



ETHICAL AND SOCIETAL IMPLICATIONS OF TRANSHUMANISM AND TECHNOLOGIES OF THE FOURTH INDUSTRIAL REVOLUTION

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Abstract: This paper deals with the impact of transhumanism and the technologies of the Fourth Industrial Revolution on ethics and environment of the emerging society. Transhumanism, with its ideas of radical technological transformation of human being aiming at creating a new being – a hybrid form developed from the fusion of man and machine, with transhuman, as a transitional form, and posthuman, as the ultimate stage of the human-machine fusion, brings many controversies and radically affects the position and essence of the human being. The ethics of transhumanism is being manifested through the Fourth Industrial Revolution, which, based on new set of technologies, enables a radical transformation of the human being, requiring the necessity of a new approach to ethics, from the point of view of technological ethics. Technologies within the framework of 4IR bring new, hitherto unimagined challenges that require the entire global community to review current ethics and adopt new measures and tasks for the purpose of redefining, reorganizing and restructuring the relationship between humans and technologies, in the direction of preserving the stable, humanist, holistic sustainable development of human society.

Keywords: Transhumanism, The Fourth Industrial Revolution, Human Enhancement, HE Technologies, Ethics.

Introduction

Transhumanism is an ideology, a philosophy, a broad social and political movement that appeared in the second half of the 20th century and gained wide popularity in the last decade of the 20th and the first decades of the 21st century, currently imposing itself as a mainstream of philosophy and cultural development. Transhumanist ethics mostly an ethics inherited from humanism, with an emphasized belief in the transformative power of technologies, which should serve the ultimate goals: human enhancement and the transition from human to a new being – the posthuman. The ethics of transhumanism is rather a complex one, and it is based on various philosophical schools. The ethical and social implications of transhumanism and the human enhancement by using technologies, which it advocates, are of huge importance for the future.

Transhumanism: definition, origin and short history

Transhumanism is an ideology, a philosophy, a broad social and political movement that appeared in the second half of the 20th century and gained wide popularity in the last decade of the 20th and the first decades of the 21st century, currently imposing itself as a mainstream of philosophy and cultural development. Transhumanism advocates a radical and comprehensive transformation of the human being through the use of technology, with the aim of improving, enhancing or augmenting human abilities, seeking to overcome human condition and human nature and transform human into a new being through merging human and technology. The transitional form of that being is called a transhuman, and the ultimate goal is to create a posthuman, a completely new being that will no longer have anything in common with humans.

The World Transhumanist Association (Humanity+) defines transhumanism as “improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities” (Humanity+, 2021). According to Britannica (2023), transhumanism is defined as “philosophical and scientific movement that advocates the use of current and emerging technologies – such as genetic engineering, cryonics, artificial intelligence (AI), and nanotechnology – to augment human capabilities

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and improve the human condition.”

Nick Bostrom (2003) offers two distinct ways of defining transhumanism: “(1) The intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities” and “(2) The study of the ramifications, promises, and potential dangers of technologies that will enable us to overcome fundamental human limitations, and the related study of the ethical matters involved in developing and using such technologies.” The same two ways of defining transhumanism are included in the recent version of *The Transhumanist FAQ* (3.0), where it is added this concise note: “Transhumanism is a way of thinking about the future that is based on the premise that the human species in its current form does not represent the end of our development but rather a comparatively early phase.” (*The Transhumanist FAQ* 3.0, 2014)

In my book *Transhumanism: The Future Without People* (Radun, 2018), I defined transhumanism as “the teaching that advocates the view that it is possible and desirable to radically change human nature, to remake it in a certain way and to transform human, through the application of new technologies, into a completely new species, which could surpass the capabilities of the current man and replaces him... Transhumanism is driven by the idea of the possibility of improving and enhancement of human, with the ultimate goal of creating a posthuman, through a transhuman as a transitional stage.”

It should be mentioned that transhumanists themselves do not agree on what is meant by transhumanism and the definition of transhumanism has evolved over time. It can be said that the very concept of transhumanism is still in the process of evolution, and this is so because it is expanding over and over, upgrading and updating with the turbulent development of 4IR technologies, whose exponential expansion exceeds the ability of the human mind to track them and observe their consequences and implications for technological transformation, i.e. the human enhancement, which transhumanism strives for.

