of distributive justice.

### ***Enhancement and the ethics of development***

Given the potential of some future enhancements for increasing productivity and hence for creating the potential for increases in well-being, and given that the link between productivity and increased well-being has been a central feature of human development thus far, it makes sense to re-situate the debate about enhancement in the larger context of the ethics of development. The ethics of development, as I understand it, is the subject matter of normative theorizing about development, undertaken in the light of the best available social science thinking about development. Here I can only indicate, in broad strokes, several ways in which thinking of the ethics of enhancement as one dimension of the ethics of development may prove illuminating.<sup>13</sup>

First, social science theories of so-called economic development focus not just on the effects of increases in productivity, but also on how technologies that increase productivity emerge and spread. It may turn out that theories of technological innovation and diffusion advanced by development economists will provide valuable insights into the emergence of those

enhancements that increase productivity. Knowing how enhancement technologies emerge and spread will be crucial for devising effective strategies for controlling them or for fostering them.

Second, thinking of future biomedical enhancements as the latest in a series of enhancements that have played a crucial role in development may enrich the discussion of the implications of biomedical enhancements for distributive justice. I have already indicated one way in which this can occur: for enhancements that promise significant increases in productivity, the state may take an interest—and perhaps in some cases should take an interest—in ensuring that all have access to them, at least at some “basic” level of provision, as with education. More generally, thinking of the ethics of enhancement through the lens of development can encourage a greater appreciation for the complexity of the issues of distributive justice that enhancement raises. For example, it is often said that access to new enhancement technologies according to ability to pay will reinforce and perhaps even exacerbate existing inequalities or that those who have enhancements while others do not will be in a position to exploit the unenhanced. Thinking of enhancement in terms of the ethics of development may help us to understand which enhancements are of the most concern from the standpoint of distributive justice. If there is something approximating a “right to development” at the level of societies or a right of individuals to be included as an effective participant in the global basic structure, then lack of access to enhancements that significantly affect productivity may be much more serious, morally speaking, than lack of access to other enhancements. In addition, thinking of enhancements under the rubric of development makes clear how inadequate it is to say that unless everyone has a particular enhancement, no one should, or to blithely assume that eventually everybody will catch up, due to some providential trickle-down process. Few of us would say that India should not be allowed to continue its gains in development until Ethiopia catches up; but no one acquainted with the best work in development theory would assume that disparities in development will disappear as less-developed countries benefit from some automatic trickle-down process. Social scientific thinking about development may provide crucial guidance for



how to mitigate the effects of an ‘enhancement gap’ or to shorten its duration. Work on the normative issues of development may help us to help us understand when such gaps are morally acceptable and when they are not.

Third, understanding enhancements within the context of development would also help us avoid the mistake of underestimating how difficult it may be to refrain from developing certain enhancements—and how hard it will be to prevent their diffusion once they are developed. For enhancements that promise significant gains in productivity, telling people they should pull up their moral socks and eschew them may prove about as effective as telling people to just say “No” to globalization.

Finally, a plausible ethics of development focuses attention squarely on three issues which economic approaches to development have only quite recently begun to take seriously but which theorists of the ethics of development have long emphasized. (i) *Under what conditions* does the adoption of various productivity-increasing technologies *actually* result in significant increases in well-being (as opposed to merely creating one necessary condition for such increases)? (ii) Because increases in *aggregate* well-being are compatible with extreme inequities, aggregate measures of development are inadequate. What sorts of quantitative measures should be employed to gauge the impact on well-being of enhancements that are likely to increase productivity? (iii) The character of the processes by which technologies emerge and spread can impose constraints on the possibilities for redistribution or compensation *ex post*. In particular, the character of the process by which technologies are developed may reinforce power asymmetries that prevent redistribution or compensation from being serious political options. It is therefore naïve to say that we should foster policies that “maximize innovation” and then leave it to the political process to take care of redistribution or compensation to the losers.<sup>14</sup> To summarize: the ethics of development approach to enhancement not only breaks the spell of the two false framing assumptions by bringing the productivity-increasing effects of enhancement

into view; it also helps us avoid the naivete and lack of ethical sensitivity that has often afflicted a purely economic approach to increasing productivity.

### ***The Conservative Argument***

I now want to consider an objection to the approach I have been advocating. “It’s true that enhancement is not new and that what we call economic development is the history of human enhancement. It’s also true that some enhancements—particularly those that are likely to attract social investment—will increase productivity and that increased productivity creates the potential for increased well-being. It was a good thing that writing, numeracy, agriculture, immunization, computers, etc. were developed. But it doesn’t follow that we should encourage biomedical enhancements, even if they would increase productivity and create the potential for increases in well-being. The problem is that biomedical enhancements, especially those that involve genetic changes, carry extraordinary risks, and given how well off we already are (thanks in part to past enhancements) those risks are not worth taking. So even if it would have been wrong—indeed stupid—to have forgone the major historical enhancements (if we could have), we should draw the line now.” Call this the Conservative Argument.

