The Effects of Technological Development on Humanity: New Human or Superhuman?

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Abstract: This study explores the transformative effects of technological advancements on humanity, questioning whether current progress leads humanity toward a "new human" or a "superhuman." The unprecedented integration of technology in fields such as healthcare, biotechnology, artificial intelligence, and genetic engineering brings significant advancements not only in extending human life but also in enhancing physical abilities and treating complex diseases. However, these developments challenge traditional definitions of humanity, raising complex ethical, social, and economic issues.
Starting from the question of what it means to be human, the study underscores the multifaceted nature of "being human" and argues that the role of technology in shaping this identity cannot be fully understood through biological perspectives alone. Instead, it emphasizes the necessity of a sociological analysis that considers social, cultural, and economic inequalities. The study discusses how technological evolution has entered a new phase with artificial intelligence, exibiting catalytic potential akin to cultural evolution and potentially creating a self-sustaining feedback loop without requiring external input. This could lead to the entrenchment of inequalities between individuals and societies.
The study argues that addressing inequalities in technological access requires a redefinition of access to technology Access from a privilege to a fundamental human right. It contends that only by recognizing and addressing these inequalities—often perpetuated by existing socio-economic structures— can technological evolution offer holistic benefits to society.

Keywords: New Human, Superhuman, Technological Evolution, Artificial Intelligence, Technological Accessibility

1. Introduction

Humanity is more intertwined with, reliant on, and even dependent upon technology than ever before. The primary driver behind this widespread adoption of technology lies in the economic and social welfare it provides to individuals and societies alike. Over the past few decades, technological advancements have brought about an unprecedented transformation in human health and well-being, spanning areas from healthcare to information technology. While these advancements promise a longer and healthier life, they are also radically reshaping the definition of what it means to be human (Harari, 2015; Susskind & Susskind, 2020). As a result, there is an evolving, reciprocal relationship between technological progress and the definition of humanity, characterized by changes that can be classified as internal (the co-evolution of technology and human identity evolving from within) and external (progress or alienation for both humans and technology).

The inevitability of the integration of technological development integrating with artificial intelligence and the resulting transformation of the relationship between product and producer—marks a profound internal change in technological advancement, signifying a shift in the very nature of technology. For humans, internal change and the resulting transformation of the relationship between product and producer—marks a profound internal change in technological advancement, signifying a shift in the very nature of technology technology both the surpassing of species-specific traits and the modifiability of structural characteristics at a pace that often outstrips societal acceptance, challenging existing (largely biological) consensus on the definitions of humanity. External change, on the other hand, reflects the reality that technological advancements, while offering significant advantages, often benefit certain groups while remaining inaccessible or external to others. For example, innovations in fields such as biotechnology, artificial intelligence, genetic engineering, and cybernetics demonstrate the potential to transcend human biological limits. These technologies enable the enhancement of physical abilities, the treatment of complex diseases, and even the extension of human lifespan. However, these developments also raise profound ethical, social, cultural, and economic concerns.

This study aims to examine the effects of technological progress on humanity and project potential outcomes based on current implementations. It further argues that the question of how technology

redefines human identity cannot be adequately addressed through a purely biological perspective. Instead, a sociological lens— considering social, cultural, and economic inequalities— offers a more comprehensive and meaningful assessment.

2. Technological Advancements and the Transformation of Human Identity

The question of what it means to be human has been explored throughout history by philosophers, scientists, and various disciplines, each offering a distinct perspective. These interpretations often differ based on social, cultural, and temporal contexts. For instance, Aristotle described humans as "zoon politikon" - social beings - emphasizing the intrinsic connection between human nature, rational thought, and political life. This perspective suggests that human nature is shaped through social order and morality (Aristotle, 1998). Descartes characterized humans as "thinking beings," asserting that reason and consciousness are the defining attributes of the human species (Descartes, 1996). While these perspectives offer normative and idealized definitions of humanity, they also highlight the duality of humans as both physical entities and social beings (Kaufman, 1993). Notably, in Descartes's emphasis on conscious awareness as the core attribute of humanity allows for differing interpretations particularly when considered in a species-wide context.

