

## Genetic Enhancement, Human Nature, and Rights

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### **Abstract:**

Authors such as Francis Fukuyama, the President's Council on Bioethics, and George Annas have argued that biotechnological interventions that aim to promote genetic enhancement pose a threat to human nature. This paper clarifies what conclusions these critics seek to establish, and then shows that there is no plausible account of human nature that will meet the conditions necessary to support this position. Appeals to human nature cannot establish a prohibition against the pursuit of genetic enhancement.

**Keywords:** absolute prohibition | genetic enhancement | human nature | human rights | medicine | philosophy

### **Article:**

#### I. INTRODUCTION

There are a plethora of recent books and articles critical of actual and proposed biotechnological interventions. Both the targets and the criticisms are numerous. The targets include gene therapy, preimplantation genetic diagnosis, cloning, mood-altering drugs, and performance-enhancing drugs. Interventions that aim to enhance normal human traits especially draw the ire of critics. Among the many criticisms of such interventions, here I shall focus on those that appeal to human nature. In general, the charge is that some biotechnological interventions should be rejected because they pose a threat to human nature. My reasons for focusing on this particular line of argumentation are that it is common, it seems to have an audience that is wider than professional academics, and it has had political muscle. I shall argue that this entire approach to the issue is seriously misguided. One of my (modest) contentions is that if we ask the right questions, we can see why this approach is unhelpful.

Chief among the proponents of this approach are Fukuyama (2002), the President's Council on Bioethics (2003) (under George Bush), and Annas (2005). The type of argument invoked urges us to defer to nature. Thus, the President's Council asserts that “not everything in the world is open to any use we may desire or devise” and that there are things “which should be left inviolate” (President's Council on Bioethics, 2003, 289). In the same vein, Fukuyama writes: “What is it that we want to protect from future advances in biotechnology? The answer is, we want to protect the full range of our complex, evolved natures against attempts at self-modification” (Fukuyama, 2002, 172). Seeking to enhance normal human traits is said to be an unjustifiable attempt at self-modification.

The first question that should be asked of these critics is this: What conclusion do they want to establish? This is important because as one reads their warnings, one might initially think that they have a point. But warnings can call attention to different moral conclusions. Here I shall distinguish two:

Weaker conclusion: Go slowly. Be cautious when employing biotechnological interventions.

I shall refer to this as “the precautionary stance” (not to be confused with the familiar precautionary principle<sup>1</sup>).

Stronger conclusion: Do not go there at all. It is wrong to tamper with human nature.

I shall refer to the stronger conclusion as “the prohibitionist stance.” All too frequently critics fail to specify which of these conclusions they seek to establish. But when we sort through the arguments, it is the stronger conclusion that they typically suppose they have supported. Certainly, that is what is communicated by the President's Council's use of the term “inviolate.”<sup>1</sup>

## II. PROHIBITIONS BASED ON HUMAN NATURE

The most obvious instance of the type of argument that I want to assess is presented by Fukuyama in *Our posthuman future*. It unfolds over three chapters (Fukuyama, 2002, chs 7–9).<sup>2</sup> The argument has the following structure:

- (1) Humans have a higher moral status than other creatures.
- (2) Humans are morally equal to each other.
- (3) Moral values, including rights, are objective.
- (4) So there must be some feature of all humans that gives them moral significance (higher than other creatures but equal to each other). Call this feature “Factor X” (Fukuyama, 2002, 149–53).

Fukuyama takes premises (1), (2), and (3) as obvious. Granting these, it is the possession of Factor X that explains both the superior moral status of humans (to other living things) and that all humans are morally equal to each other.

Given this argument and Fukuyama's goal of showing that certain biotechnological interventions should be banned absolutely, there are specific tasks that he needs to complete. Among other things, he needs to show the following:

- (1) That all humans have rights  $R_1 \dots R_n$  (grounded in Factor X).
- (2) Rights  $R_1 \dots R_n$  have correlated with them obligations  $O_1 \dots O_n$ .
- (3) Identify the rights that are relevant to the biotechnological interventions being criticized.

(4) Identify the content of the obligations correlative with the relevant rights.

(5) Show that these obligations O1 ... On prohibit the pursuit or use of the biotechnological interventions being criticized (e.g., anything that promotes genetic enhancement).

