

Genetic Enhancement

Alteration of the human genome will soon become a reality. In fact, [it already has](#). Scientists are already able to send what are essentially nanobots—but are actually engineered viruses—into your body, which then fundamentally alter your DNA. It is a near certainty that, within your lifetime, such “sci-fi” treatment will become commonplace. The question is, what should we do with such technology?

1. Genetic Alteration: Jonathan Glover points out that alteration of the human genome has been happening for a long time. (1) Alterations in the environment, in weather patterns, in food sources, predators, wars, and so on have sculpted the human genome over millions of years. (2) Breeding itself alters the human genome. For instance, we could sculpt the nature of human beings in much the same way as we sculpted dogs—namely, by large scale selective breeding programs; or, on a much smaller scale, the simple fact of who we choose as a mate.

(3) Put that way, genetic engineering is just a new, THIRD way of altering the human genome. But, many see it as far more threatening than (1) and (2), because it is, unlike (1), **intentional**, and, unlike either, **invasive, immediate**, and has the potential to produce **radical changes in a short amount of time**.

In fact, some might see genetic alteration as the next logical step in human progression. When humanity was young, our environment shaped our genes. Later, we shaped our environment, and this altered our genes. The next step is to alter our genes directly.

But, we should be cautious. Let’s look at the reasons for and against:

2. Gene Therapy and Genetic Enhancement: There are two ways in which we might use gene-altering technology:

- **Gene Therapy (Negative Engineering):** Genetic alteration aimed at curing a disease or removing a genetic disability that someone has.
- **Genetic Enhancement (Positive Engineering):** Genetic alteration aimed at altering or improving the features of someone with a genome that is already adequate or “normal”.

Both Glover and Glannon assume that gene therapy is morally permissible. The aim of medicine all along has been to treat ailment and disease. If we develop the capability of repairing the genes of a child with Huntington’s disease or spinal bifida, they think it is clear that we should do so. As such, the focus of ethical debates is on genetic enhancement.

3. The Unfairness Objection to Genetic Enhancement: Walter Glannon raises the issue of unfairness. Imagine a world where parents could pay to genetically enhance their children. Such children, engineered to be smarter, faster, more creative, etc., would have an **unfair advantage** over non-engineered children. It would be unjust to allow this to happen. Here is a bit of back-and-forth on the topic:

Enhancement and/or “Unfair” Advantages Already Exist: Several currently standard procedures are already enhancing. For instance, **immunization** shots make human beings abnormally unsusceptible to certain diseases. Anti-osteoporosis pills enhance bone density. And so on. So, enhancements are already accepted as permissible.

Reply: Such procedures do not count as “enhancements”. For, they only attempt to facilitate biological systems in doing the job that they are meant to do. For instance, the immune system’s purpose is to fight off disease. Immunization only ensure or optimize this function. The skeletal system is meant to facilitate mobility of the body. Pills that fight osteoporosis only ensure or maintain this ability (by fighting off bone fractures, etc.), and fight off bone disease. As such, these practices are **therapies**, not enhancements.

Rebuttal: On this definition of “enhancement”, only foreign enhancements would be ruled out—such as giving someone wings or gills. But, it still seems like improving existing systems in any way would still be acceptable. For instance, the brain’s function is to help us think. As such, engineering a child to be super smart would just “ensure” or “optimize” this already existing function. Similarly, the function of muscles, or arms, legs, etc., are to help us move around, lift things, and so on. As such, engineering a child to be super strong, or be able to jump 10 feet high, etc., would only “facilitate” or “optimize” these already existing functions.

Reply: Therapy is not just optimizing an existing system. It is optimizing it to some “**base**” level—to what is “normal”. So, alteration of one’s genome is only permissible for some individual who has a disability or handicap of some sort which gives them some disadvantage or inability to have a “normal” life where they can achieve some basic level of well-being, and where the objective of the treatment is to restore them or bring them up to this base level. Therapy restores a **basic good**. Enhancement, on the other hand, bestows a **competitive good**. Enhancing an individual BEYOND this basic level is unfair to everyone else, because it gives them a competitive advantage.