As an argument for the conclusion that we should forgo biomedical enhancements altogether, The Conservative Argument is not compelling for several reasons. The most obvious is that if it is supposed to provide guidance for what we should do, it is unrealistic. For reasons already noted, at least for enhancements that promise significant gains in productivity, it is unlikely that we will “just say NO.” Given that this is so, instead of pretending that we can just say “NO”, we should focus on how to control the pursuit of such enhancements in an ethically responsible way. I want to focus, however, on two other objections to the Conservative Argument.

First, the argument’s assumption that biomedical enhancements carry uniquely high risk is dubious. It is implausible to say that the sorts of biomedical enhancements widely discussed in the enhancement debate carry significantly greater risks than enhancements we have already

achieved. To take only two examples, the science that enhances so many of our capabilities has created the risk of the extinction of human life or at least of civilization by a nuclear holocaust, and the enhancement of our capability for mobility through modern transportation technologies has created the possibility of global pandemics.

Second, the Conservative Argument simply *assumes* that we are now at a point at which further biomedical enhancements (or, on a more restricted version of the argument, gene-changing enhancements) will not be needed, either (1) to sustain the gains in well-being that many humans have achieved or (2) to make these gains available to those who now lack them. But this assumption is also highly dubious. We may need further enhancements, perhaps even gene-changing enhancements, either to ensure that we in the developed countries continue to enjoy the benefits of past enhancements or to help close the gap between us and the people of less-developed countries, or for both reasons.

Here are some examples of enhancements that might be needed either for holding our own or for providing the benefits of previous enhancements to all.

1. Enhancement of existing capacities for impulse control, sympathy, altruism, or moral imagination, through pharmaceutical or genetic interventions. Given the current human propensity for violence, the prevalence of ideologies that fuel it, and the availability of highly destructive weapons technologies to individuals and small groups not subject to effective political control, we might come to need such interventions as part of a more complex strategy for catastrophic violence.
2. Enhancement of the human capacity for extracting nutrients from current foods and perhaps even the development of the ability to extract nutrients from items that humans have never consumed before.<sup>15</sup> Such enhancements might be extremely valuable if global warming or massive environmental damage due to the accumulation of toxins significantly reduce the capacity to produce standard food crops.

3. Enhancement of the ‘normal’ viability of human gametes and/or embryos, or the invention of new reproductive technologies, in order to counteract a decrease in fertility, an increase in lethal mutations, or a rise in the rate of cancers, due to environmental toxins.
4. Enhancements to help us to adapt physiologically to climate change. (For example, drugs or gene therapies to improve the body’s capacity for thermal regulation or the skin’s resistance to cancers).
5. Enhancements of the immune system and/or enhancements of the body’s ability to repair damaged tissues, in order to compress morbidity in countries in which life-expectancy has already increased significantly, so as to avoid the breakdown of social welfare systems under the strain of a large population of chronically ill elderly people.
6. Enhancements of the immune system to accelerate the development of resistance to virulent emerging infectious diseases in an era of globalization.

This rebuttal of the Conservative Argument is just that; it is *not* an argument in favor of enhancements across the board or even an argument for a presumption in favor of pursuing biomedical enhancements. It is a critique of the smug assumptions that lie behind the recommendation to put the brakes on human enhancement generally or to eschew biomedical or genetic enhancements in particular. The Conservative Argument may have considerable bite when applied to some particular proposal for enhancement, by prompting us to consider whether the enhancement in question carries a significant risk of undermining something we already have and value and whether, if it does, the enhancement would be worth the risk. But the Conservative Argument cannot enable us to draw a bright line between the historical enhancements and biomedical enhancements and thus cannot undermine my proposal for exploring the ethics of enhancement through the lens of the ethics of development.

## **II. A Still More Fundamental Disagreement About the Ethics of Enhancement**

So far I have argued (1) that we should re-orient thinking about the ethics of enhancement by abandoning two false framing assumptions that have distorted the debate, FA1 and FA2, (2) that once we see that some enhancements will increase productivity and create the possibility of large-scale gains in well-being, the case for pursuing them becomes stronger, other things being equal, and (3) that it is fruitful to view the ethics of enhancement as one important dimension of the ethics of development. I have proceeded on the assumption that it makes sense to weigh the pros and cons (or, very broadly construed, the risks and benefits) of various biomedical enhancements. Call this the Balancing View, or BV for short.

This assumption can be challenged, too. It would have to be abandoned *if there are any conclusive moral reasons against biomedical enhancement that are available to us now*—prior to the exercise of trying to take all the pros and cons of this or that enhancement into account. If there are such reasons, then my whole approach has been wrong. Call the view that we already have conclusive reasons against biomedical enhancements the Conclusive Reasons View, or CRV for short.

