The Ethics of Being Super

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Writer's Note:

> *Since middle school, I have been drawn to genetics and science that involves people. The idea that we are, in a sense, predetermined, the fact that what we will look like and how our bodies will work is all planned out for us by our DNA is fascinating to me. As a child, I was also interested in cartooning and comics. I was never really interested in superhero comics, but I was fascinated by the films based on Iron Man, Thor, Captain America, and the Avengers. I love the glorified drama that having superheroes brings to society– a security net, a role model. So what if science and superpowers were combined? I realized that may happen sooner than we think. My goal in this paper is to explore the ethical questionability of enhancement and alteration of humans and how that relates to our culture's obsession with superheroes and super powers.*

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> "Most people don't read fairy tales when they're grown-ups, but I don't think we ever outgrow our love for those kinds of stories, stories of people who are bigger and more powerful and more colorful than we are."
>
> -*Stan Lee*

Imagine a typical morning: waking up, making some coffee, and drinking it as you're reading the newspaper or watching the news on television. The news sources available to us all appear so complicated– tangled messes of stories about national security, military technology, terrorism, and more. They aren't uplifting or lighthearted, and often times we aren't getting the whole story, or it doesn't make very much sense to us. Many of us see this dark world as reality, so slipping away into a fantastical world is something we crave. Superhero stories often provide that escape because they follow an addictive, predictable formula containing the same key ingredients each time. Almost always, these stories feature the issue caused by the villain, the superhero's plan to fix it, a hiccup in that plan, and a resolution to that hiccup that restores safety to the citizens. The stories feature a much loved hero, opposed by a much feared villain who has jeopardized the safety of millions of innocent civilians. With these ingredients, the writers create a convenient getaway from the real world.

Throughout history, superhero stories have not only provided a convenient, fictional, escape, but they have reflected real-world situations and made them bearable. Around the time of World War II, for example, comics largely focused on stories of superheroes going to war. Later, around the Cold War, comics showed superheroes dealing with threats of communism and nuclear war. Even later, in the 1960s'-1970's, stories were centralized around issues such as racism, drug abuse, political corruption, and questioning authority (Gustines). In recent years, it has become a trend to remake original superhero stories as Hollywood blockbuster films with huge budgets, which has increased their popularity. The same characters are used, but now they are dealing with issues that reflect the United States' conflict with the Middle East, and new threats of nuclear weaponry and military technology. Thus, these stories remain relevant to us, but they make the issues easier to understand.

Our culture idolizes these stories and their heroes because they provide a polarization of good and bad, which is much simpler than the world we actually live in. We are able to grow

attached to the hero because they are a constant sign of goodness and justice. On top of that, they are role models because they exhibit bravery and extreme abilities at a level we could never even dream of matching. Stan Lee, legendary comic artist and former president of Marvel Comics, said, "The human condition is such that we love reading about people who can do things that we can't do and who have powers that we wish we had" (Lee). It is simply a pattern of human nature. But what happens when the line between fantasy and reality is blurred? What would happen if the fictional powers we have been reading about actually existed? What would the ethical implications be? If we brought superheroes off of the screen and into reality, we would need to revise our society's moral code to address the new dilemmas raised.

The Science | Ethics

The ethics of creating superhumans is an immense topic, so perhaps we should start at the beginning of the concept. Creating superheroes is all about isolating a specific, desirable trait and amplifying it to the extreme. Similarly, eugenics is the science of picking beings to breed based on desirable hereditary traits with the goal of advancing the genetic makeup of the race. The term was coined in 1883 by Francis Galton, a scientist greatly influenced by Darwin's theory of natural selection (Wilson). By World War I it was generally a popular and supported theory among scientists, eventually resulting in laws forcing sterilization on more than 60,000 Americans deemed "deficient" in 20 states. At state fairs, there were contests for "Fitter Families" sponsored by the American Eugenics Society that consisted of various testing, winning the most genetically fit family a trophy. Later, people began to recognize these processes as cruel and misguided (Levin). While it is widely agreed that eugenics was an unethical practice, the ideas behind it are present today in forms generally accepted by our culture.

Powerful examples of this paradox are sperm banks. When couples who cannot conceive children wish to have a child, they can go to a sperm bank and pick from a donor who has features they want their child to inherit such as hair color, eye color, and even intelligence. This process of "designing" a child is generally viewed as acceptable and often convenient, even though it directly coincides with what tends to repel people from eugenics. However, people were outraged at a similar situation. A gay couple, of which both partners were deaf, wanted to have a child who was deaf like themselves, so they picked a sperm donor with 5 generations of deafness in his family. People were angry that they "designed" their child to be like the parents because they saw deafness as a disability. *The Case Against Perfection* discusses this issue by asking, "what makes it wrong– the deafness or the design?" (Sandel). This is a valid question– are people mad because the parents are inflicting a "disability" on their child, or are they mad that the parents are picking the traits that they would most like to see in the child rather than allowing nature to do that part?

