

What Does It Mean to Be Human? Post-Human Theories and the Future of Humanity

Saván De Jesus

It took the universe billions of years to coalesce into the symphony of stars, suns, and solar systems that lie beyond our light years today. Before humans achieved consciousness or a higher intelligence, it took life on earth billions of years to emerge from a few simple single-celled organisms. Hundreds of thousands of different technologies, which range from language to writing to modern tools, have redefined what it means to be human. Throughout that time, these technologies have constantly changed individuals' way of life. In the mere span of 60 years, humans have witnessed the moon landing, the rise of computing power, the development of cellphones, the takeover of the internet, and the purposeful mutation of the human genome sequence. Technology moves fast.

One of the most evident examples of the rapid technological progression is the development of the computer. It took the computer approximately 60 years to develop from a room-sized calculator to a pocket-sized supercomputer. At a 2009 TED Talk, Google's director of engineering Ray Kurzweil explained that information technology grows at an exponential rate, not a linear one. The difference is huge. When you take 30 linear steps, counted one by one, you will hit the number 30 in 30 steps: 1, 2, 3 ... 30. But if you take steps where each one doubles the value of the last, you will quickly start hitting the billions and beyond: 1, 2, 4, 8, 16, 32 ... 536,870,912. This exponential growth model describes the continuous and rapid speed at which technology advances. Technology took humans to the moon and back with four kilobytes of memory, using computers so large they took up entire rooms. Today, the typical cellular phone is "a million times cheaper, a million times smaller, and approximately 250,000 times more powerful than computers from 40 years ago" (Kurzweil, 2009). This exponential rate of growth has resulted in a "billionfold increase in capability per dollar," and will most likely continue to grow in the upcoming quarter century.

When discussing possibilities for the future of humanity and how computers will play a role, it is important to understand exactly how rapidly these technologies have evolved in comparison to other forces in the universe. Such forces have taken millions, or even billions, of years to accomplish any notable forms of evolution. As technology progresses at an exponential rate, advancements are bound to come that will alter the life of all humanity. This rate of advancement applies to several factors that are constantly impacting our evolution. Some of these theories will be discussed in the following sections.

Cybernetic Beings and the Human Condition

Post-humanity is the concept that, through technological means, a person can become an entity more than human—a cyborg. What was once viewed as Science Fiction is now on the verge of becoming reality. Or is it reality already? Certain technologies have already started our shift toward cybernetic being.

Donna Haraway, American Professor Emerita in the History of Consciousness Department at the University of California, defines cyborg as “a hybrid of machine and organism” in her essay “A Cyborg Manifesto” (2). By that definition, we have already become post-humans, cyborgs, or something beyond human. The theory thus proposes that we are all cyborgs, and that technology is so entrenched in us that we do not even realize its presence. In our highly literate and advanced technology enriched society, post-humanity theories suggest an inevitability for us all. In a 2018 documentary titled *More Human Than Human*, Daniel H. Wilson, author of the novel *Robopocalypse*, states:

This future that we’re living in is not possible without all of the factories, all of the infrastructure, that’s been built up around artificial intelligence and technological systems. All the infrastructure of our cities, all the power, all the information systems that keep things happening, all the airplanes are routed by these technologies, where they put stuff in the supermarkets, all of this stuff in artificial intelligence. (Pallotta & Wolting, 15:36)

Cars, subway systems, electronic grids, sewage systems, and all the technologies that keep life moving along as we know it have meshed with our humanity, creating a truly unique form of cybernetic being. Of course, I say “as we know it” ironically, because, in truth, we do not know it. Just as early humans may not have felt the effects of language or writing in the moment, humans today do not fully understand the immense role that these technologies play in our lives, or how these technologies can completely alter the human condition.

To understand that alteration, we should note that the human condition comprises the characteristics, key events, and situations of a human’s life, the sum of one’s experiences. Some major aspects that form the human condition are birth, childhood, career, emotionality, aspiration, internal and external conflict, and, of course, mortality. Each of these aspects of the human condition, as well as countless others, are relevant when defining our humanity. However, it seems that two of these aspects rise above the rest when defining humanity, because they have always been an inescapable fact of human life: the phenomena of “work” and “death.”

