Contemporary Science in Society: Creating Monsters or Superhumans?

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As contemporary science evolves, the altering of DNA coding may become an accessible commodity. In 2015 scientists began editing the genetic code of human embryos (Ball). If scientists continue to experiment, and the market for genetic editing exaggerates, then future generations could be created and altered through science, with no real need for human reproduction. Thus, creation could lead to monstrosity through science, power, and lust for the ideal. Contemporary scientists are beginning to approach a highly controversial path in modern DNA manipulation; a path which resembles a Frankensteinian future.

The fear of future generations becoming less human and more human-like sounds dystopian and horrific, yet at the pace synthetic biology is moving it seems like a probable reality. One of the first and most notable novels on the creation of human-like entities was Mary Shelley's Frankenstein, in which, the main character, Victor Frankenstein, a scientist, becomes obsessed with the idea of constructing a human being out of dead body parts. He claims that his creation was for the betterment of humankind, but it could be argued that Frankenstein's arrogance was what drove him to take on the god-like role of creation.

Much like Frankenstein's ambition, the drive for creation is still an inherent characteristic of many modern day scientists. This motivation, combined with society's hunger for perfection, and big industries' lust for money, means that ethical lines have and will continue to be blurred. Therefore, we must question if altering life in such ways, as through genetic engineering, is taking away from our natural state of being.

The technology behind genome editing is known as "CRISPR-Cas9" or "clustered regularly interspaced short palindromic repeats" which, in short, is the irregular sequence of DNA in some bacterial genomes (S. Zhang). This irregularity has potential to cure diseases found in plants, animals, and humans. Scientists use CRISPR as coding to inform the Cas9 enzyme where to cut, splice or remove DNA in a genome (S. Zhang). The technology itself is innovative and revolutionary by showing "promise in gene therapy" through extracting stem cells, correcting them and then infusing them "back into the same patient to cure a genetic disease" (Warmflash).

The Broad Institute comments that "[w]ith CRISPR technology, researchers can permanently modify genes in living cells and organisms...at precise locations in the human genome in order to treat genetic causes of disease" (F. Zhang). The future is already becoming the present: as of November 2018 twins who had been genetically modified in their embryonic stages to be HIV resistant were born through Dr. He Jiankui's use of CRISPR experimentation (Stein).

This technology feels futuristic; however, in the early 1800’s, Shelley was already creating a science fiction world where Frankenstein discovers the cause of generation and life and uses it to create a superhuman, while turning himself into a monster (Shelley 40). In our own reality, Dr. He is already viewed by many as a monster in the scientific community for experimenting with human life and for keeping it secret until the birth of the aforementioned genetically engineered twins. We do not yet know if the twins will be HIV resistant or if they will have other medical downfalls, but their creation is the first step in a direction toward creating superhumans. Therefore, in many ways, Frankenstein should be viewed as a cautionary tale.

In the book, Victor immerses himself in the "unhallowed arts" of alchemy and chemistry; he is thoroughly intrigued by them and it's because of his time spent studying that he yearns to “bestow animation upon lifeless matter” (Shelley 42). The language surrounding Victor and his studies is dark and forewarning. The phrase "unhallowed arts" connotes an unholy or immoral practice, which is Shelley's way of warning her audience not to delve into experiments similar to Frankenstein's.

As of 2018, science has already brought forth cures for diseases, shots for immunizations, plastic surgery for alteration, and in vitro fertilization for procreation. Ethics is a major point of contention in all the aforementioned procedures. Independent agencies regularly oversee research in the scientific community; however, because embryonic gene manipulation is rather new, there are no specific rules to govern it. Thus allowing scientists to have almost absolute control with their experimentation.

In fact, some nations are so appalled by this technology and in fear of its potential that they have "banned such work" (Kolata). Because of the lack of regulation on genome manipulation, and Dr. He’s recent independent work, there has been substantial backlash from the public and the scientific community: “He’s research has raised serious ethical questions around the transparency of gene editing and sparked calls for a globally binding code of conduct” (Regan). Thus, as Shelley warned, and as current science is showing us, we must institute guidelines and laws on such procedures before biology turns Frankensteinian.