### ***Two ways of thinking about the ethics of enhancement***

CRV is the denial of the BV, which holds that the proper approach to the ethics of enhancement is to proceed to identify and then to balance, to the extent that this is possible, the pros and cons (or, very broadly construed, the risks and benefits) of various types of enhancements, in various contexts. My argument thus far has simply assumed the truth of BV in this sense: I have proceeded on the assumption that there are no conclusive reasons against biomedical enhancements *ex ante*, and then explored some important reasons in favor of some biomedical enhancements that have been neglected in the debate. CRV rejects BV and hence calls my approach into question.

BV does *not* assume that all the pros and cons of enhancement are commensurable, much less quantifiable. Rather, the idea is that the proper way to think about the ethics of enhancement is to try to articulate all the considerations in favor or and against enhancements of various sorts,

to reflect on them in the light of our most important moral values, and then try to make an impartial, factually-informed, all-things-considered judgment about what to do, or at least to try to identify a range of morally acceptable options. BV is a commonsensical view, because it recommends that we think about technologies that provide enhancements in the same way we generally think about technologies, recognizing that they can be used for good or for ill, and invites us to consider the pros and cons (or costs and benefits broadly construed) and then to pursue or avoid various enhancements depending upon where the balance of reasons lies.

BV does *not* assume consequentialism. It does not assume that all pros and cons can be aggregated on a single scale of value or that the goal is to maximize aggregate value or that there are no non-consequentialist reasons against enhancements. It merely says that it is appropriate to look both at the considerations in favor of enhancement and those against and to strive for a judgment that reflects a proper appreciation of both. It leaves open the possibility that some of the considerations against enhancement may be deontological, rather than consequentialist in nature.

I now want to suggest that some of the most vocal critics of biomedical enhancement could be understood as making a case against BV and in favor of CRV. All of these critics proceed as if they subscribed to CRV: they lay out what they take to be powerful reasons against enhancement, but they do *not* then go on to discuss considerations in favor of enhancement and then argue for an all things considered judgment against enhancement. They proceed as if undertaking any sort of balancing is not necessary; indeed their tone sometimes suggests that such an undertaking would be not only misguided, but would also betray a kind of moral insensitivity. In probing these authors' arguments against enhancement my goal is not exegetical. It is to see whether their views provide resources for supporting the objection that I have been mistaken in assuming Balancing View of how we ought to reason about ethics of enhancement.

***Kass and Fukayama: Don't endanger human nature***

Despite many differences in their views, Leon Kass and Francis Fukayama both warn that biomedical interventions aimed at enhancement might destroy human nature.<sup>16</sup> Both could be interpreted as providing an anti-enhancement argument that is designed to attack BV. Both seem to think that the destruction of human nature would be so bad that it excludes or at least clearly outweighs any reasons in favor of doing that which threatens such destruction. My surmise, then, is that Fukayama and Kass would dismiss my suggestion that we should take seriously the productivity-increasing prospects of certain enhancements as morally obtuse, given what they think is at stake.

Jonathan Glover observes that the “don’t endanger human nature” argument is fatally flawed because it assumes that if something is part of human nature, then it is good (indeed, so good that we could never have reason to change it) (Glover 2006, pp. 82-4). That assumption is problematic to say the least, because human nature is typically understood to contain bad properties (such as selfishness) as well as good ones.

Kass or Fukayama might reply that they are not assuming that every aspect of human nature is good. Instead, their point is that human nature is a *whole* and that if we change one part of it we are likely to destroy it, the good as well as the bad.

This understanding of the “don’t endanger human nature” argument avoids Glover’s objection, but at an exorbitant price. It assumes that there is a tight web of causal dependencies among all the properties that together constitute human nature that if we remove one property, the rest are likely to be destroyed, with the result that we will lose the good with the bad.<sup>17</sup>

Notice that this strong causal interdependency assumption is needed. Without it, the argument collapses back into the normatively impotent tautology that if you remove an essential property of a thing it is no longer that thing. The latter claim succumbs to Glover’s objection, because we can ask: if some parts of us are bad, why shouldn’t we get rid of them, even if doing so would make us another kind of thing (a ‘post-human’)?

When stated in such a way as to avoid Glover's objection, then, the "don't endanger human nature" argument must include the very strong claim that we cannot change any part of human nature without an unacceptable risk of destroying all of it, including the valuable aspects. This latter claim presupposes something which neither Kass nor Fukayama have even begun to provide: either a very robust essentialist *a priori* metaphysics or an empirical scientific theory that reconciles the idea of human nature as an unalterable whole with evolutionary biology. Perhaps because of a growing awareness of just how much baggage the "Don't destroy human nature" argument carries, other criticisms of biomedical enhancement seem to enjoy greater popularity. I now turn to three such objections, to see whether they provide support for the CRV and against BV and hence threaten to undercut my approach.