The need to earn a living by trading time for money, or “work,” comprises a majority of humans’ lives, as well as acting as an indicator for how the course of one’s life will go. In addition, the fact that, from the moment we are born, our bodies begin the ageing process that will eventually lead to death, is another defining characteristic of our existence. These two concepts have been an integral part of being human since humanity’s dawn, but what if it was possible to eliminate those defining attributes of the human condition? How would that change our definition of humanity? How would that further propel us toward our post-human path?

The Philosophical Meaning of Work

The need to earn a living has been a part of the cultural narrative seemingly forever. Our jobs, career, and how we earn our money play a role in who we are as human beings. When you meet someone for the first time, one of the first questions that person is likely to ask is, “What do you do for work?” It is almost a reflex to define a human being by the job they hold. This is not shocking, as the average person spends about 40 hours a week at work, for approximately 45 years of their life.

In ancient Greece, Aristotle said, “A working paid job absorbs and degrades the mind” (Aristotle 350 B.C.E). His statement suggests that, if a person did not happily provide their work for free, then their mind would be at risk of deterioration, and obsession with money would take hold since they were working purely out of obligation. Centuries later, Karl Marx described the workers of society as “alienated” from their work and wholly saturated by it (Marx 7). He believed that the mindless tasks that workers of society were somewhat forced to provide for compensation would eventually cause humans to become estranged and alienated from themselves, while becoming oversaturated by the work itself. Marx believed that most work did not allow an individual's character to grow (Marx 77). Similarly, a French Marxist theorist named Guy Debord wrote a critique on Western Society titled “The Society of the Spectacle.” In this, he describes employees in a capitalist society as “ruled by commodities and services” (Debord 21). He stated that this type of society requires the majority of its population to participate as wage workers, in order to contribute to the “unending pursuit of the system's ends” (Debord 24). Debord ultimately suggests that working equals surviving (Debord 109). This system forces individuals to live by its rules in order to keep a roof over their heads and a constant source of food in their stomachs. As Debord puts it, this is a requirement to which, as everyone knows, one “must either submit or die” (Debord, 24).

Unfortunately, for most humans, working is simply seen as a means to obtain money. In our society, money is taught as the solution to buy a place to live, food to eat, and clothes to wear. It is essentially our livelihood and our only means of living in the current economic system. A primary source of motivation for the majority of current employees is the fact that, if you do not work, you are more than likely destined to be living on the street, homeless and hungry. Humans work because they have to.

The Impact of the Robot Worker

However, in the not-too-distant future, most jobs currently held by humans will be at risk of being replaced by robots. The ability of humans to do more with less continues to grow, but through this rapidly moving technological revolution, it seems as if human workers will inevitably be replaced by more efficient machines. On an almost daily basis, advanced algorithms, stellar software, premium programs, and breakthroughs in mechanical engineering edge us closer to a future where it is more reliable and more cost-efficient to employ robot workers rather than humans. This process is known as automation, the use of largely automatic equipment in a system of manufacturing or other production process. Today's automation, however, includes the use of highly advanced artificial intelligence. Due to the

exponential growth of technology, the automation of tomorrow is destined to bring great change.

An example of this exponential growth can be seen in the popular culinary phenomenon of fast food chains. The fast food industry is tremendously important to the economy, creating over 10 million jobs worldwide. Momentum Machines, a San Francisco-based company, created a machine to automate hamburger production. This system has the ability to cook and prepare 400 gourmet hamburgers per hour (Troitino, 2018). Manufacturing creates 250 million jobs worldwide. Industrial Perception, a company in Silicon Valley, has also built a machine to speed up production (“Industrial Perception Secures Patent on Moveable Apparatuses”). This company has created a robot that can stack one box per second, compared to the roughly three seconds an efficient human worker requires to perform the same task. Larger companies, such as Amazon, have already begun using automated robots in their factories and warehouses in place of human workers. What does this mean for all those human workers who hold jobs in the fast food and manufacturing industries?