In order to evaluate Fukuyama's position, we need to ask and answer several questions. What, according to Fukuyama, is Factor X? Is X unique to humans? If X is unique to humans, is X morally relevant? Put another way, does X support the rights and obligations that Fukuyama needs to make his case? I shall argue that not only is the answer to the last question negative but also that there is no (nontrivial) content for X that will support the sort of conclusions that Fukuyama, the President's Council, and others who pursue this type of argument seek to establish.

In his search for Factor X, Fukuyama rejects a number of candidates. He posits and discusses consciousness, sociability, having language, having intelligence, making moral choices, and having emotions, and rejects each on grounds that it is not possessed only by humans (Fukuyama, 2002, 165–70). That brings him to the alternative that he introduces with the label “What to fight for.” What gives humans “dignity and a moral status higher than that of other living creatures” is described in the following passage:

Factor X cannot be reduced to the possession of moral choice, or reason, or language, or sociability, or sentience, or emotions, or consciousness, or any other quality that has been put forth as a ground for human dignity. It is all of these qualities coming together in a human whole that make up Factor X. Every member of the human species possesses a genetic endowment that allows him or her to become a whole human being, an endowment that distinguishes a human in essence from other types of creatures (Fukuyama, 2002, 171).

Whether what Fukuyama describes here as Factor X is unique to human beings, I do not know. But we can put that question aside and ask a more important one: What is the normative upshot of this? If this complex array of traits is morally relevant, what sort of rights and obligations does it generate?

### III. PROTECTING INDIVIDUAL HUMANS

Recall that Fukuyama, the President's Council, and other advocates of this sort of argument hope to establish an absolute prohibition against the employment of biotechnological interventions that they dub “genetic engineering” and that seek the goal of “enhancement.” Fukuyama believes that these interventions tamper with Factor X and that it is wrong to do so. This suggests that the relevant right that Fukuyama believes that Factor X is the ground of is either the right not to be harmed or the right not to be put at risk. Factor X is valuable to its possessors, and so any diminution of it will be harmful. In particular, since Factor X gives its possessors a higher moral status than all other living creatures, a diminution of it will lower the moral standing of anyone to whom this happens. And even if per chance a given intervention did not destroy elements of Factor X, the mere fact that that is a possibility renders the employment of such an intervention as wrong. Either causing serious harm or putting individuals at risk of such harm is absolutely wrong. And in the cases envisioned, the losses will be a loss of rights and with that the disappearance of the obligations correlative with those rights. Emerging from all of this, then, is that possessors of Factor X have a right not to be changed and moral agents have an obligation not to attempt to do so. Some biotechnological interventions will produce such change. Therefore, employing them is wrong.

The approach that grounds rights in the possession of valuable traits is neither unusual nor unreasonable. James Griffin, in his recent book *On Human Rights*, argues that what are properly called “human rights” can be seen as protections of our standing as normative agents. And, Griffin argues, agency requires autonomy, liberty, and a baseline level of resources. Thus, human rights generate obligations on agents to protect and promote the autonomy, liberty, and basic welfare of rights possessors (Griffin, 2008, 33 and chs 8, 9, and 10).

Nevertheless, I contend that Fukuyama's specific argument fails and for multiple reasons. Even if a given intervention creates some risk of harm, it is implausible to hold that there is an absolute prohibition against pursuing a course of action that has risks associated with it. As we have learned from research ethics, many actions may be risky. The proper thing to do ethically is to determine the expected benefits, the risks, and the likelihood of each, and then decide accordingly. If the expected benefits outweigh the expected risks, and if the probability of the risks is small, it is not wrong to pursue such a course. Moreover, even if we could say with confidence that harm will come to some, there is not an absolute prohibition against harming others. Many medical interventions have associated with them a small probability of inflicting serious harm (e.g., death). If they are employed enough times, we can reasonably assume that there will be a small number of cases in which the harm is realized. But we do not conclude that using the intervention in question is prohibited. So neither risk nor actual harm is sufficient to establish an absolute prohibition.