The relationship between present-day synthetic biologists and Victor Frankenstein draws a defining parallel: both are creating life by manipulating the natural world through science. Originally, synthetic biology was devised as a means to manipulate embryonic development, by correcting disease-causing mutations. However, with social tension already brewing around this issue by raising questions about the ethical boundaries between altering human development, and
creating inhuman, and potentially inhumane, individuals it has turned into a controversy about the power it allows people to have. Although creating life and editing genes seem like contemporary innovations, their conception dates back to the time when Mary Shelley was alive. During the early nineteenth century the influence of biologists’ and philosophers’ ideas greatly impacted society; it is speculated that Luigi Galvani, a scientist and philosopher, contributed to Shelley’s idea of 

Frankenstein when he wrote, “Perhaps a corpse would be re-animated… perhaps the component parts of a creature might be manufactured, brought together, and ended with vital warmth” (Belt). As we can see, the ideas of life and creation were speculated upon as much then as they are today. In this respect, Shelley is able to reflect timeless social issues such as fear of technology, fascination with creation, and ethical controversies (Parker 223-239).

Victor and contemporary biologists reflect these fears by manipulating life with scientific innovations. While 

Frankenstein provides sufficient evidence that there are limits to human abilities, both Victor and synthetic biologists are extending them. Scientists are enhancing DNA by extracting naturally-made developing embryos to delete, add, and manipulate the sequence of genes; they are not creating life out of nothing. Similarly, Victor creates his monster from the limbs of the dead. Many critics argue that Victor and synthetic biologists are taking on god-like roles because even God created Adam, the first man, from the dust of earth: “If the construction of artificial life forms only deserve to be called creation of life when it is created literally out of nothing (creatio ex nihilo), then we can be pretty sure that this elusive aim will never be achieved. But wasn’t Adam formed from the dust of the earth?” (Belt). If contemporary scientists can alter life, similarly to how Frankenstein reinvets it, and how God creates it, then it may not be long until we will be able to create life solely through science. If there is no reason for a God, or for humans to reproduce sexually, then do scientifically untouched people become insignificant and expendable?

Medical purposes aside, another possibly threatening problem than the technology itself is the concern of scientists like Victor and contemporary biologists becoming fatally ambitious. Lester Friedman and Allison Kavey, authors of Monstrous Progeny: A History of the Frankenstein Narratives wrote, “The monster, through its precise performance of humanity, demonstrates the pathetic hubris-and the innate limitations-of its inherently human creator” (Friedman and Kavey). Their quote recognizes the idea that when manipulating biological nature to create synthetic life, scientists could be creating entities that may become more advanced than them, thus making the creations unstoppable. Currently, synthetic biologists are only in the experimental phases of genome editing by altering mutated DNA in embryos; however, they have the ability to do much more. They have the power, and soon the public could have the choice, to manipulate embryonic development in order to create superhumans. Through Victor’s voice Shelley warns her readers of the potential destruction and despair that science, ambition and philosophy culminate to create:

“Learn from me, if not by my precepts, at least by my example, how dangerous is the acquirement of knowledge, and how much happier that man is who believes his native town to be the world, than he who aspires to become greater than his nature will allow.” (Shelley 41)

If synthetic biologists become as obsessed with their desires of perfecting life as Victor was with creating it, then the embryos being manipulated will become constructs of humans and the creators will become monsters driven by power, greed and perfection. Knowledge is power, and we can use the knowledge we have of biology to benefit humans ethically; however, we must remember that there are limits to human power, and those limits are necessary.

With the power that the scientific community is gaining through genome editing there is great potential for unhealthy control and monstrosity to unravel. Not only is this an issue of bioethics, but also an ethical issue of parenthood. Within recent years, and with the development of genetic technology, the idea of “designer babies” has been questioned and debated. Designer babies are considered to be genetically modified children or “genetic interventions into pre-implantation embryos in the attempt to influence the traits the resulting children will have” (Steinbock). What this means is that scientists will able to edit the genome of an embryo to the parents’ liking. Scientists have the capabilities to edit physical, mental, and emotional traits, in addition to eliminating various mutations and diseases. Advocates for designer babies say that “[t]here will be no disappointments and no surprises—parents can imagine what they want, and they can get it,” while opponents of the idea call it a violation of human rights to turn people into a “manufactured product” (Catalano). Regardless of the controversies, the first designer babies are already on their way; some would even say that they are already here.

