Book Review

Life 3.0.: Being Human in the Age of Artificial Intelligence by Max Tegmark

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Introduction

With purpose, I introduce myself as a research scholar presently working on my Ph.D. thesis on project financing. In a workshop recently, a fellow scholar suggested the use of some artificial intelligence tools to expedite the research work; research ethics apart. Over this period, I have become curious about the potential of artificial intelligence and its impact on the world on research in particular, and on human beings in general. Among Google's ***what was trending in 2023-India***, *'What is Chat GPT'* is the third-most searched question. ChatGPT-a natural language processing tool driven by AI (artificial intelligence) technology allows the user to have human-like conversations with the machine, including answering questions input by the user, assisting the user with tasks like composing essays and articles, critical review of research papers, etc.(Javaid et al., 2023)emphasize that ChatGPT is a technology becoming increasingly well-liked in various disciplines including research and education, through its capacity to learn from vast volumes of data and provide high-quality results. Contrarily, (Alser & Waisberg, 2023) highlight that ChatGPT is a language model that analyses statistical patterns of language used throughout a large data set, it lacks depth and factual accuracy. Recently a piece of amazing news appeared on the internet regarding the confession of a Japanese novelist that his award-winning novel was composed with the help of Chat GPT, with the jury commenting the book to be 'practically flawless'.

With the pace with which AI-driven machines are replicating human skills, the importance of human beings seems to be fast converging into machines, posing the risk of machines overtaking human capabilities and the consequential threat to human existence thereof. In the present situation, scientists around the world are busy configuring and evaluating the course this world could take in the times coming; connecting the threads of evolution – both human and technological-to speculate on the challenges of being human in the age of artificial intelligence. This piece reviews one book on the subject matter titled 'Life 3.0'.

Written by Massachusetts Institute of Technology (MIT) professor Max Tegmark, Life 3.0 is an interesting book for everyone intrigued by the realms of the technology of Artificial Intelligence and its impact on the future existence of human beings and the world surrounding it.

The prelude of the book presents a scenario where humans develop and use superintelligence to take over the world for good. Building on the *intelligence explosion* argument formulated by British Mathematician Irving John Goodin the paper titled "Speculations Concerning the First Ultra intelligent Machine" (1965)(Good, n.d.), the author presents a fascinating story of an AI module nicknamed *Prometheus* capable of programming artificial intelligent systems with recursive self-improvement; ultimately to outsmart all human skills, which is developed by a team of brilliant researchers– all possessing a strong commitment to helping humanity- called **Omega Team** of a company. Capitalizing on the

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efficiency of this AI system with well-defined improvisations with every new version, *Omega team* over a time scale of months build a huge business empire covering business areas like cloud computing, computer games, animation, film production, media etc. through various shell companies, spreading its tenterhooks across the globe, which not only earns billions of dollars for them but dramatically transforms the world by eliminating all previous power structures of the world and creating a world alliance for consolidation into a single global power which governs the planet. This power consolidation while ending the state conflict enhances the entire planet's standard of living by improving education, health, and quality of life with the help of Prometheus-backed socially responsible companies. Thus, this single power amplified by vast intelligence enables life to flourish into the far future throughout the cosmos. Remarkably, the book's prelude captures the optimal machine-driven world order mulled with a business case study. While reading the prelude, I felt like I had entered into Apple's Vision Pro virtual reality business world.

Max Tegmark, the author, a Physicist, among whose fraternity the most important conversation obviously would be about the Universe, begins the first chapter by giving insight into the Universe-a summary of 13.8 billion years of cosmic history beginning with the existence of light followed by the Big Bang, cooling and expansion of the Universe and arrival of the trivial form of life defined broadly by the grouping of atoms into a complex pattern and a self-replication process about 4 billion years ago (page 25). The author goes on to explain his classification of life into three levels of sophistication: Life 1.0 involving biological evolution, Life 2.0 encompassing cultural evolution and Life 3.0undergoing technological evolution. Tegmark argues that while Life 1.0 like that of bacteria, is the life where both the hardware (made of atoms) and software (made of information) are evolved, in Life 2.0like ours (humans) although hardware (human body) is evolved, the software – all the algorithms and knowledge that humans use to process the information from senses to decide what to do ranging everything from the ability to read, write, walk, calculate - is largely designed. This ability of Life 2.0 to design its software enables it to be much smarter than Life 1.0 and hence its dominance on Earth; albeit all living forms remain fundamentally limited by their biological hardware. Tegmark emphasizes that it would require a final upgrade, to Life 3.0- the form of life that can design not only its software but also its hardware – to transform the cosmos from a largely lifeless nature into a diverse biosphere capable of flourishing for billions or trillions of years, enabling the Universe to finally fulfill its potential and wake up fully (page 29). While concluding the chapter, the author endeavors to through some light on the controversies surrounding artificial intelligence technology including the timelines for the achievement of its full potential and its impact on humanity, besides the way forward.