If we agree that eugenics is unethical, it does not make sense that either of the cases above would be ethical. Yes, utilizing sperm banks is a choice, and eugenics is mandated by the state. But designing a child, period, whether that is so it will have blonde hair, or so that it will be deaf like its parents, is designing a child to be "advanced" either physically, or more likely socially, according to the one who picks its genes. The two situations presented are different in that deafness is widely viewed as a disability. If a parent selected a donor with blond genes, that would probably either be because they were blond and wanted their child to be blond, or because they were not blond and wanted their child to be. Either way, selecting the gene would put the child into a specific social group whether or not that is shared by the parent. The same goes for the deaf couple: they wanted their child to fit into the "deaf lifestyle" that they knew. If they had

picked their sperm donor specifically so that their child would *not* be deaf, they would be consciously excluding their child from that social group. This is not to say that either of those scenarios is wrong or right, but rather that "designing" a child is an extension of eugenics, whether or not it is socially accepted.

Ultimately, the controversy comes down to genetic engineering and how much control we as a race let that play in defining our future. The 1997 film *Gattaca* examines the social implications of a genetically designed world that values designed, or what the film calls "valid" babies, to "invalids"—the naturally conceived babies. The main character is born naturally, and upon his birth his parents discover the probability of him suffering from eyesight issues, ADD, and various diseases, along with his life expectancy and most probable cause of death. The ability to pick an offspring's genes creates two classes in society because those who were created with artificially picked genes are elite in terms of health, intelligence, and appearance. The "invalids" are normal people, but they are inferior to the upper class, resulting in many issues such as a lack of self worth, and more serious issues such as discrimination when applying for jobs. The whole concept is discomfortingly realistic, which makes the film a probable representation of what could likely happen if genetic engineering ruled society, and a valid argument against it.

This film's chillingly realistic setting and plot seem "off" somehow, as do the original social implications of eugenics– very few people believe that killing off people deemed "deficient" by a specific group of people or that forcibly sterilizing others is ethical. Even designing children to have specific traits is not acceptable to some people because something about it just does not feel right. But what is it about that? Designing a child is not necessarily hurting anyone, yet it feels as though they could lead to something sinister and unbalanced if brought to the extreme. A spokesman for the Church of England, Steve Jenkins, said "I'm not anti-science but there is no way that God is now out of a job" ("From"). Why is that? What is so sacred about natural birth and letting nature play its part? Perhaps, the discomfort regarding eugenics and designed babies stems from our lack of experience with the subject, and as time goes on we may become more comfortable with it.

If we as a culture are opposed to the controlled genetic engineering that is already happening, then how could we accept the process of using genetic technology/medical alterations to create a superhuman? Going by the social implications explored in *Gattaca* and our culture's current obsession with superheroes, the creation of these superhumans would likely create the social classes in the film, resulting in a whole new span of issues. So, yes, using genetic engineering to create people with superpowers is likely pretty far off, but the ethical controversy it would raise is present in today's world.

As a result of the controversy over genetic engineering, specifically regarding humans, it seems unlikely that scientists will use it to create superhumans any time soon. But scientists are discovering other ways to enhance humans that do not involve leaving it to nature, or generations of breeding. Princeton engineer and professor Michael McAlpine has created a "bionic ear" by making use of a 3D bio printer. The ear is made of a combination of bovine cells and a liquid gel to form "living, biological material" rather than just a plastic model (Jung). It makes a direct connection with the brain by receiving electromagnetic signals, allowing the wearer to hear outside the normal spectrum of human hearing (20-20,000 hz) which would give us "the ability to hear what bats and dolphins hear" (Flaherty). The technology could be used for repairing lost hearing, but McAlpine "wants to create superhumans" (Flaherty). Projects like this, though small-scale, are just a taste of what the future could be. Science has made it possible for us to

discover how to not only remedy our medical issues, but enhance ourselves so that we may reach beyond typical human standards.