In addition to fast food and manufacturing, the transportation industry consists of a significant portion of employees, creating over 60 million jobs worldwide. However, the invention of self-driving cars has created a recent impact that may change this statistic. The CEO of Tesla Inc, Elon Musk, stated last year that his company would premiere a fully self-driving car in 2019 (now projected for 2020). This car would allegedly possess the ability to find their owner in a parking lot, pick them up, and bring them to their destination without external human intervention (Ferris, 2019). Within the next 10 to 15 years, self-driving cars will be all over the road. In the next 25 to 50 years, we may very well be debating if we should allow human beings to drive for themselves at all. The future of bus, taxi, Uber, or truck driver jobs may well be at stake due to this rapidly evolving technology.

Throughout the world, over 40 million individuals work to provide customer service. However, with the sophistication of voice recognition software today, each of those jobs are at risk of robot replacement. A company called IPSoft has created an intelligent automated software system called Ameilia, which can understand what you are saying to it and the emotional context in which you are saying it, whether it be in happiness, anger, arousal, or admiration. Ameilia is also able to learn from its mistakes (IPSoft, 2020). With the creation and continued development of this software system, we can expect to see a large number of customer service employees losing their jobs and being replaced by automated software services within the coming decades.

Martin Ford is a futurist and author who focuses on robots and artificial intelligence. In his book titled *Rise of the Robots: Technology and the Threat of a Jobless Future*, he states that over a third of jobs are at risk of being replaced by robots within the next 25 to 50 years (Ford 98). He suggests that robots are threatening all employed individuals, not just typical blue-collar workers. Anyone whose job consists of routine and formulaic tasks is now at risk. Ford states that humans are “becoming less and less useful compared to machines” (Ford, 2016). It seems almost inevitable that robot workers and artificial intelligence will be replacing jobs at an alarming rate over the next 15 to 50 years, and even more so in the next 100 to 200 years.

In addition to being able to complete tasks quicker and more efficiently than humans, these robot workers could work 24 hours a day, 7 days a week, without ever having to stop. These workers would never get injured, file a complaint, form a union, take a vacation, or even take a lunch break. Robots could be the absolute ideal employees, saving companies millions of dollars while multiplying their profits at the same time. Over 500 million jobs worldwide are vulnerable to replacement by robot workers. This could drastically impact humans' way of life. Humans would have to find an alternative source of income, the cost of living would dramatically change, and the socially constructed systems in which humans have earned a living would ultimately fall. An abyss of political and ethical questions would require direct intervention from government officials to redistribute resources, jobs, and wages equitably, back to the people. Ford mentions that, if robot workers took over our jobs, it would call for a complete restructuring of our economy and society. That restructuring would most likely result in a world "where we all have a lot more leisure time" (Ford 181). Problems such as these, however, require staggering political change. Unfortunately, the current evidence that we are provided with across the globe suggests that hurdles like these would be incredibly challenging to overcome.

That said, if it were possible to overcome these ethical challenges as a global society, then there is a real possibility for a world soon to come, where virtually every job would be better executed by machines, robot workers, and artificial intelligence. This then begs the question: what if society could fairly distribute the wealth among all the world's people, effectively creating a true utopian future where all labor, from menial tasks to essential jobs, was performed by robots? What if the early thoughts on finding a more fulfilling life and existence by freeing ourselves from work, spoken about by people such as Aristotle, Marx, and Debord, were within our reach? If human beings were able to harness technology and automation and make it fair for all humans, we would no longer need to be defined by the work we perform or by the careers we hold. It would allow human beings to seek a higher enlightenment and obtain a deeper meaning of self.

Technological advancements of machines have greatly influenced and impacted the state of the human condition. Machines and artificial intelligences have crept into our daily lives, helping to revolutionize the very way that human beings operate. Erik Brynjolfsson, the author of *The Second Machine Age*, has stated that "machines are better than humans in many tasks right now, from playing chess to legal discovery to medical diagnosis... that will just accelerate" (Brynjolfsson, 2018). Given the exponential growth of technology, he is absolutely correct. If it is possible for robot workers to perform all jobs, and for humans to purposefully harness and share these technologies equitably, then the future of humanity may be bright. Such a future may fundamentally change what it means to be human, eliminating a system that has held us captive for far too long. Specifically, it would eliminate the socially constructed idea that people must work for their wellbeing, creating a new set of ideals and a new set of philosophies about the meaning of humanity.

