

## What Does it Mean to be Human: How Neuroethics Alters Our Perception of Mankind

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*June 18th, 2350: The world as it was once known has vanished. Due to the aid of new scientific technology, mankind is completely altered. Through pregenetic diagnosis, wealthy families create designer babies whose genetically programmed personalities and intelligence ensure success in life. Those who cannot afford such technology must reproduce naturally; they are casted off as lesser human beings and may only find remedial work. To make matters worse, expensive pharmacological drugs used to enhance memory and increase brain plasticity have become a dietary staple for most genetically modified families. This tremendous dichotomy forces all natural humans to be subservient to anyone genetically modified.*

Although this scenario may seem far-fetched, many scientists and authors have depicted the inevitability of scientific technology being utilized to create a dystopia. However, others believe progressive scientific technology can be employed in beneficial ways— such is the view of Michael Gazzaniga. In his book *The Ethical Brain*, he supports the belief that neuroethics, a brain-based philosophy of life, can be used in solving ethical dilemmas of disease, normality, mortality, lifestyle, and philosophy of living. Most of these ethical problems stem from the simple question: what does it mean to be human? Should moral status be granted to an embryo? Will pregenetic diagnosis dehumanize mankind? Will pharmacological enhancers destroy inherent human qualities, like motivation and hard work? I believe that neuroethics should be applied to social issues but cautiously and holistically. When looking at issues such as the moral status of embryos, the use of pregenetic diagnosis, and the use of pharmacological brain enhancements, it is vital to consider the role of religion and economics.

When discussing how new scientific technology can alter our perception of humans and their lives, it is important to decide when life actually starts. Many people, predominantly members of the Catholic Church, believe life begins at conception, and because of this, abortion, in vitro fertilization, and stem cell research are unethical. However, I agree with Gazzaniga's (2005) neuroethics perspective that "mere possession of the genetic material for a human being does not make a human being" (p. 18). He supports his belief by outlining the development of the human brain: unorganized electrical activity begins to fire within week five and six, the fetus begins to move around week thirteen, and the fetus can survive outside of the womb around week twenty-three (para. 5-6). Like Gazzaniga, I believe that the intention of the embryo should be taken into consideration when granting moral status: "if we create cells for research purposes, and never intend to create a human, or if a parent creates embryos so that one can 'take,' do we have a moral responsibility to grow those other embryos into human beings? Of course not" (p. 14). The benefits of using

embryos for scientific research, such as stem-cell research, outweigh any moral concerns. In an article by John Timpane (2007), he explains finding treatment for illnesses like Parkinson's disease justifies the use of embryos and is a better alternative than throwing them away (para. 86). Although I believe that the neuroethical philosophy to this issue is perfectly acceptable, I do not think it can be solely implemented in society. Due to certain religious views, issues like stem-cell research and genetic cloning will continue to be a moral grey area.

Gazzaniga also argues that pregenetic diagnosis is inevitable and can be practiced responsibly in society. I, however, believe that scientists should be precautionary about the social and economic ramifications. In Gazzaniga's book, he discusses reproductive technology that could be used to alter the genetic structure of an embryo. Through modern techniques of in vitro fertilization, sex and traits could be manipulated (para. 38). Some argue implementing this kind of technology would be "cheating nature" and could dehumanize the human race. Others speculate as to what effect changing genes would have on our lives: genes only influence us to a certain extent. Genes are found to affect intelligence, athleticism, good looks, and personality; however, even after taking into account the role of genes and shared environment, "an unexplained variance of about fifty percent remains for differences in behavioral heritability among siblings" (Gazzaniga para. 44, p. 47-48). The remaining fifty percent seems to be a result of "unsystematic, idiosyncratic, and serendipitous events," and what truly makes us who we are results from the interaction between genes and the environment (Gazzaniga p. 48). Therefore, altering genes would not be cheating the system or destroying human spirit. When arguing for the use of pregenetic diagnosis, Gazzaniga says, "we are talking about the practice that exists only because of the very nature of being human: to discover, to think, to figure out new ways to do things. How, then, can using the brain, the thing that makes us human, be accused of 'dehumanizing'?"

(Gazzaniga p.53). Others fear parents will misuse this technology to create a perfect race. However, Lee Silver (1997) argues reproduction is about "individuals and couples who want to reproduce themselves in their own images...they will use some [technology] to reach otherwise unattainable reproductive goals and others to help their children achieve, health, happiness, and success" (p. 10). This technology could prove to be very beneficial, but scientists should be careful of its social effects. If altering genes is extremely expensive, then only the upper-class could utilize this technology, widening a social and economic dichotomy.

Although I am hesitant about the use of pregenetic diagnosis, Gazzaniga and I both agree that pharmacological neurochemicals should be used to enhance memory. These "smart drugs" can be manufactured to help increase intelligence by allowing faster and more efficient formation of memories (Gazzaniga para. 71). For example, Jerome Yesavage administered donepezil, a drug used to slow memory loss of Alzheimer's patients, to pilots before flight simulation; the pilots who had taken the pill remembered the training better and improved their performance, which implied that the drug improves memory of the normal population (Gazzaniga para. 76-77). Some believe consuming these drugs encourage cheating, and the drugs

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will not emphasize the importance of hard work. However, today's society is already altered by drugs and other substances. In an article by Arthur Caplan (2007), he states "many people take various drugs, foods, and herbs, or utilize technology such as virtual reality, to try to enhance their mood, emotional state, sexual enjoyment, or range of sensory experiment" (p. 273). Indeed, when students consume large amounts of caffeine before an exam, they are attempting to enhance their intelligence temporarily. Enhancing memory through drugs will not devalue work ethics nor cheat the system. No one with enhanced vision feels guilty that their vision is fraudulent because they did nothing to earn it; people do not always "earn" their happiness, nor do they reject the things that make them happy that were not earned (Caplan p. 275). Also, becoming truly successful and intelligent requires hard work. As Gazzaniga says, the smartest people "work hard to achieve insight and solutions"; drugs will only allow us to find new problems faster, but real work will be required to solve them (p. 84).

When looking at social issues like the moral status of embryos, pregenetic diagnosis, and pharmacological enhancement, a holistic perspective must be taken. Although I agree with Gazzaniga's neuroethical views, other factors must be taken into account: religion and the economy. Hopefully, by understanding brain mechanisms, society will come to conclusions about these issues. I am sure as society and technology continues to advance, we will continue to redefine the definition of human.

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