A defender of this argument might claim that my objections miss the point. In assessing risk, we should focus not only on the “probability” of harm but also on the “magnitude.” If something is correctly described as genetic engineering, one of the harms that is possible is a loss of one’s humanity. Assuming that Factor X correctly delineates what is morally important about people and assuming that people have a higher moral status than other living creatures, then any intervention that threatens to erase Factor X imposes a risk of the highest magnitude. Or so a defender of the argument that appeals to human nature will claim. But this defense too is weak for several reasons.

First, although describing an outcome as “losing one’s humanity” sounds horrible, it is not obvious that it is the worst possible outcome. That same individual’s death, for example, might be worse. Whether that is so presumably depends on how bad it is for one who has “lost his humanity.” Second, the probability of the occurrence is still relevant. Unless we hold that the mere “possibility” of a risk of “magnitude M” renders an intervention as absolutely wrong, we will have to factor in its probability and the probability and magnitude of the expected benefit in order to determine the permissibility of pursuing such an intervention. A third objection, however, is the most significant. What conditions must obtain before an individual has lost her humanity? Factor X designates a multiplicity of traits and, Fukuyama tells us, they are the essence of human nature and ground of rights possessed by humans. It is easy to see why a loss of all of those traits would be considered significant and harmful. But if only one of the traits is lost, we think that the being is still human. If some are no longer conscious or have an impaired capacity for reasoning, for example, we do not question their humanity. It is implausible to think that obligations are not owed to such beings. Yet if Fukuyama’s argument is to support the stronger conclusion, it seems that he must say this. This third objection may arise because Fukuyama is making what I call “the all-or-nothing assumption.” This is the view that any given being has the full complement of moral rights or has none at all. In one striking passage, Fukuyama says:

But in the political realm we are required to respect people equally on the basis of their possession of Factor X. You can cook, eat, torture, enslave, or render the carcass of any creature lacking Factor X, but if you do the same thing to a human being, you are guilty of a “crime against humanity” (Fukuyama, 2002, 150).

Even if human beings have a higher moral status than all other creatures, it does not follow that all nonhumans have no moral standing at all.

#### IV. PROTECTING THE HUMAN RACE

All of my criticisms so far assume that Fukuyama believes that it is “individuals” who are threatened by any biotechnological intervention that seeks genetic enhancement. But much of what Fukuyama says suggests that it is not individuals, but humanity itself, that is threatened by these interventions. It is the human race that will be lost. Indeed, the title of Fukuyama's book is *Our posthuman future*. So the threat envisioned is much greater than what I have imagined. As with individuals, however, we need to unpack the nature of these alleged threats. It seems reasonable to think that the same three possibilities mentioned for individuals are candidates for understanding the threat to the species as a whole: genetic enhancement may impose serious “risks” on humanity, they may “harm” humanity by destroying it, or they may “change” humanity irrevocably and in such a way that humanity is harmed (by being made “less”).

Before considering these possibilities, however, several questions must be contemplated. (a) What is it to harm “human” nature? (b) Is it possible to “change human” nature? and (c) If human nature can be changed, must it be wrong to do so?<sup>3</sup>

Let us begin with question (b). There are more than 6 billion humans on the planet. Absent some kind of magic wand, it is initially difficult to see how any given genetic intervention could change human nature. Fukuyama is aware of this objection. As he notes, “Modifying, eliminating, or adding to those alleles on a small scale will change an individual's patrimony, but not the human race's” (Fukuyama, 2002, 78–9). In spite of the obvious difficulty of altering the patrimony of the entire human race, Fukuyama nevertheless believes that we should worry. For one thing, he says, scientific and technological developments in the life sciences have proceeded much more rapidly than most anticipated. In addition, he says, we have already seen a population-level effect of some technologies (Fukuyama, 2002, 79–80). Here he has in mind the skewed sex ratios in certain Asian countries because of a number of people selecting against female fetuses. But this is a puzzling response to the objection. One can grant that there are distorted sex ratios in certain countries and one can agree that this is undesirable. It is hard to see, however, why this constitutes a change in human nature. If there is an essential human nature, that nature has not changed because of a skewed sex ratio in certain parts of the world.