The intellectual history of Anatolia has also contributed unique perspectives on the nature of human existence. For instance, Yunus Emre, a 13th-century Anatolian mystic and poet, depicted humans as beings with both physical and spiritual dimensions. According to Yunus Emre, a person's spiritual depth transcends material existence and is shaped by love and devotion. In one of his poem he wrote, "Knowledge is knowing knowledge; knowledge is knowing yourself," emphasizing the importance of self-awareness as the pathway to truth. This perspective suggests that humans are not merely physical or mental entities but also spiritual ones. In Yunus Emre's view, the human being carries an intrinsic spiritual essence and embarks on a journey marked by struggle and transformation to attain the divine— a perspective deeply rooted in Anatolian Sufi thought.

The question of what it means to be human has been expressed through various perspectives across different time periods, regions, beliefs, and philosophies. As Hegel remarkeded, *"No man can surpass his own time, for the spirit of his time is also his own spirit"* (Hegel, 2004). This suggests that individuals are shaped by the social, cultural, and economic conditions of their era, and that their assessments are inevitably influenced by this contextual framework.

From a biological perspective, humans are primates that have evolved through complex evolutionary processes. Homo sapiens distinguishes itself from other species through advanced intelligence, the capacity for abstract thinking, and ability to construct intricate social structures (Harari, 2014). Key biological traits defining humanity include genetic composition, the nervous system, and the brain's capacity. In essence, the biological definition of humanity rests on physical structure and genetic attributes. Evolutionary biology posits that humans are a species shaped by natural selection, developing unique characteristics that enhance survival (Dawkins, 2006).

However, recent advancements in biotechnology, genetic engineering, and artificial intelligence are challenging this traditional biological definition. Technological interventions now allow for enhancements to the human body that transcends natural limitations, suggesting that humanity is evolving toward a form that surpasses traditional biological boundaries (Kurzweil, 2005; Harari, 2016). Technologies such as CRISPR enable enable precise human genome editing, while biomechanical prosthetics and artificial organs expand the functionality of human body in unprecedented ways. These innovations not only improve the capacity to preserve human health and bodily integrity but also raise a pivotal question: Are we creating a new type of human being that transcends biological constraints ? (Fukuyama, 2002).

These technological breakthroughs necessitate a re-evaluation of traditional definitions of humanity. Fields such as genetic engineering, cybernetic organs, and artificial intelligence provide tools capable of transforming both the physical and mental dimensions of human existence. Transhumanist thought

suggests that such transformations could push humans beyond biological and mental limits, introducing the concept of the "enhanced human" rather than merely a "new human" (Bostrom, 2005). This perspective indicates that technology's influence not only extends beyond biological boundaries but also fundamentally reshapes the meaning of being human. Humanity may soon face a crossroads between these two pathways.

Nonetheless, these advancements are not universally accessible. Currently, cutting-edge technologies - whether for treating diseases, providing prosthetic limbs or organs, or regenerating the body—benefit only a privileged minority with the financial means to afford them. Those without access remain at a disadvantage, exacerbating existing social inequalities. This disparity allows a select few to gain relative superiority over the general population, reviving class struggles that once seemed to have diminished.

As such, understanding the impact of technological advancement requires addressing not only their implications for the definition of humanity but also their role in perpetuating social inequalities. The form and pace of this technological progress have evolved into a distinct phenomenon, necessitating a separate and thorough analysis to evaluate its far-reaching consequences.

3. Technological Evolution

The history of evolution is inseparable from the development of humankind, encompassing both the planet's history and human history. For humanity, the process that began with biological evolution has transitioned into a new phase characterized by cultural evolution. Nevertheless, biological evolution remains the foundation of cultural evolution, as the latter could not exist without the former. Both forms of evolution have played critical roles in shaping human history.