***Habermas on enhancement and moral status***

With respect to genetic engineering of embryos at least, Habermas seems to be committed to CRV and hence to a rejection of BV. He believes that this sort of enhancement violates a principle of the fundamental equality of persons as free beings.<sup>18</sup> He also apparently believes that the fact that something would violate this fundamental principle is a conclusive reason for avoiding that thing, not merely a reason against it that must be balanced against reasons in favor of it. In brief, Habermas seems to think that his argument takes genetic engineering enhancements off the table, rendering irrelevant any consideration in favor of them. If that is his view, then he rejects BV and would therefore regard my arguments in this paper as worse than irrelevant, at least so far as some biomedical enhancements are concerned.

Even when restricted to efforts to enhance human beings by thoroughly genetically designing embryos, Habermas's argument fails. He provides no explanation of why a person who develops from such an embryo *should* regard herself or *should* be regarded by others as being less free than other persons. The reason cannot be that such a person could not *be* "the author" of her life. That would be true only if genetically designing an embryo rendered that individual incapable of living autonomously. So long as the genetic design does not destroy the biological



basis for the individual from developing into a person, a being with the capacity for autonomy, the individual can be “the author” of her own life.

On this interpretation of his argument, Habermas overlooks a simple point: Whether one is a moral equal among persons depends upon whether one has what it takes to be a person, not on whether some other person did or did not design one’s genome. A person who developed from a genetically designed embryo is still a person and as such is of equal moral status with other persons. So, if Habermas’s claim is that people who develop from genetically designed embryos would have *good reason* to think of themselves as less free than others, he is making an egregious mistake: He is assuming that how one’s genome was selected is relevant to one’s moral status as a person. This error is no less fundamental than thinking that a person’s pedigree—for example, whether she is of noble blood or “base-born”—determines her moral status.

Suppose that Habermas’s claim is not that that persons who developed from genetically engineered embryos *would be* of inferior moral status but rather that they *would (wrongly) regard themselves* as having an inferior moral status or as being unfree (or be so regarded by others). That is an empirical psychological prediction, not a self-evident truth; it requires good empirical evidence, based on existing people’s psychologies. Habermas provides no evidence whatsoever for this claim and I know of none that supports it. But even if there were empirical evidence for the claim that such persons would be prone to (wrongly) regard themselves or be (wrongly) regarded by others as of inferior moral status or as unfree, Habermas’s argument would still fail, unless he could give us reason to believe that people are so incorrigibly dim that they could not come to understand the simple point that it is personhood, not the origin of the genetic preconditions of personhood, that matters so far as fundamental moral status and freedom are concerned. Surely we should not forgo all the benefits that could be provided by making genetic changes in human embryos simply because some people might be deeply confused about the impact of such interventions on basic moral status or freedom. Instead, we should try to make

sure that everybody understands the basic idea of equal moral status and the character of the freedom that all persons have.

I conclude that Habermas's argument does not support CRV, even when the latter is restricted to enhancements that involve genetically designing embryos. It gives us no reason to reject BV and hence no reason to think my strategy of calling attention to the productivity-increasing effects of enhancements is misguided.

***Sandel: enhancement as a threat to central human goods***

Sandel's "giftedness" argument against enhancement might also be seen as attempts to make the case for CRV and against BV. For Sandel, the effort to enhance human beings both expresses morally flawed attitudes and undermines virtuous ones. Sandel claims that those who pursue enhancement evidence a boundless craving for "mastery" and thereby contribute to the erosion, in themselves and others, of the sense of "the giftedness." The sense of "giftedness," according to Sandel, includes an acceptance of the limitations of human powers and an "openness" to what we cannot control, and it is a precondition for having proper humility and perhaps other virtues as well. In brief, Sandel believes that the sense of "giftedness" is or is necessary for fundamental human goods and that biomedical enhancement endangers it.<sup>19</sup>

Given how highly he esteems the sense of "giftedness" and given that he refrains from considering whether there is any combination of other goods that enhancement might provide which could compensate for its loss, it seems plausible to think that Sandel subscribes to CRV—that he rejects the idea of balancing the pros and cons of enhancement. In other words, if we take the "giftedness" argument at face value, its conclusion appears to be that the enhancement enterprise is *ipso facto* such an assault on a central human value that any attempt to appraise the pros and cons of enhancement reveals a kind of moral obtuseness. So Sandel's "giftedness" argument could be interpreted as showing that the approach to enhancement I am advocating is misconceived.

I now want to argue that Sandel's argument does not support the conclusion that I have misframed the debate, because it falls far short of showing that we already have conclusive reasons for forgoing biomedical enhancements. Let us begin with the assumption that Sandel's argument from "giftedness," stripped of its eloquent rhetoric, can be outlined as follows.