The more fundamental and troubling question is this: When is it accurate to say that human nature has been changed? Suppose that 1 billion people are subjected to some sort of germ-line gene therapy. One consideration that would have to be addressed is how much of a change must have been effected in those individuals in order for it to be true that they are no longer human. Fukuyama seems to think that any alteration whatsoever of the complex Factor X is sufficient to

make the being less-than-human. This seems implausible, however. If these beings have an improved capacity for reasoning or a more potent immune system, but nothing else has changed, they would still be *Homo sapiens*. Some changes, no doubt, would lead us to say that those beings were no longer human—for example, if they could reproduce with each other but not with unaltered humans. But many changes fall well short of this. A second consideration that is relevant here is the status of the 5 billion (or more) people remaining whose genome has not been altered. They are still human. So the human race will have been neither eliminated nor harmed. Instead, a new species will have been created. And if anyone has been harmed by being made less-than-human, it will be specific individuals.

This shows how difficult it is to get a handle on just what Fukuyama and others who advocate this view mean by changing human nature. But let's turn to question (c). Assuming that human nature can be changed, why should we think that it is always wrong to do so? And we should remind ourselves that Fukuyama, the President's Council, and others who endorse this argument that appeals to human nature are attempting to establish the prohibitionist stance. To see what is needed for this approach to succeed, imagine that we can change Y. It seems that if that is possible, then from an evaluative point of view we could change Y in any one of three ways: we could make Y worse, we could keep Y at the same level, or we could make Y better. So if it does make sense to say that through a series of genetic interventions agents can change human nature, in order to establish the “stronger” conclusion (the prohibitionist stance) proponents will have to show that any change in human nature is a change for the worse. If any change in human nature will be a change for the worse, then either (a) human nature is such that it cannot be improved upon or (b) human nature is such that it cannot be improved upon by the acts of human agents.

To support line (a)—that human nature cannot be improved—it seems that proponents must hold one of two claims. They can say that human nature, as constituted, is that than which none greater can be conceived. This hardly seems plausible. As Fukuyama himself notes, there is a dark side to human nature. There is, for example, a human propensity for violence and aggression (Fukuyama, 2002, 44–5; Murray, 2007, 504). Focusing on nonmoral traits, it seems that if human memory were better or the immune system were more efficient, that would be an improvement. As for traits that are morally relevant, it seems that it would be an improvement if humans were less prone to jealousy and envy. If these possibilities are not improvements, the burden is on others to show that. Jonathan Glover states this point clearly in *Choosing Children*:

If a good argument showed that some terrible characteristic—which by genetic means, we could change—was essential to being human, it might be better to transcend the limits of humanity rather than stay as we are. The idea of what is essential is a murky one, but,



even if it were not, its importance is unclear. What is worth preserving is what is valuable, and the connection between the two is not obvious (Glover, 2006, 84).

To deny this seems to commit one to what John Harris calls “the sanctity of the existing human genome” (Harris, 2007, 12).

The other way to defend claim (a) is to say that human nature is a complex organic whole. Even if we can imagine a different being that is superior, there is no way to change humans as currently constituted to make them better. Tamper with any part of the organic unity, and the whole will be made worse. The President's Council suggests such a position when they write, “[T]he danger here is that we will become better in some area of life by diminishing ourselves in others, or that we will achieve superior results only by compromising our humanity ...” (President's Council on Bioethics, 2003, 295; see also, Goering, 2000, 331–2). Fukuyama too seems to endorse this when he says that “we want to protect the full range of our complex, evolved natures against attempts at self-modification. We do not want to disrupt either the unity or the continuity of human nature ...” (Fukuyama, 2002, 172; see also, 77, 98, 101, and 128). Such a claim is astonishing in its boldness. We can imagine producing beings with a capacity to reason better or with a more efficient immune system without having lost any other advantageous traits. This is logically possible, and it seems also to be physically possible. At the very least, those who deny its possibility must provide evidence. This will not be easy to do. Suppose that we have an intervention that makes humans less prone to jealousy. It seems that the only way we could know that beings created with this trait will also have had some vice exacerbated (or a new vice created) is through experience. Given that, the burden of proof is on those who endorse this version of organic unity.<sup>4</sup>