The term transhumanism was first popularized by English scientist Julian Huxley (Huxley, 1957) in his essay titled *Transhumanism*, where he states: “The human species can, if it wishes, transcend itself - not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this new belief. Perhaps transhumanism will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature.”

The ideas underlying transhumanism are not new. Those are ideas that are deeply rooted in Western civilization: ideas of progress, rationalism and secularism. Behind those ideas lies the quest for transcending our limitations as human beings, extending our lifespan and gaining new, superior capabilities. There is an agreement that the core transhumanist notions and values can be traced from the Enlightenment rationalism and humanism. Nick Bostrom (2005) finds the origin of transhumanism in the ancient myths and legends, such as Sumerian Epic of Gilgamesh. Max More (1990), one of the main protagonists of the modern transhumanism, states that transhumanism shares many elements of humanism. Of course, Nietzsche’s doctrine of the Overman (*der Übermensch*) inspired transhumanists to create the concept of transhuman and posthuman, but they are most likely closer to the philosophy of utilitarianism, which most significant representatives are Jeremy Bentham and John Stuart Mill (Bostrom, 2005).

It is common view that transhumanism developed from humanism and inherited key ideas and values from it, such as rationality, commitment to progress and science, personal autonomy, pursuing improvement of the human condition and human nature, but more than that, it widely applies technology in a variety of ways, unknown to humanism, in order to radically improve human condition and enhance the human nature as such, aiming at reshaping and transforming human being as a whole. The modern transhumanism emerged in 1980’s in the USA, and to this day it has expanded enormously, entering almost all areas of a society on a global level. Among a lot of prominent authors who paved the way for the development of modern transhumanism, we should mention J. B. S. Haldane, who published his essay *Daedalus; or, Science and the Future* in 1923; Richard Feynman, who anticipated nanotechnology in his post-dinner speech in 1959; Eric Drexler with his book *Engines of Creation*, published 1986; Robert Ettinger, who published *The Prospect of Immortality* in 1962, initiating establishment of cryonics; FM-2030, who was one of the earliest professors of future studies; Max More, founder of the Extropian Institute (1992), who wrote the first modern definition of transhumanism and created extropianism, the first original branch of transhumanist philosophy; Nick Bostrom, who is currently the most distinguished transhumanist philosophers; Ray Kurzweil, famous for his thoughts and predictions of the technological singularity and emergence of Superintelligence and many others.



Transhumanism, technologies of The Fourth Industrial Revolution and human enhancement

The Fourth Industrial Revolution (4IR) is a concept invented by Klaus Schwab, who claims that it is fundamentally different than the previous three industrial revolutions. According to Schwab (2023), “it is characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human.” The core and driving force of 4IR is a set of advanced technologies that lead to a comprehensive transformation of the economy, the society as a whole and human beings as such, their lifestyle, behavior, relationships, enabling humans to radically change human body and mind, giving opportunity to enhance human condition and human nature, what was previously unimaginable. According to the Global Risk Report 2017 (World Economic Forum, 2017), 12 essential technologies are listed that make up the technological platform of Industry 4.0: a) 3D printing; b) advanced materials and nanomaterials; c) AI and robotics; g) biotechnology; d) obtaining, storing and transmitting energy; f) blockchain and distributed ledger; e) geoengineering; h) Internet of Things; z) neurotechnology; i) new computer technologies; j) space technologies and k) virtual and augmentative technology. The spectrum of 4IR technologies, in addition to the above, includes many more technological innovations and improvements (quantum computing, Big Data, autonomous robots, Cloud technology, brain-computer interface (MRI), computer vision, drones, etc.), which are clearly different from the past technologies in use.

