



Genetic engineering, a further step for humanity or a dangerous pitfall?

How “Gattaca” (1999) can stimulate a
reflection on gene manipulation ethics

April 2021

*Emerging Technology Ethics
through Fiction*

Jacopo Mazzanti

In the recent history of humankind there's mainly one characteristic that has driven the development of our species and society, namely the desire to break our limits and extend human control over the forces of nature.

Now that we're living what many scientists define "the century of biotech" it's more than ever the moment to raise our eyes and imagine how the men and women of the future will look like, especially thanks to the newly discovered capacity to modify human genes.

Genetic engineering is the most promising form of biotechnology and it's today a reality even if it has not commercial use yet.

The revolution in sight clearly brings together a great bundle of possibilities and worries which are the foundations of a relevant ethical dilemma every citizen is invited to reflect on: should genetic engineering be embraced as a next step in the evolutionary trajectory of mankind or should it be considered as a dangerous pitfall for our society?

The following paragraphs will take you by the hand to discover the potential impact of genetic modifications, privileging the possible negative outcomes not for a personal stance, but because the positive effects are certainly more straightforward to be analyzed and less interesting from an ethical point of view.

Many parallels will be made with the sci-fi movie "Gattaca" (1997), that depicts an idea of future characterized by widespread utilization of genetic engineering.

Think of walking around your hometown and being surrounded by people smarter than Einstein, faster than Usain Bolt and prettier than Uma Thurman, basically individuals with no weaknesses and just strenghts. Then suppose to compete with them in the society, for example in the job market, and find yourself with almost no chance of getting your dream job. Or similarly, imagine yourself taking part in a sport competition, discovering that your participation cannot end up in anything else than a defeat. This would be the perception of a normal man among superhumans. The society shown in the movie is the one that morally lost the control over the newly discovered power, and where there is a clear discrimination between the enhanced people and the "in-valids", so the individuals that had a natural conception.

The separation is grounded in the eugenics practices, namely the selection of desired heritable characteristics to improve future generations. This kind of philosophy toward human improvement appeared for the first time at the end of the 19th century, but became more widely known and

understood with the German Nazis. They gave foundation to their racial ideology on the idea that some traits were preferable to others and so were worthy to be preserved at every cost.

History warns about the risks of such an ideology, but it's interesting to analyze why humanity is so attracted by the artificial selection of genes.

The leading force is the desire to cure or prevent genetic pathologies that affect a significant part of the population, while currently the only solution implemented is to investigate the embryo in its initial phase and interrupt the growth if a serious disease is detected.

A world without genetic malformations is very appealing, as it is the possibility to have perfect health, a high IQ and a long lifespan. Every parent would love to have a child designed for a healthy and successful life. "Designer baby" is the name used to indicate a baby whose genetic makeup has been selected or altered, often to include a particular gene or to remove genes associated with a disease.

Vincent, the protagonist of *Gattaca*, is an in-valid which unfortunately is characterized by a weak hearth and severe sight problems. Since the beginning of the movie it's clearly perceived the struggle with his origins. He expresses his dissent with the decision of the mother to not rely on genetic engineering confessing to the audience <<I'll never understand what possessed my mother to put her faith in God's hands, rather than her local geneticist>>.

The status of the in-valids in the society is so low that most of the desirable life paths are precluded. Naturally conceived kids are not even allowed to enter kinder gardens, and in job interviews they're systematically discarded if not for very humble jobs.

This leads to consider a relevant ethical issue, namely the judgement of an individual based only on his inherited DNA, disregarding effort, dedication and attitude. Is it a desirable evolution for human society?

In a world where achievements are brought about more by technological intervention than effort, the entire system of justice that underpins society is brought into question¹. Genetic determinism seems to clash with the values of egalitarianism² and equal opportunities.

In fact the refusal to accept societal limits posed by genetic heritage is one of the recurring themes in the movie: a symbolic scene shows a grown Vincent beating his genetically enhanced brother in a swimming challenge, the same he always used to lose as a child. It represents how even in that

¹ Miah, A. (2020)

² The idea that all humans are equal in fundamental worth or moral status

world obsessed by social control there's still place for human will and self-determination. Vincent's desire to overcome adversities, push his limits and follow his dreams permitted him to avoid a loss just apparently written in his genes.