Line (b) is a more interesting approach. It emphasizes human fallibility and the complexity of the world. As often as the term is used in this context, we might reasonably call this the “hubris objection.” The President's Council seems to have this criticism in mind when it says, “The human body and mind, highly complex and delicately balanced as a result of eons of gradual and exacting evolution, are almost certainly at risk from any ill-considered attempt at ‘improvement’ ...” (President's Council on Bioethics, 2003, 287). Fukuyama makes a similar point when he writes, “There are good prudential reasons to defer to the natural order of things and not to think that human beings can easily improve on it through casual intervention” (Fukuyama, 2002, 97; see also 172). There is a certain ingenuity in this response. It says that human beings are so fallible that any attempt at self-improvement will backfire. There are several problems with this position, however. First, its implications are too broad. It is not only genetic enhancement that falls prey to this charge. Virtually, all new medical interventions would be similarly condemned. Second, this criticism is self-undermining. In the name of protecting

that which is most valuable, human nature, from change, the critics tell us how limited and imperfect humans are. We must wonder how they, limited humans themselves, can know this. And we must also wonder why an imperfection can be accurately identified but not repaired. Unless these puzzles can be answered, this second line of argumentation is unconvincing.

Is there any other way that those who appeal to human nature might argue for the prohibitionist stance? Sometimes their language suggests a different concern. Tampering with human nature may produce an altogether different being, a new species that will do harm to humans. At the conclusion of *Beyond Therapy*, the President's Council opines that "there is the risk of attacking human limitation altogether, seeking to produce a more-than-human being, one not only without illnesses, but also without foibles, failures, or foolishness" (President's Council on Bioethics, 2003, 307). It certainly is odd to worry both that humans are so fallible that any intervention they devise is likely to backfire and also to think that humans can produce beings without illnesses or foibles. But that aside, this argument taps into a fear to which many science fiction writers often appeal. *Frankenstein*, *Dr. Jekyll and Mr. Hyde*, and *The Time Machine* come to mind. Such a fear seems to motivate George Annas. He worries that the employment of genetic enhancement will create a new species of "posthumans," a species that will regard humans as inferior and will subject them to exploitation, enslavement, and perhaps genetic genocide (Annas, 2005, 51). Some of the most enthusiastic supporters of biotechnology have themselves posited the possibility of creating a being superior to humans (Silver, 1997, 246). Human nature must be protected from such change, Annas says. He goes so far as to suggest that those who attempt to enhance human nature through genetic interventions are guilty of crimes against humanity (Annas, 2005, 40). To take these concerns seriously, we have to believe that attempts at human enhancement will create a new species, that it will be superior to humans, and that it will use its powers to dominate humans. These worries are understandable if one adopts what I earlier called the all-or-nothing assumption and if one holds that the more-than-humans that are created will not be bound by morality. But each of these assumptions requires an affirmative defense that has not yet been provided. Moreover, the feared scenario cannot obtain unless the newly created species thrives and reproduces prolifically, and unless humans will be defenseless against it. These assumptions too are in need of justification.

One other way that critics of biotechnology appeal to human nature does not go so far as to posit the creation of a new species. Instead, they worry what will soon become of our species. This is a particular instance of the charge that biotechnology will make humans worse. But with this criticism, the charge is that it will make them worse not by causing suffering, but rather by being too successful at alleviating it. The President's Council puts it this way:

[T]here appears to be a connection between the possibility of feeling deep unhappiness and the prospects for achieving genuine happiness. If one cannot grieve, one has not truly loved. To be capable of aspiration, one must know and feel lack ... [I]f human fulfillment depends on our being creatures of need and finitude and therewith of longings and attachment, there may be a double-barreled error in the pursuit of ageless bodies and factitiously happy souls ... (President's Council on Bioethics, 2003, 299).

Fukuyama makes a similar point. He complains that biotechnology seeks to make us less complex. He continues:

The answer lies in the constant pressure that exists to reduce the ends of biomedicine to utilitarian ones – that is, the attempt to reduce a complex diversity of natural ends and purposes to just a few simple categories like pain and pleasure, or autonomy. There is in particular a constant predisposition to allow the relief of pain and suffering to automatically trump all other human purposes and objectives. For this will be the constant trade-off that biotechnology will pose: we can cure this disease, or prolong this person's life, or make this child more tractable, at the expense of some ineffable human quality like genius, or ambition, or sheer diversity (Fukuyama, 2002, 172).