Transhumanism is inherently connected with 4IR technologies. These technologies enable what is the central idea of the transhumanism – they offer us unprecedented opportunities to improve, augment and enhance the human body and mind, human condition and human nature. Therefore, the human enhancement (HE) is the main goal that should be attained by using these HE technologies and it can be conceived as an end-point of the process of technological transformation of humans into transhumans and posthumans, as a final stage. Nick Bostrom (2003a) states that HE includes “radical extension of human health-span, eradication of disease, elimination of unnecessary suffering and augmentation of human intellectual, physical and emotional capacities”, in general, “all possible attainments that could profoundly alter the human condition”. The human enhancement (HE), although sometimes used as a synonym with transhumanism, is a wider concept, as it includes all means of improvement, modification and transformation of a human being, whether they are of cultural, political, economic kind or by means of technology. In the context of transhumanism, HE refers exclusively to enhancement of human beings by using HE technologies.

Ethics and values of transhumanism

Bearing in mind that transhumanism was born and developed from the auspices of secular humanism, and its strong connection with technologies that enable human enhancement, when we talk about the ethics of transhumanism, it is mostly an ethics inherited from humanism, with an emphasized belief in the transformative power of technologies, which should serve the ultimate goals: human enhancement and the transition from human to a new being – the posthuman. The ethics of transhumanism is rather a complex one, and it is based on various philosophical schools, among which the most significant are the following: utilitarianism, pragmatism, neo-darwinism, libertarianism, secular humanism, critical rationalism, hedonism, techno-utopism etc. (see Iuga, 2016; Dag, 2023; Bostrom, 2005; Pierce, 2024; More & Vita-More, 2013).

The ethics and values seeking from transhumanists is comprehensively elaborated by Nick Bostrom. The essence of the transhumanist ethics is given in Bostrom’s claim that “transhumanists view human nature as a work-in-progress, a half-baked beginning that we can learn to remold in desirable ways. Current humanity need not be the endpoint of evolution. Transhumanists hope that by responsible use of science, technology, and other rational means we shall eventually manage to become posthuman, beings with vastly greater capacities than present human beings have.” (Bostrom, 2003b)

Bostrom clearly and systematically lists and briefly analyzes human limitations, which are the following: a) lifespan; b) Intellectual capacity; c) Bodily functionality; d) Sensory modalities, special faculties and sensibilities; e) Mood, energy, and self-control. Then he defines the core or central transhumanist value as “having the opportunity to explore the transhuman and posthuman realms”, the basic conditions necessary for the realization of the transhumanist project, which are: a) Global security; b) Technological progress and c) Wide access, and a set of derivative values: a) Nothing wrong about “tampering with nature”; b) Individual choice in use of enhancement technologies; morphological freedom; c) Peace, international cooperation, anti-proliferation of WMDs; d) Improving understanding (encouraging research and public debate; critical thinking; open-mindedness, scientific inquiry; open discussion of the future); e)



Getting smarter (individually; collectively; and develop machine intelligence); f) Philosophical fallibilism; willingness to reexamine assumptions as we go along; g) Pragmatism; engineering- and entrepreneur-spirit; science; h) Diversity (species, races, religious creeds, sexual orientations, life styles, etc.); i) Caring about the well-being of all sentience and j) Saving lives (life-extension, anti-aging research, and cryonic.

According to the Transhumanist Declaration (2002), transhumanists promote a stance of openness and embracing new technologies, expecting to turn them to our advantage. They advocate the moral right for those who so wish to use technology to extend their mental and physical (including reproductive) capacities and to improve their control over their own lives. They also advocate the well-being of all sentient beings, including humans, posthumans, artificial intellects and non-human animals. Transhumanism as a philosophy and a cultural and social movement has great ethical implications. As the ideas of transhumanism are being increasingly realized in practice, with the expansion and ever wider and faster use of HE technologies in various areas of society, the concerns for their ethical and responsible use grows, and the resistance to transhumanism and its criticism grows consequently.

Transhumanists vs bioconservatists debate and criticism of transhumanist ethics

The whole transhumanist body of ideas seems to be so fantastic and at the same time so horrible to a majority of people that for this reason a great stream of opposing opinions was created, a kind of reaction to transhumanism, which represents a diametrically different opinion than transhumanism, called bioconservatism. That is the point where the transhumanists vs bioconservatives debate emerged.