Biological evolution primarily refers to the accumulation of genetic changes in organisms over generations through natural selection, a process that unfolds over thousands or even millions of years. Its slow pace often makes direct observation challenging. For example, the transition from human ancestors to modern humans, as revealed by fossil records, occurred gradually under the influence of environmental factors and subsistence practices like hunting (Hawks et al., 2000). While biological evolution has profoundly influenced human physical characteristics, it must also be evaluated in relation to cultural evolution, especially as humans began to form social structures. Initially, environmental conditions primarily shaped biological evolution; however, the advent of socialization introduced cultural dynamics that began to influence biological processes. In today’s context, technological factors are further reshaping these dynamics, altering not only the definitions but also the structural mechanics of biological evolution.

Cultural evolution, on the other hand, involves the transmission of knowledge, beliefs, and behaviors across generations within societies, occurring at a much faster pace than biological evolution. Societal advancements in technology, ideas, and norms spread rapidly, fundamentally altering human life. For example, the development of agriculture drastically transformed social structures, leading to more complex social organizations and the adoption of a sedentary lifestyle (Bellwood, 2005). Research suggests that cultural evolution is shaped not only by biology but also by socio-cultural contexts, highlighting its multifaceted nature (Boyd & Richerson, 2005; Mesoudi, 2017).

Unlike biological evolution, cultural evolution operates in a **self-sustaining manner**, driven by internal dynamics such as time, place, technology, and human interaction, as well as interactions with other societies. Edward O. Wilson describes this process through the concept of autocatalysis—originally a chemical term referring to reactions accelerated by their own products. Applied to cultural evolution, autocatalysis implies that a cultural innovation or change can trigger subsequent innovations, creating a “feedback loop” that accelerates societal transformation. In this loop, once initiated, change processes gain momentum within their own dynamics, fostering new developments in values, norms, and knowledge (Wilson, 2002). The rapid pace of cultural evolution compared to biological evolution, is largely a result of this self-sustaining nature.

Technological innovations significantly accelerate the cultural evolution. Over the last few centuries,

technological advancements have amplified the momentum of this process. For instance, the proliferation of digital technologies and of the internet has dramatically increased access to informatio, fostering cultural interaction. The rapid dissemination of knowledge through digital platforms has intensified the exchange of ideas between individuals and communities, further accelerating cultural evolution (Kleinberg, 2000; Mesoudi, 2011). Castells (2010) emphasizes that digital networks have reshaped societal cultural dynamics, enhancing the speed of cultural change in the digital era. While cultural evolution's autocatalytic nature is amplified by technological innovation, it is also influenced by social, economic, and political changes. For instance, Boyd and Richerson (2005), stress that cultural evolution is shaped by a combination of technological advancements and societal norms, reinforcing its self-sustaining structure.

In the current stage of technological evolution, the integration of **Artificial Intelligence (AI)** into ecological and technological development introduces a new layer to this autocatalytic process For example, the invention of the steam engine not only enabled the development of trains and steamships but also catalyzed broader industrial advancements—a human-driven form of autocatalysis. However, with AI integration, technological evolution's autocatalytic nature is set to accelerate further, potentially leading to even faster cycles of innovation.

AI applications in technological development have already begun to manifest transformative effects across various domains. Through advancements in big data and machine learning, AI has enhanced humanity's capacity to process information, revolutionizing industries such as healthcare, education, and automation (Mesoudi, 2011). In sectors such as automation, healthcare, education, and industry, AI-driven applications leverage prior innovations to unlock new developmental opportunities, thereby fueling subsequent waves of technological progress. This dynamic positions AI as a pivotal catalyst in the self-perpetuating cycle of technological advancement (Brynjolfsson & McAfee, 2014). AI-powered advanced data analytics is enabling personalized medicine in the healthcare sector, significantly accelerating progress in biotechnology. Additionally, the rapid development of autonomous vehicle technology in the automotive industry is not only transforming transportation but also indirectly impacting the energy sector. Each of these innovations serves as a catalyst for subsequent technological advancements, reinforcing a self-sustaining cycle of progress.

The rapid advancement of technology and its autocatalytic nature inevitably exacerbate inequalities in access to technological resources. Socio-economic factors, such as income and education level, heavily influence access to digital technologies, the Internet, and AI-driven applications (van Dijk, 2020). Lower-income groups face significant barriers to utilizing AI-supported educational or healthcare services, whereas higher-income groups gain enhanced quality of life through such innovations. This disparity reinforces social inequalities, undermining the ideal of technology as a universally accessible developmental tool (Eubanks, 2018).