Readers of Huxley's *Brave New World* can understand why Fukuyama is fond of comparing the posthuman world that he believes will be created by biotechnology with the world described in that novel. One way to understand this criticism is in terms of organic unity (mentioned earlier). Tamper with one part of human nature in order to achieve an improvement, and we are apt to effect a greater setback in another part. This sounds like an odd tribute to suffering. Fukuyama realizes this. He says:

No one can make a brief in favor of pain and suffering, but the fact of the matter is that what we consider to be the highest and most admirable human qualities, both in ourselves and in others, are often related to the way we react to, confront, overcome, and frequently succumb to pain, suffering, and death. In the absence of these human evils there would be no sympathy, compassion, courage, heroism, solidarity, or strength of character. A person who has not confronted suffering or death has no depth” (Fukuyama, 2002, 173).

It is rather extraordinary that anyone is concerned that humans (or posthumans) will get to the point that they will not grieve, that they will not feel lacking, and that they will suffer too little. But let us grant that this is a possibility. The issue then is whether mere possibilities are sufficient to prohibit absolutely the pursuit of certain interventions. Is this a case of unjustifiably subjecting others to risk? If we adopt such a position, the freedom to pursue any new research will be in jeopardy; progress will be imperiled. These costs are too stiff of a price to pay for mere possibilities. Finite living beings have always faced obstacles, have adapted to them, and have encountered new problems. There is no intervention on the horizon that is likely to stop such a cycle.

## V. WHERE DOES THIS LEAVE US?

The argument that appeals to human nature to support the prohibitionist stance fails. Asserting that various actual or proposed biotechnological interventions pose a threat to human nature is rhetorically powerful. But analysis suggests that the argument cannot succeed. We must first ask who the potential victim of these interventions is. If it is “individuals” who may suffer a loss of their humanity, then proponents of the argument must complete several daunting tasks. They must explain what human nature is, why losing it is always harmful, and why the mere possibility that an intervention might deprive an individual of her humanity thereby renders it wrong to pursue. I am skeptical that the first two tasks can be completed. But even if they can, how can they show that the mere possibility of certain outcome, regardless of its probability and regardless of any other expected benefits or risks, can make wrong the pursuit of an intervention that might produce such an outcome? If, on the other hand, it is the “human race” that is the potential victim, then defenders of this argument must show that human nature can be changed and that any implemented will be a change for the worse. I remain puzzled about how we can know that human nature has been changed. But even if we can know this, the assumption that any change will be a change for the worse lacks credibility. That can be true only if human nature as currently constituted is that which none greater than can be conceived, or is a combination of factors which is such that if any is disrupted the whole will be worse, or cannot be made better by human agency because of fallibility. None of these possibilities is plausible. Moreover, it is hard to imagine what content for human nature will enable this argument to succeed.

Let's step back and see how we arrived at this point. Fukuyama, the President's Council, and other defenders of the argument take as their starting points that humans have the highest moral status, that all humans are equal, and that they possess the same rights. This requires them to hold that all humans share a set of morally relevant traits that serve as the basis of their rights. They then must articulate what these traits are and why they generate the obligations that these proponents believe that all agents have. In particular, they must show that there is an obligation not to attempt to alter human nature because to do so is to impose a risk of harm. For that to succeed, however, it is not enough that the traits in question give human beings a higher moral status than any other creature. It must also be the case that it can be changed and that no change can be an improvement. If this is implausible, maybe the starting point is wrong. Maybe moral status in general and rights in particular are not possessed in virtue of species membership. Instead, perhaps we should focus on morally relevant traits, such as the capacity to suffer and the capacity to make choices. Normal adult human beings have these capacities, and as a result they

possess rights that generate obligations. Clearly other creatures have some of these traits, and so other creatures may possess rights too. Do humans have the highest moral status? They might; for it is possible that whereas many creatures possess these traits, on a continuum humans possess them to a greater degree. But is it even important to say that humans have the highest moral status? It is not clear that there is a moral competition going on; what is important is who has obligations and to whom are the obligations owed. We can answer those questions without drawing global conclusions about the status of various species.