Thus, two completely different views exist, opposing each other. The first view is that advocated by transhumanists, who argue for transcending the human and moving into the transhuman and posthuman through the influence of technology. The second view, bioconservative one, opposes the first one and includes those who advocate for the development and advancement of human in every sense. None of these camps is homogeneous and monolithic, but different directions and currents are distinguished within both opposing sides. Transhumanists pay a lot of attention to their critics. On the page of H+pedia (H+, 2023) there is a complete overview of critics of transhumanism. Among the critics of transhumanism, who represent the so-called bioconservative point of view, are James Barratt, Francis Fukuyama, Leon Kass, George Annas, Wesley Smith, Jeremy Rifkin, Bill McKibben and others.

According to Bostrom (2007), critics fear the establishment of posthumanity for at least two reasons. The first reason is that they object to transhumanism because they think the posthuman condition might be inherently degrading. Another is that they believe that posthumans can pose a threat to ordinary people. In his reasoning and defense of the transhumanist viewpoint against criticism leveled by Leon Kass (2003), Bostrom makes many abstractions and generalizations. Thus, starting from the fact that human nature and the characteristics and tendencies with which we are naturally endowed as humans cannot be the basis with which we should harmonize, Bostrom points out: "Transhumanists counter that nature's gifts are sometimes poisoned and should not always be accepted." From this, Bostrom concluded that we cannot accept the nature of man as the only and unchanging basis, and defended the aspiration of transhumanists to "legitimately reform ourselves and our natures in accordance with humane values and personal aspirations."

Confronting the views of Leon Kass, Bostrom points out that the allusion to the Brave New World, which Kass cites as an example of the dehumanization of man, is completely opposite to transhumanist intentions. He points out: "Transhumanists argue that the best way to avoid a Brave New World is by vigorously defending morphological and reproductive freedoms against any would-be world controllers." Given the differing views on the possibilities of human augmentation technologies, Bostrom believes that "it is crucial that no one solution be imposed on everyone from above but that individuals get to consult their own consciences as to what is right for themselves and their families. Information, public debate, and education are the appropriate means by which to encourage others to make wise choices, not a global ban on a broad range of potentially beneficial medical and other enhancement options." Another fear is the fear that the new species - the posthumans - will likely view the old - "normal" humans as an inferior species and seek to subjugate or kill them. On the other hand, normal humans may see posthumans as a threat to their survival and may engage in pre-emptive killing of posthumans before they themselves are killed.

Responding to the second fear, Bostrom writes that there has always been a risk in society of one group or class of people opposing another class of people and efforts by one class to subjugate or kill members of another class. In order to prevent this, society passes laws and authorizes institutions, which act in such a way as to prevent such a thing from happening. Bostrom's response implies giving greater powers to the state or the global community to regulate relations between the class of "normal people"



and the class of “posthumans”, which contradicts his previous insistence on individual freedom of choice. He rejects the possibility that there could be conflict or “war” between two opposing classes of people, looking for an analogy with today’s existence of different groups of people peacefully coexisting and cooperating. This claim of Bostrom’s is only speculation and can neither be accepted nor rejected. From this point of view, we cannot know with certainty how social relations will continue, whether and how the people who will agree to the modifications through the application of HE technologies will be differentiated from the group of “normal” people and what their mutual relations will be like. There can be many different scenarios.

It is certain that some kind of general social control will be necessary. But the question is to what extent this control will be able to go and how effective it will be. The possibility of conflict and war between two classes of people who will have a completely different level of intelligence, way of thinking, acting and a different external (physical) form should not be ruled out. It is a threat that will always be present.

In his short essay on transhumanism, Francis Fukuyama (2004) calls it a “strange liberation movement” and writes that transhumanists want to “free the human species from biological limitations.” Fukuyama finds that the first “casualty” of transhumanism is equality. By that he means the political and legal equality of people. Transhumanism, according to Fukuyama, will first threaten equality because not all people will be able to afford to undergo the appropriate procedures and technologies that will transform them into a more superior species than humans. This will be especially pronounced in the relations between rich and poor countries, where HE technologies will not be available. The question arises as to what rights those who will transform into a superior species - transman and postman - will seek for themselves, and how will these rights relate to the rights of normal people? Fukuyama also objects to transhumanists that they want to change the human essence and that they oversimplify the problem of improving or expanding the human being and ignore the complexity and intertwining of the different characteristics of the human being, where each characteristic, both good and bad, is developed in man for a reason and has its own meaning, as a product of evolution. In essence, Fukuyama’s objection to transhumanists is that they approach the human being mechanically, as if a person is made up of several parts, and then they aim to improve or replace a part that is damaged, outdated or not good enough, with a new and more perfected part.