1. The sense of the giftedness is a central human good.
2. The drive for mastery is incompatible with the sense of giftedness.
3. The employment of biomedical enhancements is an instance of the drive for mastery.
4. (Therefore) the employment of biomedical enhancements is incompatible with the sense of giftedness.
5. Therefore, the employment of biomedical enhancements is incompatible with a central human good.

As it stands, even if this very bold argument were sound, it would not show that CBV is wrong, because it leaves open the possibility that there might be some good or combination of goods that can only be attained by biomedical enhancement that would compensate for the loss of the central good of the sense of "giftedness." If this were the case, then it would be perfectly appropriate to try to take these other goods into account, as reasons for enhancement. Suppose, then, that we grant Sandel an additional premise:

6. If something is incompatible with a central human good, then this incompatibility is conclusive reason against it.

This sixth premise is far from self-evident; perhaps human life is tragic in that not all of the most important goods are compatible. However, even if we grant it to Sandel, the argument still fails. The most obvious problem with improved version of the "giftedness" argument is that people can and do coherently pursue enhancements of many different sorts, including biomedical enhancements, without exhibiting a "drive for mastery" that is incompatible with any sense of "giftedness" that could plausibly be construed as a central human good.<sup>20</sup> Here are two of many examples to make this point. Suppose that I am having laser surgery on my eyes to correct

myopia. I opt for over-correction, for better than 20/20 vision, because this will enhance my birdwatching ability on those occasions on which my binoculars are not at hand. Have I thereby exhibited a desire for mastery? No; the desire for having to rely on my binoculars a little less often for satisfactory bird-watching is not a desire for mastery by any stretch of the imagination; to say that it is would be an abuse of language. In opting for some over-correction, do I *thereby* reveal that I lack an appropriate sense of “giftedness”? Obviously not. Opting for over-correction is no evidence whatsoever that I fail to appreciate that much of what is good in life is not subject to human control.

Similarly, if we pursue cognitive (as opposed to visual) biomedical enhancements, whether as individuals or as a matter of social investment in increased productivity, does this show a desire for mastery that is incompatible with a sense of “giftedness” that qualifies for being a central human good? If the answer to this question is yes (and surely it is *not*), then literacy, numeracy, immunization, and the use of computers are all profound moral wrongs--and that central human good, the sense of ‘giftedness,’ was wantonly destroyed long ago. Sandel’s warning that we should not imperil the sense of ‘giftedness’ comes several millennia too late.

Sandel does not restrict his claims about mastery to efforts to enhance our children, but even if he did it would still be unsound. The fact that one immunizes one’s child, or provides the child with an education, a computer, or other cognitive enhancements is in itself no evidence whatsoever that one desires to master the conditions of its existence or that one is not “open” to appreciation of features of one’s child’s existence that one cannot control.

Consider a much more dramatic enhancement: a significant extension of human life-span, say to 140 years. We could succeed in achieving this enhancement for all human beings and yet not be under the delusion that we have achieved mastery of the conditions of our lives or of the attributes of our children--unless we were remarkably blind to the nature of human existence. In a society in which the life-span was 140 years, there would still be plenty of things to sustain the sense of “giftedness.” People would still die of accidents; wars would presumably still occur

even though many of us would still not want them to; deadly pandemics would still presumably arise, despite our best efforts to avoid them; people would still fall in love with people who don't love them and fail in every effort to make themselves loveable; people would invest in careers and projects that fail, despite the best laid plans; the weather, and hence natural disasters, would still be beyond our control; many human actions, both individual and collective, would still have unpredicted consequences; and children would still sometimes profoundly disappoint their parents by repudiating their values, for the simple reason that they become independent persons. Whenever we did *not* suffer such misfortunes we would have occasion for the sense of "giftedness," for an appreciation that many of the most important goods we enjoy, including life itself, are not within our control and never will be. There would also still be countless positive reasons for appreciating the "giftedness" of human life: the good fortune of having met one's soul mate, of having had the opportunity to be a part of an important social movement because one was born at the right time, of having read a particular book at just the right time in one's life for it to make an impact on one's character, of having chosen a career that turns out to be socially valued, of having children who grow up to be good people, etc., etc. Opportunities for a sense of "giftedness" would not be lacking in a world replete with biomedical enhancements.

It is difficult to understand how Sandel could think that even the most extreme biomedical enhancements would make much of a dent in the lack of control that characterizes so much of the good and the bad in human life. Ironically, it is Sandel who has an inadequate appreciation of the "giftedness" of human life and an inflated sense of biomedical empowerment.

Sandel might reply indignantly that I have misinterpreted him. He is not arguing that enhancements would undercut the sense of 'giftedness' by eliminating or even greatly reducing our lack of control over the good things in life or over our children. His point is that the pursuit of enhancements is likely to *diminish* our precious sense of "giftedness."