Moreover, the integration of AI into technological evolution risks deepening these inequalities, particularly through job displacement caused by automation. Productivity gains from AI and automation predominantly benefit those with privileged access to these technologies, while the digital divide further marginalizes economically disadvantaged groups (Susskind, 2020).

Although predicting the precise trajectory of a human-influenced process is inherently complex, the current socio-economic system provides a relatively clear path for technological evolution. Propelled by autocatalytic processes, technological advancement not only transforms societal structures but also amplifies class disparities. Without the emergence of a robust counter-organizing force, these trends may solidify existing inequalities and hinder inclusive progress.

4. Inequalities in Access to Technology

Globalization and advancements in communication technologies, particularly the rise and proliferation of social media, have illuminated the understanding are not only a product of internal societal dynamics but also have regional and global dimensions. Furthermore, it has become increasingly evident that even

within relatively developed, affluent, or welfare-oriented states, significant disparities exist—marked not only by poverty but also by deprivation and inequality.

It is crucial to distinguish between viewing inequality as a natural condition that societies must endure and recognizing it as an exploitation that demands resistance. To date, there has been insufficient qualitative discourse on whether this state of inequality should be considered as an inevitable circumstance or as a pressing issue requiring intervention.

In more focused discussions, the characterization of technology as merely reproducing existing inequalities fails to capture the full scope of the situation. With advancements in artificial intelligence, it is essential to consider not only the perpetuation of these inequalities but also their potential escalation. Once integrated with artificial intelligence, these inequalities may become entrenched in ways that are irreversible, complicating efforts to address them within existing social and socio-economic structures. Consequently, addressing the injustices in technological access emerges as an urgent necessity.

Technological advancements have emerged as one of the primary factors contributing to the deepening of global inequalities across societies, particularly in recent decades. As evidenced during the COVID-19 pandemic, access to health technologies has become a fundamental determinant of individuals' quality of life and life expectancy. These inequalities in technological access not only make class disparities more visible but also increasingly marginalize a larger portion of society, perpetuating the perception that development is continuous and that there will always be something better. Furthermore, technological advancement fosters a dependency between those who currently possess technology and the structures that derive technological development.

When Marx argued that capitalists, by controlling the means of production, rendered the working class dependent on them for access to these tools (Marx, 1990), it was clear that those who believed this dynamic would be limited to the working class did not anticipate the proletarianization of the majority of society within such a short time frame. It is important to recognize that the scope of the means of production is expanding to include high-cost sectors such as biotechnology, artificial intelligence, and genetic engineering, where only those with substantial economic power can access these advanced technologies (Harvey, 2005; Sassen, 2014). This situation suggests that an increasingly small number of people will be able to benefit from these advancements.

Explaining the limited access to high-cost healthcare services, such as genetic engineering, personal genetic tests, and advanced medical interventions, primarily to high-income individuals, can be effectively framed using Bourdieu's concept of "cultural capital". This concept helps illuminate the fact that essential needs, like healthcare, become accessible only to those with favorable economic status (Bourdieu, 1986). Recent studies similarly highlight the growing inequality in access to healthcare services. For example, a study in the United States on healthcare inequities, specifically in access to genetic testing, found that genetic tests and personalized medicine are predominantly available to wealthy individuals. According to the study, while low-income individuals are unable to access these services, high-income individuals have far greater access to genetic testing, which allows them to identify genetic risk factors and take preventive measures (Kahn et al., 2019).

Similarly, during the COVID-19 pandemic, global inequalities in healthcare access became starkly evident. Numerous reports highlighted the significant challenges faced by poor communities in accessing testing and treatment services during the pandemic. An article in *The New York Times* noted that even in the United States - one of the wealthiest countries in the world - COVID-19 vaccine access rates were notably lower among low-income populations compared to affluent communities. This disparity emphasized that low-income individuals lacked health insurance or the financial means to access necessary healthcare services (Hoffman, 2021).