We would be able to define ourselves beyond and completely separate from any job or career. While "Who am I?" would become a difficult question to ask ourselves, through the pursuit of its answers, a greater sense of our true humanity could be achieved. Robot workers, artificial intelligence, and technology would have

the capability to completely replace the human workforce, possibly leading to a fundamental change in what it means to be human.

Medical Technology, the Cyborg, and the Extension of Life

Human beings of today live longer on average than our ancestors did. Only 100 years ago, the average life expectancy worldwide was around 31 years. Currently, it stands at 71 years, a 40-year jump in one century. According to the World Health Organization, the number of people aged 60 years or older is expected to increase by about 1.5 billion over the next 35 years (WHO, 2015). Part of this is due to the technological systems that provide us with cleaner supplies of drinking water and higher standards of living.

Another key factor of this phenomenon is the constant improvement of medical science and technology, which have cured diseases, created vaccines, performed brain surgeries, transplanted organs, and given limbs to the limbless. In short, they have enhanced and prolonged human lives. John Leland, an author for *The New York Times*, writes, “Medical breakthroughs that prolonged human life by technological means [have] changed the way Americans could see death and by extension, the ways they defined life.” The technologies brought forth by the medical science and technology industry have allowed humans to live longer than their biological clocks intended. These advancements have begun the slow but ever-present process of our posthuman evolution, the next phase in our evolutionary timeline (Leland 2).

Rapidly improving medical technologies, such as wearables and implants, have made many humans part cyborg already. Jeanne Lenzer, an award-winning independent medical investigative journalist and author, writes in her book *The Danger Within Us* that an estimated 10 percent of Americans are implanted with medical devices like pacemakers, artificial hips, cardiac stents, and other medical technologies. This accounts for nearly 70 million Americans over the last 10 years (Lenzer 97). These trends will only continue as the technologies get more complex, through the natural exponential growth that seems true of all technologies. It seems almost certain that future assistive technologies will not only compensate for human disability, but also drive human capacities beyond our innate physiological levels.

Seeing and hearing are two of the most basic cognitive senses that make us human. Cochlear implants have been helping the deaf hear for decades. Bionic eye transplant technology is possible and in the early stages of its existence. The Argus II artificial retina designed at the Lawrence Livermore National Laboratory was the first of its kind in medical visual prosthetics to receive FDA approval (Hill, 2013). Cochlear and retinal implants have helped millions to hear and see again. It would seem that, with the way technology is rapidly advancing, the possibility for advanced audio and visual capabilities through technological means is real. What happens when bionic hearing becomes possible, empowering us to hear from great distances, pick up on whispers, or even hear on different frequencies? Bionic vision may even become possible, and technologies such as night vision, infrared, and built-in magnifiers could be readily available to the human eye.

Dr. Albert Chi is an expert surgeon, performing several procedures to repair the upper extremities throughout his career. He performs bilateral shoulder targeted muscle reinnervation (TMR) surgeries, which consists of removing the residual nerves of clients who have suffered upper extremity loss and rerouting that nerve

information. The new route of the nerve information can be utilized to travel to the missing limb, to residual muscles that are still present in the patient (REF). In layman's terms, he gives robot arms to the armless. After the surgery, a client can merely think of moving his or her missing limb and their muscles will then contract. These contractions are recorded, and from there, the mind is able to control these advanced prosthetics. Dr. Chi speaks of the term “superhuman” and explains how “it is technically possible to make these advanced prosthetic arms stronger than normal human arms” (Pallotta & Wolting, 1:04:17). Certain applications of these advanced prosthetic arms add advantage for certain tasks or jobs. One patient receiving the surgery stated that, when he was in control of the arms, he felt whole again. Furthermore, it is possible for the future of these technologies to make him feel more than whole, even more than human. It is possible for him to feel, and become, a post-humanistic cyborg.