Given how much there is in life to prompt the sense of "giftedness," it is hard to know what would count as diminution of our sense of "giftedness", much less such a *dangerous*

diminution as to warrant out forgoing all of the goods that some biomedical enhancements would bring. Given the ubiquity of lack of control in human life, and the imperviousness of so much of it to biomedical enhancements, are we really threatened with a “giftedness” shortage? Is it likely that biomedical enhancements will reduce the domain we cannot control to the point that our sense of “giftedness” will be too weak for us to have a good life? What reason is there to believe that there is such a threshold or that we are likely to approach it? Sandel does not say and I cannot imagine what he could plausibly say.

Consider yet another interpretation of Sandel’s argument. Perhaps his point is not that we are in danger of a shortage of lack of control (and an ensuing sense-of-giftedness shortage) but rather that pursuing enhancements will cause us to come to *believe* that we can master the conditions of human existence--and that this *belief* will cause us to lose the sense of “giftedness.” If this is his argument, then he is resting the case against enhancement on a very strong prediction that pursuing enhancement will cause a delusion of such proportions as to be tantamount to collective madness. Yet he provides no evidence for the hypothesis that enhancements will cause such a delusion. Sandel’s anecdotes about “over-parenting” certainly don’t supply the needed evidence. It is one thing to say that people, or some people, may over-do the enhancement enterprise, quite another to say that a significant number of people will become so deeply deluded as to think that they are or could be masters of the human condition or could ensure that their children will turn out the way they want them too.

Consider yet another reading of Sandel’s “giftedness” argument. Perhaps it is simply a reminder that the possibility of enhancement may, for some people, provide a new outlet for unsavory tendencies they already have, including an over-estimation of their ability to control things. If that is his point, it is hardly a new one. It has been the stock and trade of critics of technology for at least a couple of hundred years. More importantly, that familiar reminder falls far short of supporting CRV and rejecting BV. So, it does nothing to undercut the approach to the ethics of enhancement I am advocating here.

In fairness to Sandel, perhaps we should consider one last, even more deflationary interpretation of his “giftedness” argument. Perhaps Sandel is only saying that if we pursue enhancement *without limit*, we thereby exhibit a drive for mastery that is incompatible with a good human life. On this interpretation, the only practical import of the “giftedness” argument is a warning not to pursue enhancements without limit, along with some anecdotes that are supposed to show that Americans--or is it upper-middle class Americans?--have dispositions that exacerbate the risk of doing so. Apart from the special urgency of the message to (some?) Americans, this is again hardly novel or earth-shaking. After all, pursuing virtually anything without limit is a bad idea and humans have known that for some time now. On this interpretation the “giftedness” argument provides nothing approaching a conclusive reason against biomedical enhancement or even a reason of sufficient weight to ground a general presumption against it. So, once again, Sandel gives us no reason to reject BV and or to reject my proposal for reframing the debate.<sup>21</sup> At most, Sandel’s argument calls to our attention some considerations that should be taken into account in doing the hard work of identifying and trying to balance the pros and cons of various enhancements.

## **Conclusion**

My aim has not been to make a case for enhancements generally or for any particular enhancement or to try to set out all of the reasons for and against enhancement, but rather to offer a better way of thinking about the ethical complexities of enhancement. The debate about enhancement has been distorted by two key framing assumptions. The first is that from the standpoint of attempting to take into account the risks and benefits of enhancement, the picture is largely one of personal benefits (to the enhanced or their parents) versus potential serious social harms. I have argued that this assumption is false because some of the most widely-discussed enhancements, including the improvement of cognitive functions and the extension of life, are likely to bring increases in productivity and thereby create the potential for large-scale increases in well-being, especially in the case of enhancements that exhibit network effects or other

positive externalities. The second false framing assumption is that *the* ethical issue, at least for those in liberal societies, is how to control a market in enhancements, because the negative reaction to eugenics makes it very unlikely that the state will be involved in the enhancement enterprise. I have argued that this assumption, like the first, overlooks the productivity-increasing effects of some enhancements and therefore fails to consider that the state may have a strong interest in them.

In addition, I have argued that once we understand that enhancements may have significant productivity-increasing effects and may therefore create the potential for large-scale gains in human well-being, it is fruitful to explore the idea that the ethics of enhancement is one dimension of the ethics of development. I have also outlined some of the ways in which this latter conceptual shift can shed new light on the issues of enhancement, including those pertaining to distributive justice. Finally, I have considered prominent anti-enhancement arguments by Kass, Fukayama, Habermas, and Sandel and argued that they do not undercut the approach to the ethics of enhancement I have advanced.<sup>22</sup>

Once we focus on the hypothesis that some of the enhancements that are likely to become widespread will increase productivity and may be encouraged by state policies, we may be better positioned to identify the most serious problems and avoid being distracted from a due consideration of them by preoccupation with issues that become less important once the issues are properly framed. We may come to realize, for example, that an enhancement arms race by countries competing with one another in the pursuit of economic growth or the prospect of becoming more productive but less happy because we are treating increased productivity as if it were an end in itself are more serious problems than the risk of losing the sense of “giftedness.”