Going on with the debate on the ethics of genetic engineering, it's interesting to acknowledge that one of the most used arguments against genetic modifications of human beings is the slippery slope argument. It states how it can be morally undesirable to provide now legal acceptance to genetic engineering for medical reasons if the regulatory structure is unable to prevent the future use for socially undesirable actions, like provide enhanced skills to criminals or armies.

A practical application of this logical reasoning is present in the discussion about light drugs legalization common to many countries. In the opinion of certain political leaders granting it would soon lead to a request to legalize also heavy drugs, clearly much more dangerous for health.

There are many criticism about the slippery slope argument, since the historical evidence is weak, but it is worth to be considered while developing an opinion about genetic engineering.

A possible step toward a solution to this ethical issue could be to clearly define the separation between human enhancement and therapy, focusing regulatory efforts on the first one, that seems the type of genetic engineering use that raises more concerns. The problem which arises here is that what's just an enhancement for someone can be a therapy for others, and vice versa, depending on the social context.

Adding another piece of the puzzle to the ethical issue analyzed, Gattaca shows us that a society reliant so much on genetic determinations can lead to self-destruction, raising doubts over the pervasive use of genetic modifications.

Jerome Eugene is the character that is born "valid" but remained paralyzed in a suicide tentative, displaying how genetic enhancement not only doesn't guarantee a happy and meaningful life, but can even be a determinant of depression. He represents a person that was born to do great things, with a perfect body and an incredible talent for swimming, but that also for that same reason has never had the perseverance and the resilience needed to face obstacles and get over them.

Indulgence toward human imperfection could be an alternative ethical solution for the mankind: what if the real ethical human enhancement doesn't involve our genes but our mindset?

A different perspective on the ethical dilemma about embracing genetic engineering is the danger of reducing humans to mere organic objects, with human life that can be partially owned and

redesigned at will. As consequence some ethicists claim it will cease to be treated with proper dignity³. Also regarding this argument the movie offers a vision. In the relationship between the protagonist and Irene, a woman working at the same space agency of him, they make a step closer to each other refusing to reciprocally examine their DNA. In fact, the screening of genetic code is a common practice while choosing a partner in the dystopic future of Gattaca.

The just apparently “perfect” society depicted leaves no space for identity. The personality that every individual develops through the experiences of a lifetime doesn’t really matter. It’s all about generalization and simplification of human complexity tracing back the value of someone to his DNA.

Does this go along with our appreciation of diversity and of the facets that characterize everyone, included those traits that are not written in the genetic heritage? The story of Gattaca suggests that there’s no gene for human spirit.

Coming back to the start, the ethical dilemma regarding adoption of genetic engineering doesn’t present a simple solution. Even if this technology can save or improve the lives of many people, his utilization presents concerns that shouldn’t be underestimated by individuals and governments. It’s a debate that in the next years is going to intensify and grow in importance, so it may be the perfect moment to start questioning yourself: “Which would be my stance?”

References

Miah, A. (2020). Ethics Issues Raised by Human Enhancement. I. ETHICS IN A GLOBAL WORLD, 167.

Bankston, C. L. . I., PhD, & Valles, S. A. (2019). Socio-ethics of genetic engineering. Salem Press Encyclopedia of Health.

Walton, D. (n.d.). The Slippery Slope Argument in the Ethical Debate on Genetic Engineering of Humans. *Science and Engineering Ethics*, 23(6), 1507-1528. <https://doi.org/10.1007/s11948-016-9861-3>

Thacker, E. (2003). Data made flesh: Biotechnology and the discourse of the posthuman. *Cultural Critique*, (53), 72-97.

Macer, D. R. (1995). Biotechnology and bioethics: what is ethical biotechnology?. *Modern Biotechnology: Legal, Economic and Social Dimensions*. Biotechnology, 12.

³ Bankston, C. L. . I., PhD, & Valles, S. A. (2019)

5 Ethical Concerns of Biotech Engineering, <https://onlinelaw.hofstra.edu/blog/5-ethical-concerns-of-biotechnology-engineering/>

Gattaca: An Analysis, <https://reelrundown.com/movies/An-analysis-on-the-film-Gattaca>

Philosophical Movies: Gattaca - Analysis, <https://www.the-philosophy.com/gattaca-analysis>