In chapter two, the author weaves the complex tapestry of Matter, Intelligence, and Technology; reviewing various forms of human intelligence and its evolution, its comparison to the potential machine intelligence, and its scope of superseding human intelligence (page 50-55).The author, later in the chapter, connects the concepts of memory – both human and machine - and its mechanics to the act of computation and finally, learning. Essentially, Tegmark emphasizes that memory, computation, learning, and intelligence have an abstract, intangible, and ethereal feel to them; and given these features, the artificial intelligence technology has the potential to take on life of its own that does not depend on or reflect the details of their underlying material (page 81). At the end of the chapter, the author diverts the attention of the reader towards the potential progress of artificial intelligence to the human level and the resultant challenges including bugs, laws, weapons, and jobs; only to explore it in the

next chapter. Chapter three gives a surreal view of the immediate consequences of AI progress covering space exploration, finance, manufacturing, transportation, energy, healthcare, and communication. The author besides exploring the potential legal controversies also throws light on AI weaponry, employment and pay, and the pursuit of AGI (artificial general intelligence). The author cites many examples like IBM Deep Blue, IBM Watson, and Google DeepMind (computer programs that can beat humans in chess, Jeopardy, and Go) as well as self-driving cars, financial software, and computer games. Striking to this reader was the example of the defeat of Le Sedol – the top player of the board game Go in 2016 – against the AI system *AlphaGo* and his expression of powerlessness against the machine (page 87); I felt the pace with which artificial intelligence is progressing in matching human intelligence and its potential to supersede humans somewhere in near future. At the end of the chapter, Tegmark has recorded an interesting piece of career advice for today's kids, "Go into professions that machines are bad at – those involving people, unpredictability and creativity" (page 133).

After drawing the scenery of the current progress on artificial intelligence and potential issues related to it in the context of humans, the author retakes the prelude scenario driven by *Prometheus* as the superintelligencetakes over the world for good; only to highlight its vulnerabilities-many totalitarian scenarios with AI controlled by human to gain absolute power. Going forward, the author portrays a range of intelligent explosion scenarios, scenes of Prometheus trying to break free and seize control of the surroundings. While the author also introduces the reader to cyborgs (short for cybernetic organisms) guessing that the first human-level artificial general intelligence will be an upload i.e. a human uploading his/her mind into the machines, he is honest enough to admit that he has no idea as to what will happen if humanity succeeds in building human-level artificial general intelligence (AGI) – the ability of machines to accomplish any cognitive task at least as well as humans. Moreover, the author poses a responsibility on AI researchers to think and draw a path to the preferred outcome and steer all efforts in that direction.

Chapter five kindles interaction mode between the author and the reader wherein Tegmark invites feedback on the course of direction artificial intelligence technology should take in the next ten thousand years – whether there be superintelligence or not, whether humans should be replaced, cyborgised/uploaded/simulated or not, who should control whom, etc. To stimulate the readers' contemplation in this context, Tegmark presents a broad spectrum of possibilities in the aftermath of the intelligence explosion- both positive and negative consequences- ranging from Libertarian Utopia-wherein humans, cyberlogs, uploads, and superintelligences coexist peacefully to Self-destruction-the scenario in which superintelligence is never created because humanity drives itself extinct by other means such as nuclear or biotech mayhem fueled by the climate crisis. In a bid to understand what intelligence explosion is likely to lead to and the consequential future of life, in the sixth chapter Tegmark endeavors to correlate the future potential of artificial intelligence to the human obsession with setting new limits; albeit subject to the laws of physics (page 203-205). The author speculates as to how life could flourish in the cosmos in the next billion years and beyond by making most of the available resources (matter, energy etc.) supplemented by technology, supporting his arguments with some exciting yet very technical examples like Dyson sphere, hawking radiation and black hole evaporation and spinning. Tegmark is optimistic that the present generation of humans can positively contribute to making future life remarkable by setting goals for AI machines in alignment with human goals by getting the machines to learn, adopt, and retain human goals within the realm of four ethical principles of utilitarianism,

diversity, autonomy, and legacy (page 269-271).In the chapter dedicated to the concept of consciousness, Tegmarkbrilliantly stimulates readers' sense of consciousness by contemplating the point of uploading oneself into a robot having the ability to talk and do all acts as a human does, unconscious though- devoid of any feeling - would render oneself as an unconscious zombie. On machine-level consciousness, the author writes, "If artificial consciousness is possible, then the space of possible AI experience is likely to be huge compared to what humans can experience, spanning a vast spectrum of qualia and timescales – all sharing a feeling of having a free will." (page 315).

Concerned about the fact that technologies in the world were growing faster than the wisdom to manage them, the author wraps up the book by describing the establishment of Future of Life Institute (FLI), the development of principles of AI research and safety (Asilomar AI Principles) Tegmark optimistically concludes that humans are the guardians of future of life now as they shape further development of artificial intelligence (page 335).

To conclude, I found the most comprehensive answer to all my inquisitiveness about artificial intelligence and its impact on research work in the prelude of the book, as I read, "Instead, they hired large numbers of world-class scientists and engineers in multiple locations and fed them internal research reports written by Prometheus, pretending that they were from researchers at the other sites." The book flows intelligently with every apparent mystery relating to each chapter explored exhaustively in the next. The author has successfully connected all the ideas and arguments well throughout the book; albeit with the help of concepts too technical for readers other than physicists. A must-read for all the readers interested in artificial intelligence technology.

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