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<sup>1</sup> My concern is here is to challenge the standard framing of the debate about the ethics of enhancing human beings through the application of biomedical technologies to them, but I will criticize the assumption that biomedical enhancements raise fundamentally different issues than other ways of improving human capabilities..

<sup>2</sup> In this essay will focus only on the enhancement of normal human capabilities, not on the enhancement of the impaired individuals to bring them up to normality. The most vehement criticisms have been directed at enhancements of the former type.

<sup>3</sup> My arguments here do not depend upon predictions about the actual development of the sorts of biomedical enhancements that worry critics such as Habermas, Fukuyama, and Sandel.

<sup>4</sup> My focus in this essay is on what might be called the mainstream debate about the ethics of enhancement, the controversy among bioethicists that focuses squarely on the ethical issues. I do not consider the less ethically-focused popular “post-humanist” or futurists literatures.

<sup>5</sup> There are frequent comparisons between current uses of performance-enhancing drugs in sports competitions with future enhancements of cognitive and physical abilities. For an especially clear example, see Michael Sandel (2004, p.52).

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<sup>6</sup> In his latest valuable contribution to the literature on enhancement John Harris recognizes that enhancement is already ubiquitous in human life, but he does not explain the connection between enhancement, productivity, and well-being. See John Harris, *Enhancing Evolution* (Princeton: Princeton University Press, forthcoming 2007).

<sup>7</sup> If language was a crucial feature in the differentiation of humans from other hominids with whom we share a common ancestor, then it would be misleading to say that language is a *human* enhancement, an improvement of *human* beings; instead it would be an enhancement of pre-humans that helped make them human.

<sup>8</sup> For a prominent example, see David S. Landes (1998). For a fascinating analysis of the contribution of increases in productivity to the moral improvement of human beings, see Benjamin M. Freedman (2005).

<sup>9</sup> According to Bloom *et al.* (2004, p. 11), “This [4%] is a relatively large effect, indicating that increased expenditures on improving health might be justified purely on the grounds of their impact on labor productivity, quite apart from the direct effect of improved health on welfare.”

<sup>10</sup> Vaccination has proven to be a valuable means of improving human health because of costs averted via the direct medical impact of vaccines (i.e., through prevented illnesses). Interestingly, however, recent economic studies suggest that traditional cost-effectiveness and cost-benefit analyses often ignore the broader economic impact of vaccination. For example, the Global Alliance for Vaccination and Immunization (GAVI) has a vaccine package for 75 low income countries that, if implemented, could provide an economic rate of return nearly equal to primary education (Bloom *et al.* 2005, p. 35).

<sup>11</sup> There is another reason why focusing exclusively or even mainly on positional goods in the enhancement debate is misguided. As Harry Brighouse and Adam Swift (2006)

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point out, goods can have positional and nonpositional aspects and whether a good is positional or how deleterious its positional aspect is may be subject to social control, because both depend upon how the good is embedded in social relationships that may be amenable to modification.

<sup>12</sup> I thank David Goldstein for this example.

<sup>13</sup> Note that my claim is not that the ethics of enhancement can be reduced to or fully subsumed under the ethics of development.

<sup>14</sup> Matthew DeCamp forcefully makes this point in his outstanding dissertation, “Global Health: A Normative Analysis of Intellectual Property Rights and Global Distributive Justice,” Duke University, 2007.

<sup>15</sup> At present human beings, unlike most mammals (primates excluded) cannot biosynthesize vitamin C, because, due to a mutation (approximately 40 million years ago) that causes the inactivation of a gene for the production of a critical enzyme. It may become possible to change this in the future. See Michael N. Ha *et al.* (2004).

<sup>16</sup> Fukuyama (2002, p. 101) tends to use ‘human nature’, ‘human essence,’ and ‘our humanity’ interchangeably. He worries that “...biotechnology will lead us to lose our humanity.” He goes on to ask: “And what is that human essence that we might be in danger of losing? ...From a secular perspective, it would have to do with human nature...That is ultimately what is at stake in the biotech revolution.” Kass (2000) contends that human cloning, because it is not sexual reproduction is not “human” production. Hence he says that the question of whether to pursue the creation of human beings by cloning is nothing less than the question of “...whether human procreation is going to remain human.” The only way to make sense of this claim is to read ‘human’ in

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the first occurrence as a descriptive term, referring to how people do in fact reproduce and ‘human’ in the second occurrence as a normative term referring to how people ought to reproduce or to what is natural for human beings in the sense of being fitting.