For transhumanists, the technology as such has its own cause, and almost all their ethics is connected with using technologies for the purpose of becoming ‘better than well’. Transhumanists proclaim themselves as libertarians, so they place freedom on top of human priorities and virtues. They also strongly believe in perpetual progress. Their uncritical, ecstatic acceptance and promotions of new technologies and striving to free themselves from all limitations, including the biological limitations, leads to an extremely optimistic view on technology, or perhaps a kind of techno-utopian view. The seemingly endless leaning on technology makes them blind for the main failure that could be a final result of the HE process – human is transforming into a transhuman, and at the end as a posthuman, which is actually a negation of human. How we can know anything about something that is now just an imagination? The transhuman as well as posthuman are so far only projections of transhumanist ideal state of being. And that kind of ideal is not acceptable for all humans. As Andreas Vaccari (2015) states: „Transhumanists need to convince us that posthumanity represents a foreseeable and conceivable benefit. However, there is no way to calculate the aggregate result of these choices.“

In my opinion, the idea of liberation of human being through HE by using technologies that are in permanent process of improvement, where it is completely unknown what will happen in the future, how HE technologies will further develop and how transhumans and posthumans will behave, what they will feel and think about, is pretty naïve and irresponsible.

Transhumanists completely miss the meaning and value of freedom for humans and reverse the notion of freedom. In transhumanist perception of a future, the things, machines, technologies are becoming ever smarter, and also increasingly free, as they behave more and more autonomously, while humans are becoming less and less free, as they are becoming more and more tied to technologies.

Can HE technologies impact human free will and personal identity? There is a lot of evidence that certain neurotechnological interventions can significantly influence one’s free will. Imputing chips into human brain can do that. The brain-machine interface (BMI), either implanted or wearable, is a neurotechnological concept that opens up many possibilities, but at the same time it raises great concerns (GAO, Government Accountability Office, 2022). The concept of Internet of things, if fully developed, can certainly influence free will and freedom of choice of humans. Interconnectedness, to which IoT strives, surely diminishes human free will as it puts humans amid the huge network of various interconnected smart devices, machines and objects. In these conditions, human beings increasingly take submissive role, becoming only a passive element of the permanent hyperintelligent streaming of information and



knowledge. The even more developed concept of Internet of Bodies (IoB) (Lee et al, 2020) means a whole new revolution in direction of attaining fully automated, autonomous, hyperintelligent integral network that comprise not only things, but also humans, AI beings, robots, transhumans and posthu-mans. That leads to the creation of the integral all-encompassing hyperintelligent network, embodied in the concept of Internet of All (IoA). Regarding HE issue and implications on a society, Stephen Lilley (2013) states: "The transhumanists are not contempt to simply discuss the merit of enhancement, rather they are working to build a world favorably aligned. Conservationist strive to prevent this. The trans-humanity controversy is as much a political act as it is an intellectual exercise. I treat the transhumanity debate as a call-to-arms by which the contestants strive to mobilize support to bring about change in policies and institutions."

Conclusions

The central point of the transhumanist controversy is whether we should accept HE technologies in order to transform ourselves into a being that will have nothing with human nature or not. Behind this dilemma lays the necessity to involve all available forces and factors in order to legally and ethically regulate the uncontrolled exponential growth and comprehensive expansion of HE technologies, where the essential need to protect the fundamental human free will, personal identity and right to choose will be at the center, bearing in mind all the consequences that can have an immoderate, unbalanced and unregulated calling and promoting transhumanist ethics and values. Those who do not want to participate in the transhumanist experiment have the right to be excluded from it, without any harm and negative repercussions for personal and social integrity and freedom. The international organizations as well as economic and political entities at the national, regional and global level should initiate initiatives and adopt strategies and legislation that should provide a new ethical and legal framework, which will be based on the principles of safety, security, trust and responsibility.

Conflict of interests

The author declares no conflict of interest.

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