People with prosthetic limbs are going to be running faster than any human being who ever lived soon. Individuals with retinal implants and cochlear implants are going to see better, hear better, neural implants, maybe they're even going to think faster. (Pallotta & Wolting, 1:04:48)

In the future, certain disabilities may be fixed through medical technological means and allow the disabled to operate on a higher level of functioning than normal human beings. This can be completed by healing their impairments and then providing them with extra capabilities not available to basic human beings. If the trends continue at their rapid, exponential pace, eventually even those without disabilities will crave the life-altering technologies as well. We will see a new breed of humans who have embraced and integrated themselves with these revolutionary technologies, effectively making themselves cyborgs, and further sending humans into the post-human period.

The advancements brought upon by robotic workers will eliminate work and paid labor by fundamentally changing what it means to be human from a philosophical standpoint. Technological advancements in the medical science industry can enhance human capabilities and prolong life. But what if other advancements made it possible to completely eliminate death and live life indefinitely?

Definition of Humanity Based on Death

Approximately 152,000 people die every day, two-thirds of them from age-related diseases. Senescence is the loss of a cell's power of division and growth and the condition or process of deterioration with age. According to biogerontologist Aubrey de Grey, ageing is itself a disease that we are all diagnosed with at birth—none of us are spared (Grey, 2006). Human cells are programmed to decrease over time, and human beings, by their very nature, are destined to wither away, fated to become frail, and pre-determined to dwindle and die. However, the future and its rapidly evolving medical technologies may make it possible for humans to live indefinitely. Grey believes that it is 100 percent possible to develop a cure for ageing.

In 2014, through parabiosis, a team of Harvard scientists were able to effectively reverse the age of an older mouse by treating it with the blood of a younger mouse (Park, 2018). With this discovery, it was determined for the first time

in history that it is possible to gain control over the once unstoppable ageing process. The fountain of youth that has been sought after for all these years is within a few generations' reach. As mentioned by Leland, breakthroughs that are capable of prolonging the human lifespan would lead directly to redefining the ways in which humans view and understand life and death.

In 2005 Google's director of engineering Ray Kurzweil published a book entitled, *The Singularity is Near: When Humans Transcend Biology*. He predicts that, by 2045, it will be possible for humans to upload their minds into a computer, effectively allowing at least a piece of us to live out indefinitely in some shape or form. Kurzweil is also on record saying, "Something is going on in the human brain, and there is nothing that prevents these biological processes from being reverse engineered and replicated in non-biological entities" (Kurzweil 1075). In the future, it may be possible to upload consciousness into a technological or computer-based substrate, effectively redefining the definition of death and the meaning of being human along with it. Futurologist Dr. Ian Pearson believes that, by the year 2050, it will be possible for virtually anyone to upload their consciousness into some external device, rendering their mind, in a sense, somewhat immortal (Ciaccia, 2016). If consciousness is one of the defining traits of humanity, then what will it mean when that part of us could live on forever?

With the rapid exponential growth that technology undergoes naturally, it is possible that, even further in the future, humans will be able to put their consciousness into a humanoid robot that has sensory inputs and outputs, the ability to touch and feel, and dexterity better than that of an actual human. Perhaps this humanoid robot will be equipped with a highly upgraded and advanced form of the Amelia software, allowing it to hear, understand, learn from its mistakes, and grow. Would that make it possible for human beings to have these new experiences through their robotic substrates while feeling and understanding them with our own conscious mind? How would that type of prolonged, and possibly indefinite life, change the definition of death and humanity? At what point would we be more machine than man?

Human beings have been evolving over the course of millions of years, and we are currently approaching the climax of that evolution. Post-humanity and cybernetic beings are the next stage of that evolutionary timeline. Organic beings such as ourselves grow old and die. The process of death is as involuntary as the very heartbeat that keeps us alive. Through medical technologies, the growing implant industry, and the ability to upload one's mind, humans may have a say in their lifespan and a remedy for death itself. Post-humans and cyborgs do not need to take senescence sitting down. They do not need to grow old. Instead, their parts could be replaced and upgraded; their lifecycle can span for centuries, possibly for all of eternity.