Genetic counselors and fertility clinics in New York already allow clients to select the sex of their babies (Collins). With such advancements in the scientific community the idea of “homo faber,” meaning “Man the Maker” arises. This concept applies to both synthetic biologists and to Victor by showing the public how human beings are on the path to be “able to control their fate and their environment as a result of the use of tools” (daVenza Tillmans). Although this could be beneficial, there is a larger probability that it will lead to detrimental effects in our society.

The ability to “control fate” not only resides with scientists, but with the ideals of the parents who are the market for embryonic advancement. These ideals can lead to a deadly sin: lust for perfection. Because of this,
children may turn into artificial products of their parents’ design. A newly published article about genetic editing wrote, “It is unlikely to be long before a clinic offers the new test to parents’ to pick out high IQ embryos” (Wilson). Humans innately want to protect their offspring, and what is a better way to protect our kin than to give them all the genetic benefits that science will allow? With this lust for power and perfection, it is my personal belief that people will convert to creating their kids through science rather than allowing nature to follow its course. We will “direct the course of human evolution” which will lead to the creation of real world superhumans, making naturally made humans dispensable (Catalano).

The Ubermensch theory was developed in the early nineteenth century by Friedrich Nietzsche, a German philosopher and essayist (The Editors of Encyclopaedia Britannica). The theory revolves around the idea that there is (the possibility of) a superhuman or a superior man, “who justifies the existence of the human race” or “who is willing to risk all for the sake of enhancement of humanity” (The Editors of Encyclopaedia Britannica). The idea of superhumans sounds incredible, and not too far off. By intentionally manipulating the human genome we are able to produce the highest functioning individuals faster than natural selection. Therefore, instead of gradual natural enhancement, science now allows us to transform ourselves faster into the most advanced human-like entities (Koch). The issue with creating superhumans is that by genetically engineering humans with the most desirable traits we are changing what it means to be human, thus changing the human race, and giving the newly created beings an opportunity to eliminate us, the less advanced race.

In Frankenstein, Victor’s creation is human-like but still far from being a human. In many ways it was a superhuman; he was “a new species” of “gigantic stature” who seemed to mentally develop at heightened pace (Shelley 42). Victor counts on his intellect to subdue the creature; however, the creation outwitted Victor and ultimately led to his and his family’s destruction. Through Frankenstein, Shelley cautions society of what a future of superhumans would be like, warning us that they may be able to overpower naturally-made humans. With the scientific evolvement of designer babies, we are already closer to a human race that is more adept physically, functionally, and intellectually. As soon as synthetic biology is marketed, it could be creating a whole new race comprised of superior humans, which would lead to a whole new world where naturally made humans are unnecessary and irrelevant; a world in which naturally made humans could be eliminated because of their inferior abilities. This would resort us to a society yet again fuelled by eugenics (Parker 265).

Similarly to how we have philosophical questions and fears about creation, industry and power, Shelley showcases the same fears and questions of the nineteenth century in Frankenstein, the foremost being the science of improving humanity. Bioethicists must implement laws on synthetic biology as soon as possible and warn the scientific community and the public that the natural world is being threatened. Scientific American states, “The use (and abuse) of advanced fertility technology that evokes fears of Gattaca, Brave New World and, of course, the Nazis’ quest for a blonde, blue-eyed race of Aryans continues apace. A recent survey found that about 10 percent of a group who went for genetic counseling in New York City expressed interest in screening for tall stature and that some 13 percent said they would be willing to test for superior intelligence” (Collins).

We need only to turn to a page of a history textbook, a dystopian novel, or Frankenstein to see what the potential of transforming society can lead to. If we create an enhanced species of humans through synthetic biology, then the public’s lust for perfection will overpower our natural state of being. Scientists will become overwhelmed by ambition and greed, by making a profit off of transforming human genomes. We will become a socially stratified society where classes are separated not only by wealth, but also by superior and inferior genetics. We will be dehumanizing ourselves, others and our way of life if we continue to pursue synthetic biology in the ways we are.

Our fears of biological advancement and technology are not often expressed. They’re not new, but they are expanding and reconstructing contemporary society. Both Victor Frankenstein and modern-day scientists present outcomes of a future where naturally-made humans become inferior to those who are biologically manipulated into genetic superhumans. We must become aware of what contemporary science is giving parents and scientists the power to do, and more importantly we must become aware of all the possible outcome. In order to ensure a future free of synthetic biology based eugenics we must set specific regulations on synthetic biological experimentation and procedures, so they can be ethically overseen and monitored. Otherwise a Frankensteinian future will overcome us.

Works Cited

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