Rebuttal: But, then, people who are naturally advantaged (e.g., abnormally creative, or smart, or athletic due to their genes) have an “unfair” competitive

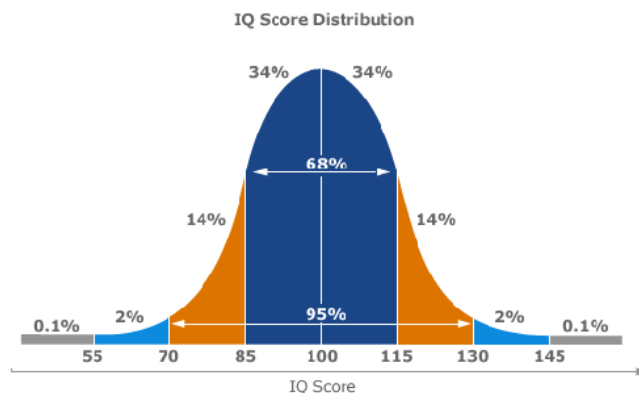
advantage over others. Surely, having such natural abilities is not morally WRONG? Should we “level down” those who presently have a competitive advantage over others (e.g., by putting weights on athletic people, scarring up the faces of beautiful people, and so on—as portrayed in a short story by [Kurt Vonnegut](#))?

Reply: Wrongdoings are only committed by moral AGENTS (e.g., people). If a tornado kills someone, we do not call it murder. No one has done anything morally WRONG. Genetic enhancement, on the other hand, is the INTENTIONAL act of some moral agent (e.g., a scientist) of creating an unfair competitive advantage.

Rebuttal: Nevertheless, if intentional enhancements beyond the “normal” or “base” level are unfair and impermissible, then this seems to rule out NON-genetic “enhancements” which have this result. For instance, parents who can afford the best schools or the best trainers for their children seem to intentionally be giving their children “unfair” competitive advantages by “enhancing” their children beyond the base level. Also, certain medical procedures such as non-therapeutic plastic surgery would be ruled out as immoral. Finally, those who can afford the BEST doctors or the BEST treatment seem to already have some sort of competitive advantage, given to them by the medical field. Should all of these people be “restored” to their original level of advantage?

[What do you think? Is Glannon’s view undefendable? Or, rather, is there something especially morally objectionable about giving someone a competitive advantage over others which is unfair in a way that, perhaps, parents sending their kids to the best schools, or coaches sending their athletes to the best trainers, does not?]

4. Is There a Distinction?: The boundary between therapy and enhancement is vague. Perhaps curing Huntington’s disease is clearly a form of therapy, while giving someone the ability to outrun a bullet train is clearly enhancement, but consider this: There is a wide range of intelligence among human beings:



What is the “normal” range? 85-115? 70-130? 55-145? Is it permissible to genetically alter someone so that their IQ is increased from 70 to 130? Does that count as therapy or enhancement? It is difficult (impossible?) to say. So, perhaps there really is no distinction here at all.

Reply: Both Glover and Glannon admit that the boundary between therapy and enhancement is fuzzy. But, neither sees this as an objection to the view that therapy is permissible, while enhancement is not. LOTS of things are like this. For instance, where is the cut-off point between bald and not-bald? Between rich and poor? (or, for that matter, between hotdogs and sandwiches?) The fact that there are fuzzy borders between concepts does not entail that there is no distinction at all.

5. Other Objections to Genetic Enhancement: Other worries below.

- (1) Unexpected Side-Effects: Our genes are often linked in certain important ways, such that enhancing one gene might have radical negative side-effects for some other gene. For instance, in Africa, there is an uncommonly high number of people who carry the sickle-cell gene. When two parents carrying this gene have offspring, that child will have sickle-cell anemia. However, sickle-cells bestow resistance to malaria. So, if we try to remove the gene responsible for sickle-cell anemia, a negative side-effect of this will be increased cases of malaria. And it is very likely that all sorts of other “enhancements” will have similar negative effects.

Reply: First, this implies a somewhat naïve view of evolution. The idea seems to be that evolution has already made us “as perfect as possible”, such that no gains in our genome can be made without some compensating loss—i.e., some “price tag”—such that we cannot strengthen some part of the human being without weakening some other part. But, that is probably false. It assumes that, while random mutations in the past have sometimes been to our species’ advantage, there will no longer be changes that are advantageous. Evolution has, in our day, come to an end.

Second, while this objection importantly recognizes that we SHOULD proceed cautiously, there is no reason to think that all gains will be accompanied by balancing losses. For instance, if we eradicate malaria first, then removing the sickle-cell gene from the human genome will not cause any problems.

- (2) Fixing Our Mistakes: Still, it is likely that we will produce SOME unintended side-effects. What if we DO make some terrible mistake? For instance, we might try to make smarter or more creative people only to find out that they

are also incredibly violent. Furthermore, CORRECTING this mistake (e.g., by sterilization) would violate autonomy (and it might be incredibly difficult to convince them to do it voluntarily).

Reply: This is certainly something to keep in mind. But, this just means that we'd have to proceed cautiously, making improvements only when the advantages were great (and probable) and the disadvantages were (likely to be) small. We already make these sorts of assessments all the time (e.g., with **nuclear power**). The objection implies CAUTION, not a complete BAN.