Inventions like the bionic ear may seem to be excessive, and that is because it is an enhancement rather than a remedy. Using the bionic ear to bring back lost hearing abilities seems ethical, but attaching a robotic device that can enhance a "normal" person's hearing somehow crosses a line. The rule of remedy vs. enhancement seems straightforward, but there are some grey areas. Consider braces, for example. Straight teeth are considered "normal," while crooked teeth "need" a remedy. In most cases, though, crooked teeth still serve their purpose effectively, and treatment is purely cosmetic. This concept applies to wearing makeup as well. A person's eyelashes still serve their purpose if they are a light color and appear short, therefore wearing mascara is not necessary for them to serve their purpose. Still, it is socially acceptable, perhaps even expected, for women to wear mascara simply for aesthetic reasons. Enhancements are excessive because they obstruct our standards, giving some people unfair advantages. Sometimes we accept those advantages, like makeup, because they are available to essentially everybody. The bionic ear is not (yet) widely available, and if it were, it would probably be pretty expensive. Thus, it would probably only be affordable to the upper class, giving them the unfair advantage of superhuman hearing. But just because makeup and braces are affordable, does that make them any more ethical than a bionic ear? I believe that it comes down to our standards of "normal" and "advanced."

The Case Against Perfection deals with this issue in an interesting way: Why would it be unethical to *enhance* somebody with a "disadvantage" if they were equally "subject to the vagaries of the genetic lottery"? (Sandel). That is, if there were some children with very crooked teeth and some with very straight teeth, there is no telling what the possibilities are that one could have ended up with the opposite situation. Thus, it is illogical to say that it is unfair to enhance one child because he or she could have ended up with the enhancement as his or her original situation.

This argument– that human intervention when creating other humans is ethical because the "genetic lottery" is random– is the whole essence of the ethical dilemma regarding both regular people and superheroes. It can be applied on all levels– from parents "designing" their children all the way to a committee deciding to create a superhuman whose abilities could save the world. In these situations, we are no longer allowing nature to play the part of creating somebody and their characteristics; we are placing somebody's life and future into our own hands. But unlike nature, we are influenced by experiences we've had. We are subjective beings with opinions and biases and standards. We do not have the objectivity that nature maintains, which complicates the whole concept.

However, we do not always have the choice to shy away from superhuman abilities, especially when nature creates advanced beings by chance. That is already happening, which is extremely interesting because it pushes us to face ethical dilemmas about whether or not we feel "ready."

Dean Karnazes is one man who already has superpowers as a result of his natural genetic makeup– no medical alterations required. His endurance as a runner is almost beyond belief– a study was conducted after he ran 50 marathons in 50 days, discovering that if he could successfully keep himself hydrated and energized with food, he could run at a seven to 10 minute-mile pace *forever* (Carmichael). Essentially, this means that he is limited not by his muscles and exhaustion, but by his basic human need for food and water. In fact, his muscles do not really get sore. Creatinine phosphokinase (CPK) is an enzyme found in the muscles that is

released into the bloodstream if there is muscle damage. This shows itself as soreness– more CPK in the blood is an indicator of more damage. The average trained runner has a level of 163 units/liter at the beginning of one marathon and over 2,400 units/liter the day after the race. Dean Karnazes had a level of 447 units/liter after running 25 marathons in 25 consecutive days without a rest day, indicating that his muscles suffer very little damage from completing excessive exercise (Cox).

In addition to that, Karnazes has a very high lactate threshold. When running, the human body breaks down glucose to make energy. A byproduct of that is lactate, which goes into the bloodstream and can be converted back into more energy. Every runner has a lactate threshold, and when that is surpassed, the body can no longer "convert the lactate as rapidly as it is being produced, leading to a buildup of acidity in the muscles" (Cox). This makes the muscles hurt as a signal to the body to take a break. Dean's lactate threshold was gauged using a test that usually only takes 15 minutes, but it had to be stopped after an hour of still working because his threshold was so high. This comes down to Karnazes' genetics. In order to convert lactate back into energy, the body uses chemical reactions through the mitochondria. The glucose produced from the process is enhanced with enzymes, which, along with a "larger mass of mitochondria," are inherited (Cox).

So, yes, Dean Karnazes trains very rigorously which helps his system have higher limits, but according to him, "the 'training effect'...only goes so far...The rest, as I am told, is left up to heredity." This could bring up some ethical questions for Karnazes even just as a runner. Because his body has an inherent advantage compared to other athletes, does that mean he should not be able to compete in endurance competitions? It goes back to the argument made in *The Case Against Perfection*: It is completely by chance that Dean ended up this way– it was just as likely that he would be totally unathletic. Because he was created naturally– as were other runners– there is no telling whether or not they could have been born with the same abilities and just weren't. So, is it really fair to limit him?

