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Biotechnology, Society, and the Future of Medicine: The Promises and Perils of Enhancement

Introduction

Advancements in the field of biomedical technology has made the idea of enhancing human physiology beyond what is "normal" may be closer for us than many may think. These technologies may soon be used for the purpose of enhancing capacities, might also affect our nature in ways which drastically alter our moral and epistemic agency. Some proponents of enhancement argue that enhanced capacities will be beneficial for both individuals and societies because it will result in "morally better agents". Those who favor enhancement therefore seem to equate higher functioning capacities with a greater kind of moral and epistemic agency and thus also with a more "perfect" human nature. One serious problem for those who view human nature and enhancement in this way, is that it seems excludes an account of virtue and the role it plays in the "flourishing" of human beings. In this paper I reject enhancement positions which equate enhanced capacities with a perfected human nature, and I defend a view human nature and agency which accounts for virtue's role in human flourishing.

Biotechnology and Medicine

Contemporary debates in Biotechnology and human enhancement often address the concern of how enhancement technologies might potentially augment the functioning and processes of the brain in ways that provide humans with enhanced cognitive capacities and thus also with an enhanced forms of moral and epistemic agency. If enhancement of human cognitive capacities is possible in ways which extend beyond the normal abilities of our given nature, then the question to consider is whether the enhancement of capacities correlates to a greater

"perfection" of our human nature and therefore with a perfection of the agency which is inherent to that nature.

In this paper I will examine whether cognitive enhancements are capable of producing virtuous agents and I pose two questions which help to further elucidate an answer. The first question asks whether cognitive interventions for enhanced capacities can provide humans with the ability to think and act as better agents, and assuming that it can, the second question considers whether these artificially induced dispositions can actually provide individuals with modes of agency that are in fact virtuous. My argument is one that claims that while cognitive enhancements may be able to enhance the capacities of agents in ways that produce beneficial dispositions for generating virtuous forms of agency, this agency cannot be fully virtuous since the production, possession, and exercise of full human virtue required for human "flourishing", demands a certain degree of recognition and understanding from an agent which is ultimately beyond the reach of enhancement interventions.

Human Enhancement

In the report "Beyond Therapy" commissioned by the President's Council on Bioethics, Enhancement is defined as the "directed use of biotechnological power to alter, by direct intervention, not disease processes, but the "normal" workings of the human body and psyche, for the sake of augmenting or improving native capacities and performances."

According to this definition, the ultimate purpose for enhancement is so that individuals may be able to transcend their own given capacities, which pro-enhancement advocates often view as being flawed, in order to attain a certain degree of "perfection" by way of enhancing said capacity. The notion of enhancing capacities for the sake of "perfectibility" is what often

animates the debate over the permissibility of human enhancement. There are three general positions which are commonly advocated for by both scholars and civilians with respect to the morality of enhanced capacities. One group generally endorses an open view on human enhancement and maintains that the decision to enhance should be contingent upon the individuals who desire to enhance their own capacities for either beneficial or preferential ends. A second group is completely opposed to human enhancement and claims that any form of enhancement, regardless of its potential benefit, should not be permitted because it crosses a fundamental natural and moral boundary. A third group endorses a kind of middle approach to enhancement and maintains that enhancing capacities is only sometimes acceptable if the enhancement is used for only beneficial purposes and ends. Of the three enhancement positions, the one that is relevant to the current investigation of this paper, and which I will now discuss in further detail, is the group that is associated with the first enhancement position.

Individuals who endorse an open view of enhancement are typically classified as transhumanist. The central claim of transhumanism begins with the understanding that the evolution of human beings is an undirected biological and material process which is ultimately undirected and thus should be directed by human beings themselves. As Sweet has put it, "the transhumanist position is one which sees humans in control of their own evolutionary processes and thus responsible for broadening and redesigning of human potential and the human condition." Some of the arguments that transhumanist use in favor enhancement usually include one or more of the the following reasons: 1.) The potential cognitive, physical, social, and moral benefits of enhancement vastly outweigh whatever determinants such enhancements may bring for individuals and society, 2.) If the technology is available, then the ability to enhance should

follow a liberal model whereby individuals have the freedom to choose whether they want to enhance themselves, and 3.) That our nature is not something which is fixed, but rather is something malleable and that therefore the application of human intelligence in the directing of human nature would result in superior alterations to the human form. The general conclusion that I think should be drawn from this is that for transhumanist, what is deemed to be the "good life", is something which is ultimately up to the individual to decide, and not the product of some profound metaphysical ideology of human nature. Transhumanist state the although the methods by which enhancements may be achieved will likely to vary depending upon what exactly is being enhanced, many maintain that some of the most significant augmentations to the way humans think and act may be possible through various cognitive enhancement technologies such as Neural engineering. There are numerous ways in which neural engineering may be able to enhance cognitive capacities and I will discuss how this might be possible, but first I will provide some general accounts of human nature.