Fukuyama may object, however, that this approach threatens the view that all humans are morally equal. Fukuyama properly laments social practices like slavery and female circumcision (Fukuyama, 2002, 113), and he seems to believe that they can be shown to be wrong only if they violate rights that are possessed by all humans. If rights are possessed in virtue of traits like the capacity to make choices and the capacity to suffer, then some might argue that women or African-Americans do not have these traits to the same degree as males or Caucasians, and therefore they lack some rights. But there are two obvious responses to this concern. First, such an argument is sophistical. People can claim anything, but that does not make it true. And second, sophistical argumentation can be made about one's standing as a full human being too. Anyone who is willing to say that women or African-Americans are not as capable of making choices as Caucasian males are also apt to be willing to say that they are not as fully human as males. Either way, it is a bad argument; either way, equality can be defended.

Nevertheless, Fukuyama may seem to be in a better position to defend equality; after all, genetic tests can determine whether individuals are human. But this highlights an additional issue. Fukuyama himself struggles with what to say about members of *Homo sapiens* who lack some of the traits that constitute Factor X (Fukuyama, 2002, 174–7). He acknowledges that embryos, infants, and individuals with advanced dementia lack some of the relevant traits. He concedes that “individuals possess those traits in greater or lesser amounts” (Fukuyama, 2002, 175), and he worries that this might lead to “a gradation of rights” (Fukuyama, 2002, 174). On either approach, then, there are apparently problematic cases.<sup>5</sup>

If biotechnological interventions that aim for genetic enhancement are not to be rejected because they pose a threat to human nature, where does that leave us? There might, of course, be other arguments in support of the prohibitionist stance. Critics have charged that enhancement technologies may exacerbate the gap between the “haves” and the “have nots,” that the availability of such techniques will have an adverse effect on the parent–child relationship, and that this is a foolish use of resources. Each of these criticisms will have to be considered on its own merits. In the meantime, I suggest dropping the apocalyptic language about human nature

being endangered and crimes against humanity being perpetrated. Instead, the focus should be on what degree of risk is permissible and for what ends. Any untested intervention is experimental and should be judged accordingly. Our society tries to estimate the expected benefits and the likely risks of any new procedures, and it should do so for interventions that aim for enhancement (for a thorough discussion of this, see Mehlman and Berg, 2008). Both the probability and magnitude of those benefits and risks are relevant. And maybe some benefits are not suitable to pursue. But after all of this is taken into account, if the balance of benefits to risks looks *prima facie* promising, research should be allowed to proceed, but starting with small numbers. This, in effect, is the precautionary stance. It is rather mundane and unexciting. But it is defensible. It does not allow mere possibilities to generate prohibitions. Instead, it starts with available evidence, is cognizant of the fact that untoward outcomes can occur, and so proceeds incrementally. It is not rhetorically powerful to say, “Be cautious,” but such a policy allows for progress while still protecting moral rights.

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## Footnotes

1 Even the familiar “precautionary principle” is sometimes interpreted in these two ways. The stronger interpretation urges that if there is doubt, do not go there. See Steve Rayner's “Foreword” to Harris J. 2007. *Enhancing Evolution: The Ethical Case for Making Better People*. Princeton, NJ: Princeton University Press. xii.

2 A similar argument is advanced by Annas, G. 2005. *American Bioethics: Crossing Human Rights and Health Law Boundaries*. New York: Oxford University Press, 37–40. For a critical discussion of Annas's argument, see Fenton, E. 2008. Genetic enhancement—A threat to human rights? *Bioethics* 22:1–7.

3 As Sandra Shapshay has reminded me, another important question to ask here is whether the essentialist account of human nature presupposed here is compatible with evolutionary theory.

4 As Norman Dahl has pointed out to me in correspondence, the account of human nature in Fukuyama and the President's Council is Aristotelian. And Fukuyama frequently acknowledges his debt to Aristotle (e.g., 157–8 and 164–5). Still, such a substantive account needs an independent defense. Moreover, as Dahl has suggested, it is not obvious that the Aristotelian account would condemn using enhancement technology to treat disease, nor is it clear that it would prohibit humans from producing offspring that are “more than human.”

5 Griffin (2008), 34–5, acknowledges that not all *Homo sapiens* are normative agents, and so some may lack human rights (though they may still have some moral standing). Griffin also concedes that there might be normative agents that are not human, but he focuses on the cases with which we are familiar. Readers may wonder why Griffin continues to use the expression “human rights.” He attempts to explain this in chapter 1.

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