Though Dean's "superpower" is a result of his inherited genes, his mental state gives him the motivation to make use of his abilities. He lives on a strict diet to keep his body in shape along with his training regimen (Cox). He keeps up his diet and exercise habits because "the human body has limitations...the human spirit is boundless" (Davis). He believes that "any goal worth achieving involves an element of risk" (Davis). These two statements show that he has a powerful will that enables him to complete his incredible feats, but that does not yet make him a superhero. He is a man with super*powers*, but we do not necessarily have a need for a superhero that can run for extremely long distances and amounts of time. Still, the fact of his existence forces us to ask and develop answers to these ethical questions.

Do We Need Superheroes?

My personal opinion is that we as a culture, myself included, need more time to develop a moral code that will successfully answer the ethical questions raised by the possibility of superheroes. I do not have an issue with a couple designing their baby to be deaf like them, but many people do, and that is just a model example of the social outcry that could ensue if this technology continued to advance and be utilized. I think that a large part of having a superhero is trusting them and believing in them. That most definitely would not stem from fearing them, and to do that, people would need to understand the science and be okay with what that person went through to become who they were.

Captain America is a Marvel Comics superhero, played off as the "All-American," loyal soldier that represents the U.S. He was created by an unrecorded "Super-Soldier Serum," making Steve Rogers the only person to ever receive it. Before the serum, Rogers was tiny and unfit for the Army. After the serum, became an "ideal specimen" of a human, with increased abilities surrounding fighting and agility. Was the serum a remedy? It depends on the standards of "normal"– Rogers needed the serum to be an ideal soldier, but it also enhanced him beyond the point of a normal soldier, giving him super powers. Personally, I believe the serum was an enhancement, yet I am a fan of the story. Still, the thought of it being a reality is an ethical dilemma for me. Why are we able to handle this concept inside a film, but the thought of it in our real world is unethical? I would say it is because we fall for the shiny, clean, glorified story in the film, but we know that it would not be quite the same in reality, and we have not yet figured out how to accept that.

Iron Man, on the other hand, is a superhero who has a non-human aspect to him– a metal chest plate built to prevent a piece of shrapnel from entering his heart. However, he is less scientifically altered than Captain America because his powerful suit is a product of his own brain and hard work, not from a magical serum created in a laboratory experiment. I think that if we were to have a superhero, the one most likely to be socially accepted would be one created by one person who worked hard for their powers, rather than the one created in a lab or one that was a result of some sort of eugenic-fueled plan.

The other reason I do not believe that we are ready for superheroes is that we cannot handle the thought of them to begin with, never mind being able to control or contain them. Somebody like Dean Karnazes is unlikely to be somebody that could cause any more harm than the next person, but he is not a superhero. While he possesses super powers, they are not particularly *dangerous*. Still, he is simply a product of nature. Once genetic engineering and creations like the "Super-Soldier Serum" are more prominent, there is no telling what type of a creature could be created. I worry that it would be far too exciting to make these discoveries and not fully understand them before creating something larger and more powerful than anyone could imagine.

It is important that the difference between a superhero and a superpower is established. Superpowers are simply powers or abilities that are more advanced than that of the average person, while superheroes use those powers for good. It is possible to have super powers without being a superhero. While Dean Karnazes is not a villain in any way, he is not a hero, either. There is not necessarily a good use for his powers in the world today, but even if there was, nobody could *make* him use them for good. Think about it this way: Many people are eligible to be soldiers, but only a percentage of them actually go to war. Unless there is a draft, nobody can *make* anybody else go to war and use their "powers" for "good." So, to take the concept a step further, if we used science to create superhumans, there is not yet a definite way to force them into using their powers for good, which could either result in a bunch of Dean Karnazes', or a bunch of people with superpowers that we could not control. If we were to ensure that they would use their powers for good, that would likely result in some sort of robotization, automation, or brainwashing. That would bring up a whole additional set of ethical questions, delaying the process further.

I believe that consensual, technological remedies are ethical because they are utilizing scientific discoveries in a definite humane way to help people. The realm of enhancement gets messy because there is not yet a need for a concrete opinion, so it is hard for me to come up with one. The idea of the world becoming like those high-budget superhero movies is very appealing,

but we must remember that those heroes are there because there are issues to combat that need their advanced abilities. We also must remember that we are facing some of those issues more and more quickly in the future, with nuclear warfare, for example.

I would be morally accepting of scientifically engineering superheroes, but I know that some people have a more difficult time battling those moral dilemmas. The value of a human life is something we are mostly all very empathetic towards, and risking that to have a chemically or genetically enhanced superhuman just is not worth it to some people. Just seeing how eugenics played out, I realize that it is a slippery slope. But I also believe that as long as we are conscious of that and nobody is forced to be experimented on, we could make great discoveries and advancements both in science and to society by exploring this science more and more.

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