The situation is no different when considering inequalities in Europe. An article published by The Guardian highlighted that access to high-quality healthcare in many European countries has become increasingly difficult, particularly with the reduction of social benefits. Many low-income individuals are unable to access necessary healthcare services, leading to deterioration of their health status over

time (Stavropoulou, 2021). These examples from developed countries underscore the more severe conditions faced in underdeveloped and developing countries. Inequality in healthcare services is more pronounced in impoverished countries, exacerbating global disparities in health services. For instance, the average life expectancy in developed countries is significantly higher than in impoverished countries where even basic healthcare services are difficult to access (WHO, 2020). While the opportunities presented by technology benefit a limited elite, those unable to access these advancements are disadvantaged in terms of health and quality of life, thus creating a new form of social discrimination in the face of technological progress (Sen, 1999).

The class divide in access to technology is contributing to an increasingly stratified social structure. According to Jameson, capitalism is an ideology intrinsically linked to technology, and the opportunities afforded by technological advancements serve to reinforce the position of the capitalist class (Jameson, 1991). In this context, access to healthcare technologies transcends a purely health-related issue, becoming a socio-economic problem. For instance, healthcare services in developed countries are more advanced than those in developing countries, creating a "technology gap" at an international level and exacerbating social inequalities globally (Wallerstein, 2004). Consequently, while technological advancements have the potential to improve human health, they also serve to accentuate class inequalities.

Addressing inequalities in access to technology is indeed feasible. This requires dismantling the correlation between ownership of the means of production and privilege, ensuring that the benefits of technology are equitably distributed, and emphasizing the recognition of healthcare as a fundamental social right. Such an objective would be achievable only if the right to access technology is regarded not as a luxury but as an essential human right.

5. Conclusion

The impact of technological advancements on the definition and living conditions of humanity is perhaps evolving into the most radical and unpredictable transformation encountered in human history. Through this process of development, humanity has begun to transcend its biological limits to some extent and has reached a point where it could potentially redefine itself. However, it cannot be said that all of humanity equally benefits from this transformation. Without addressing the inequalities in access to technology, each technological advancement will only further stratify the class structures within societies, offering some individuals the opportunity to become “superior humans” while leaving a large portion of humanity within the traditional boundaries of human existence, increasingly facing deteriorating conditions.

Notably, advancements in fields such as biotechnology, artificial intelligence, cybernetics, and genetic engineering are expanding the potential to improve human health and extend lifespan. However, these opportunities are predominantly shaped by economic criteria and priced according to the market dynamics. As a result, access to these technologies will increasingly be tied to purchasing power and willingness/ability to pay, limiting availability to an ever-shrinking minority. In this scenario, individuals with access to high-tech innovations will ascend to an exclusive status as “superior humans,” while those without such access will pay the bear the consequences of diminished health, constrained opportunities, and shorter lifespans.

As long as technological advancement is treated as a means of production within the current socio-economic system, and as long as access to technology is viewed not as a human right but as a luxury, it will not alleviate social inequalities. On the contrary, it will exacerbate and further highlight. Technology will serve as a tool for extending life, improving health, and enhancing welfare for some while remaining an inaccessible luxury for others. Consequently, this transformation has the potential to ignite a new class struggle within society.

While technological progress, under current accessibility criteria, grants a “new” identity to humanity as a whole, it offers the possibilities and advantages of becoming a “superior human” only to a privileged

minority. In *Capital*, Marx describes the mindset of capitalists who define their wealth in terms of what others lack, positioning themselves as the greatest obstacle to equitable distribution:

" In every stock-jobbing swindle, every, one knows that some time or other the crash must come, but everyone hopes that it may fall on the head of his neighbor after he himself has caught the shower of gold and placed it in safety. Après moi le déluge! [After me, the flood] is the watchword of every capitalist and of every capitalist nation." (Marx, 1990).

The outcome of this situation is as unpredictable as any circumstance humanity faces. However, it is clear that humanity will increasingly confront a choice between two paths. Which path will be chosen remains to be seen.

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