<sup>17</sup> Kass might be understood as advancing a more limited and less metaphysically ambitious version of this appeal to wholeness. Perhaps his point is that much of what is good in human life is inextricably bound up with features that are likely to be the target of enhancement. However, he does not take on the massive empirical burden of showing that this or that enhancement would be likely to endanger this or that particular good feature of human life. Instead of showing, for example, that in a society in which there was considerable asexual reproduction of humans, persons would in fact be regarded as manufactured items and wholesome families would not exist, he merely declares that asexual reproduction is not human reproduction and declares that using asexual reproduction techniques *is* treating human beings as manufactured items.

<sup>18</sup> Habermas (2003, p. 63) says 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”. This is a non sequitur, however, because the fact that the parents’ intentions to design an embryo cannot be reversed now does not in any way imply that the phenotypic effects that they wished to create by designing it cannot be avoided or reversed. To think otherwise is to indulge in extreme genetic determinism. More importantly, a person whose genes were determined by parental choice has no more (and no less) reason to doubt whether she is

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the “author” of her own life than one whose genes were determined by the random shuffling of genes in ordinary sexual reproduction.

<sup>19</sup> According to Sandel (2004, p. 57), “...the deepest moral objection to enhancement lies less in the perfection it seeks than in the human disposition it expresses and promotes...The problem is in the hubris of the designing parents, in their drive to master the mystery of birth...it would disfigure the relation between parent and child, and deprive the parent of the humility and enlarged human sympathies that an openness to the unbidden can cultivate.” He makes it clear that his objection is to enhancement as such, not just the enhancement of children by their parents, saying that “...the promise of mastery is flawed. 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.” Sandel also claims that the pursuit of enhancements will undermine our sense that the better off owe something to the worse off and hence will destroy the motivation that is needed for institutions of distributive justice. As a psychological prediction this is a very strong claim and one for which Sandel provides no evidence. As the normative claim that a better off person owes something to those who are worse off *only* if the better off person’s being better off is a matter of chance or “giftedness” the claim is even more dubious. As John Harris observes, there are a number of prominent theories of distributive justice that do not ground the obligation to share wealth in this way. For an elaboration of this point, see John Harris, *Enhancing Evolution*, note 4 *supra*. Furthermore, even if either (a) our obligations regarding distributive justice or (b) our having effective motivation to share wealth depended on inequalities in wealth being due to chance, there would still be plenty of room for both even if biomedical enhancements were widespread. Children could not

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be responsible for how their parents bio-engineered them and there would still be accidents, stock-market swings, the contingencies of which sort of family or culture one is born into, and a host of other factors that ensure that people's wealth is not due solely or even mainly to their own efforts.

<sup>20</sup> In a characteristically subtle and well-argued critique of Sandel's view, Frances Kamm (2005) argues that enhancements do not necessarily evidence a desire for mastery or a lack of sense of the giftedness of life in the sense of "openness to the unbidden." She also shows that even when the pursuit of enhancement does evidence a desire for mastery, it does not follow that the act is morally impermissible.

<sup>21</sup> Although Erik Parens (1995) rejects the idea that there could be anything bad about enhancement as such, he presents an argument that suffers the same fatal flaws as Sandel's. Parens argues that some central human goods, including the sense of beauty and the virtues of caring and compassion, depend upon our sense of the "fragility of goodness," our awareness that we are subject to "chance and change." There is no reason to think that the pursuit of enhancements would destroy our sense of fragility and deprive us of the goods that supposedly depend upon it any more than that it would destroy the sense of "giftedness." If biomedical enhancements are vigorously pursued, our lives will still be "fragile"--much of what we care about will still be subject to chance, that is, beyond our control, either individually or collectively. There will still be accidents, natural disasters, random mutations of infectious organisms that cause epidemics, etc, etc.-- even if we all live to 140, are much smarter than anyone is now, and have great muscle tone, excellent memory, and unabated libidos until we are 139 and 1/2. We will also continue to *suffer*, not just from the effects of nonhuman factors like the weather that

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we will still not be able to control, but also because of human actions. People will still treat other people in deeply wounding ways, projects and careers will still fail, children will still turn out badly, people will still experience alienation, will still worry, will still feel guilt, etc. Because we will still be subject to many of the causes of suffering that now afflict us, there will be no shortage of opportunities to exhibit the virtues of compassion and caring. Thus Parens's suggestion that radical human enhancements would deprive us of opportunities to cultivate the virtues of compassion and caring is bizarrely false. To think that even the more radical germline genetic enhancements would produce a *shortage* of suffering, and hence make compassion and caring obsolete or to reduce them to a point below some crucial threshold, is either to be a genetic determinist in the extreme or to be oblivious to the ubiquity and manifold sources of human suffering. If Parens were to deflate his claim by saying that he only means that if we enhanced ourselves to the point where we were *incapable* of suffering we would lose some important goods, then he would achieve plausibility at the cost of having rendered his argument irrelevant to the enhancement debate. That debate is not about whether we should undertake enhancements that would end human suffering; virtually no one thinks biotechnology could do that.

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