A common objection often raised against human enhancement and transhumanism is that it violates and/or destroys our human nature in ways that are essential for us to be able to live happy and flourishing lives. These arguments often maintain a metaphysical rather biological analysis of the human being and thus advocate for a universal view of human nature which is inherent to every human being. Although there has been a variety of brilliant metaphysical definitions of human nature expressed in different ways by thinkers such as Plato, Aristotle, Locke, and Kant, common to them all is a view of personhood which in some way emphasizes the activities of rational reflection, language as communication, self-reflexive consciousness, and the possession of moral agency and autonomy.

Even though anyone of those thinkers views on human nature would provide an intriguing perspective for the project of this paper, the view of human nature that I will choose to focus on is a view which has been articulated by Thomas Aquinas. According to Aquinas, Human beings are essentially "beings of a rational nature which are distinguished from other material substances.. human persons are also sentient, animate, and corporeal substances." Aquinas' view of human nature then is one which follows Aristotle's understanding of human beings as "Rational Animals" whose ability to exercise reason is the highest capacity in human beings because it provides us with the ability to know universal concepts of truths as well as determine our own actions. As "Rational Animals", our nature is one that is dualistic because it is animated and directed by both the animal and rational components which provide us with the capacities of sense-perception and rational thought. Now that I have provided a brief account of human nature that is Aristotelian and Thomistic in structure, I now turn to an account of "flourishing" which is also heavily influenced by the thought of Aquinas.

For Aquinas, the idea of flourishing is to be understood as a fundamental "good" for human beings because it is the fulfillment of both our animal and rational natures. And given that our nature is one that defined by the capacities we have as rational animals, human flourishing for Aquinas also involves the furthest actualization of those capacities which are apart of our nature. However, in order to achieve these actualizations of capacities, Aquinas states that we must follow our natural inclinations which are directed in pursuit of what is good. This is what Aquinas deems as following the "natural law" where included in this natural law is a set of principles that human beings must follow in order to satisfy our natural inclinations that are in accord with reason and thus lead to a perfecting of our human nature.

The term “cognitive enhancement” refers to a form of enhancement in which the brain is engineered or modified in ways that increase or exceed the organism's normal cognitive or neural functioning and abilities. The three most prominent approaches that are currently being developed for the purpose of enhanced cognition are mechanistic, surgical, or pharmaceutical intervention. Of these three, the method which seems to offer the most interesting and alarming kinds augmentations, are the ones that will be done through mechanistic interventions. In the near future, it is possible that there will be technologies which can enhance our cognition by way of interfaces or implants that connect to the brain and provide us with enhanced capacities for accessing and processing of large quantities of information.

One field that is currently exploring these kind of ideas and is developing technology which can integrate mind and machine together in this way is the field of Neural engineering. Neural engineering is a fairly new field of research which employs different biological engineering techniquices to the study, reinstatement, and enhance a wide range of nervous system functions in the brain. Although there are a variety of technologies which are currently being developed to enhance human cognition in different ways, Brain-Computer Interface Technologies (BCI), and Brain Prostheses Implants (BPs) are two particular types of technologies that are striving to enhance the human capacities for communication, memory, and moral knowledge through manipulating the neural networks of the brain in ways which allow individual to access, store, and retrieve large quantities of information. The general idea behind brain-computer interface technologies is that the mind will be linked to a computer or network through a process which “intercepts neural impulses in the brain and establishes a direct communication pathway with a computer”, theoretically this would allow the individual to communicate and interact with other

minds' and environments that extend far beyond his or her own immediate environment. In the case of brain prostheses, a device would be implanted into an individual's brain and would then function as a substitute for either damaged or healthy brain tissue as a way of repairing or controlling an individual's executive cognitive functioning or memory.

Although these types of technologies may appear to be somewhat of a distant reality for us, the truth of the matter is that experiments have already begun to explore these technologies with the intent of enhancing human capacities like the ways I just described. One notable research initiative headed by NASA called the "Extension of the Human Senses", efforts have been made to develop "alternative methods of human-machine interactions which can be applied to device control and human performance augmentation." The program is essentially trying to replace traditional interfaces such as keyboards, joysticks, microphones, etc.., with bio-electric controls and augmentation technologies that are connected and controlled by a human brain. Other research initiatives like the one headed by the National Science Foundation (NSF), have also sought to enhance human performance by trying to integrate multiple technologies together in order to help "reshape our human capacities and abilities ". The proposal suggests that by converging the fields of nanotechnology, biotechnology, information technology, and cognitive science into a machine which allows users access brain-machine interfaces, individuals would be able to "enhance one's sensory, motor, and cognitive skills and abilities in ways that enable individuals to be more productive and efficient thinkers and problem solvers."

In this section I have shown how cognitive enhancement technologies may potentially augment the capacities of memory, communication, and moral knowledge in human agents through interface and implant technology. The question to now consider is whether these enhanced

cognitive capacities will correlate in more virtuous forms of agency and thus in a more "perfect" human nature. I now turn to the second part of my paper where I will provide my own general reflections on this topic, as well as my argument for what I think is most reasonable.

The Future of Medicine

(this will also be the conclusion which I am still writing)