- (3) Alienation: Parents and children are often able to relate, understand, and sympathize with another due to their similarities. If our offspring are nothing like us, parents will be alienated from their own children.

Reply: This might be true, but only if the changes were radical (for instance, if your child had the head of a tiger, and giant butterfly wings). But, genetic enhancements need not be radical, or occur overnight in one generation.

Furthermore, don't adoptive parents love and relate to their children?

Finally, in populations where children were the first in their families to become literate, some alienation DID occur. But, wasn't the benefit worth this cost?

Rebuttal: Still, we commonly have some sort of hope that our **distant** descendants will be enough like us to look back and "approve" of, relate to, or sympathize with us. Genetic alteration of the human species will guarantee that this never happens.

Reply: Again, this takes a naïve view that evolution has ended. Surely, our descendants in the distant future will not be much like us **no matter what**. So, this goal (if it is even relevant at all) is doomed anyway. Genetic enhancement will only guarantee what is already guaranteed (albeit more quickly).

- (4) Species Stagnation/Limitation: Currently, mutations are random. But, if we control the genome, future changes would be limited/conform to scientist's goals and imaginations.

Reply: On the contrary, permitting genetic enhancement would most likely INCREASE diversity rather than limit it.

Rebuttal: But, consider current trends in fashion, etc. The human susceptibility to such trending may imply otherwise. Furthermore, trending might not only stagnate our species, but might also cause IMBALANCES (e.g., of a certain sex, or of aggressive "go-getters").

Reply: Perhaps we could regulate such things to prevent such imbalances?

Rebuttal: Regulation of procreation equates to interference with autonomy. Imagine a scenario where a couple is told that they MUST give birth to a son rather than a daughter because there were too many females born already that year.

Reply: But, surely we mustn't have a completely UN-regulated system, right? For instance, what if members of some cult want to engineer their children to be incapable of reading, or have religious cult symbols scarred all over their bodies and face? Shouldn't we have regulations to prohibit such choices?

[What do you think? If we allow more than mere gene therapy, will we need to regulate it? What will we allow, or prohibit? Who will get to decide?]

(5) "Playing God": Enhancement is "playing God" and we should not play God.

Reply: On one interpretation, there is a REAL God whose plans would be disrupted by genetic tinkering. But, if so, (a) How can we know that genetic enhancement is NOT something God planned for us to do? (b) Or, if it IS possible to thwart God's plan, how can we know we have not ALREADY done so (e.g., with modern medicine)? But, what does this objection amount to on a secular interpretation? Here are some suggestions:

"Playing God" = "Interfering with natural selection"? But, in that case, modern medicine is morally wrong. So, too, it might even be the case that altruism is wrong. Doesn't "natural selection" in the wild result in the deformed and disabled being left to die, or ripped apart by lions. If so, then we "interfere" with natural selection every time we let a disabled baby live.

On the other hand, if all human activity counts as "natural", then genetic enhancement IS natural as well, and so does not "interfere" with nature.

"Playing God" = "Altering human genes"? On this interpretation, we still rule out too much. For, then, both genetic therapy (negative) AND enhancement (positive) would be morally wrong.

(6) Control of Value Judgments: Enhancement implies "Change for the better": Who gets to decide what "better" is, or what a "positive" change is? The scientists? The government?

Reply: If we're concerned about placing the "power" or decisions in the hands of scientists, we could simply have a "supermarket" system where parents decide what traits they want for their children.

Rebuttal: If we allow parents to have control in such a system, some of them would inevitably make certain "disturbing" choices (e.g., cult example above).

Reply: We already face a similar problem with upbringing. Parents are often viewed as having a fundamental right to raise their children "as they see fit", but this right is not an absolute one (Arguably, NO right is absolute). We DO place limits on this right (for instance, we do not permit child abuse or neglect). Couldn't we do something similar with genetic enhancement?

The "Mixed" System: Ultimately, Glover suggests, the best solution is probably a "mixed" solution; i.e., some hybrid between a free market "supermarket" system and government regulation. Obviously we would want to strike a perfect balance, not going TOO far with regulation so as to unjustly restrict parent autonomy—but on the other hand, not allow TOO much so as to allow imbalances or harmful "enhancements" to permeate our species.

[One final worry: Glannon mentions that genetic enhancement would, if common, become "self-defeating". For, if EVERYONE was doing it, then enhancing yourself would no longer give you an advantage. Rather, it would be necessary just to be the SAME as everyone else. What should we make of this worry?]