To be human is to be a part of the luckiest roll of the cosmic dice of all time. After 13.8 billion years of a barren uninhabited universe, somehow our pale blue dot of a planet was able to shift into the perfect position in the solar system to produce liquid water. From that, all life would evolve, and humanity would form. Humans developed language and writing, two forms of technology that would coevolve with us, enhancing life and conscious thought. Literacy led to an increase in technological advancements, such as machines that can provide physical and

intellectual labor, and medical sciences that prolong and redefine human life. Breakthroughs in advanced computing and medical technologies may be the main catalysts that work together to create cyborgs, catapulting us into a post-humanistic era: an era in which all work is done by robot workers and machines, in which man and machine merge, effectively creating a new form of cybernetic being that might leave the definition of human in the past, along with those of primate and *Hominidae*.

Works Cited

Aristotle. *Aristotle's Politics*. Oxford: Clarendon Press, 1905.

Brynjolfsson, E., & McAfee, A. (2018). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. Vancouver, B.C.: Langara College.

Ciaccia, Chris. (2018, 25 July). *Mankind Could Have 'Electronic Immortality' by 2050*. Fox News, www.foxnews.com/tech/mankind-could-have-electronic-immortality-by-2050.

Debord, G. (1967). *Society of the spectacle*. Black & Red.

Ferris, R. (2019, February 20). *Elon Musk: Tesla will have all its self-driving car features by the end of the year*. CNBC. <https://www.cnn.com/2019/02/19/elon-musk-tesla-will-have-all-its-self-driving-car-features-by-the-end-of-the-year.html>

Ford, M. (2016). *Rise of the robots technology and the threat of a jobless future*. New York: Basic Books.

Grey, Aubrey. (2006). *A Roadmap To Ageing*. TED, 2006, www.ted.com/talks/aubrey_de_grey_a_roadmap_to_end_aging

Haraway, Donna (2012, February 14). *A Cyborg Manifesto*. Stanford. web.archive.org/web/20120214194015/www.stanford.edu/dept/HPS/Haraway/CyborgManifesto.html.

Hill, D. J. (2017, June 01). *FDA Approves Eye Implant Enabling the Blind to Partially See*. Singularity Hub. <https://singularityhub.com/2013/02/19/fda-approves-eye-implant-enabling-the-blind-to-partially-see/>

“Industrial Perception Secures Patent on Moveable Apparatuses Having Robotic Manipulators and Conveyors to Facilitate Object Movement.” Global IP News. Industrial Patent News, 2016, pp. Global IP News. Industrial Patent News, Jul 20, 2016.

- IPSoft. "Amelia - The Science Behind Her Brain." IPSOFT, 2020, www.ipsoft.com/amelia-science/.
- Kurzweil, R. (2009, February) *A university for the coming singularity*. TED. Retrieved https://www.ted.com/talks/ray_kurzweil_announces_singularity_university?language=en
- Kurzweil, R. (2016). *The singularity is near: When humans transcend biology*. London: Duckworth.
- Leland, J. (2005, March 27). Did Descartes Doom Terri Schiavo? New York Times. <https://www.nytimes.com/2005/03/27/weekinreview/did-descartes-doom-terri-schiavo.html>
- Lenzer, Jeanne. (2017). *Danger Within Us: Americas Untested, Unregulated Device Industry and One Man's Battle to Survive It*. Little Brown & Company.
- Marx, K. (1982). *Economic and philosophic manuscripts of 1844*. Moscow: Progress.
- Pallotta, Tommy and Wolting, Femke, directors. *More Human Than Human*. Futurism Studios, 2018.
- Park, A. (2018, March 22). Scientists Found a Compound That Reverses Aging in Mice. *Time Magazine*. <http://time.com/5209427/aging-nicotinamide-mononucleotide-nmn/>
- Troitino, Christina. (2018, September 24). "Meet The World's First Fully Automated Burger Robot: Creator Debuts The Big Mac Killer." Forbes, Forbes Magazine, 24 Sept. 2018, www.forbes.com/sites/christinatroitino/2018/06/21/meet-the-worlds-first-fully-automated-burger-robot-creator-debuts-the-big-mac-killer/#1241ac646a89.
- Wilson, D. H. (2011). *Robocalypse*. Gardners Books.
- World Health Organization. (2015). Global health and ageing. https://www.who.int/ageing/publications/global_health.pdf