



Thoughts from Linda:

The Singularity is Nearer When We Merge with AI

Ray Kurzweil
2024

Where will you be 20 years from now, and how old will you be? How will our world operate, and what will the future hold? Is it possible or even likely that humans will somehow 'merge' our brains with a much more powerful source, such as the 'web?' What would the implications be of such a transformation of humanity?

Ray Kurzweil has been predicting the future for over 50 years and is an acknowledged expert in the fields of mathematics, physics, and artificial intelligence. In this book, you'll get his best thinking on the subject of the future of mankind and our progress toward what he calls "The Singularity."

This book builds on his previous works and offers a 'state of the situation' we are in today as we move closer to his predicted "*Fifth Epoch*," where man and machine merge. The term '*singularity*' is a metaphor borrowed from mathematics and physics. He stresses that he is not using the term literally but rather because it "captures our inability to comprehend such a radical shift with our current level of intelligence...but as the transition happens, we will enhance our cognition quickly enough to adapt."

In one delightful passage, to illustrate his point about just how difficult it is to imagine this future, he invites us to think of a chimpanzee watching a movie in a theater today. He relates just how difficult it would be for the chimp to comprehend what she is seeing. In the same way, he believes it is impossible for us to comprehend the world 20 years from now with the upcoming changes underway and the 'law of accelerating returns,' which he describes as both a cause and a result of the Singularity.

Kurzweil predicts "the date for the Singularity—representing the profound and disruptive transformation in human capability—as 2045." This book, published in 2024

and written by the long-acknowledged prognosticator, seems like the perfect book as we enter 2025.

Artificial Intelligence seems to be 'everywhere' now in the popular vernacular and in use as ChatGPT introduced its offering in late 2022. Open AI developed the generative artificial intelligence chatbot and, by January of 2023, had become (as of that date) the fastest-growing consumer app in history, with over 100 million users in just two months. As of the writing of this review, ChatGPT is included in the Apple portfolio, and numerous other offerings are available, with applications expanding exponentially.

Ray Kurzweil knows quite a bit about this subject, and this newly released book follows his 2005 book *The Singularity is Near* and builds on his 1999 prediction that AI would reach human-level intelligence by 2029.

As this book shows, the future is here. Now. And this book, connected as it is to the timely evidence of what is emerging with AI, is one of the most significant books I have perhaps ever read.

Kurzweil grew up in the New York City borough of Queens, emigrating with his family from Austria just before World War II. His father was a concert pianist, a noted conductor, and a music educator, and his mother a visual artist.

Kurzweil was a child prodigy, having become an inventor at the age of five. As a young boy, he had an inventory of parts from various construction toys given to him and old electronic gadgets he'd collected from neighbors. At the age of eight, he built a robotic puppet theater and robotic game. In his youth, Kurzweil was an avid reader of science fiction literature.

He was involved with computers by age 12 (in 1960) when only a dozen computers existed in New York City. He built computing devices and statistical programs for the predecessor of Head Start. At the age of fourteen, Kurzweil wrote a paper detailing his theory of the neocortex. He has received a GRAMMY Award for outstanding achievement in music technology and was inducted into the National Inventors Hall of Fame. He is today a Principal Researcher and AI Visionary at Google.

There is not enough space in this review to document the many accomplishments of his life, but I encourage you to check him out if you are not aware of him. He is also available on Ted Talks and his website.

Here's how he describes this Fifth Epoch: "It is the merger of human technology with human intelligence...looking ahead several decades, the Singularity will begin the Fifth Epoch. It will result from the merger of the vast knowledge embedded in our brains with

our technology's vastly greater capacity, speed, and knowledge-sharing ability. The Fifth Epoch will enable our human-machine civilization to transcend the human brain's limitations of a mere hundred trillion extremely slow connections. It will allow us to overcome age-old human problems and vastly amplify human creativity. We will preserve and enhance the intelligence that evolution has bestowed on us while overcoming the profound limitations of biological evolution.

Singularity will also amplify the ability to act on our destructive inclinations, so its full story has not yet been written."

He notes that he decided to write this book now because "...my earlier book, *The Singularity is Near*, showed that we were in the early stages of this transition to the Singularity...now we are entering its culmination. Humanity's millennia-long march toward the Singularity has become a sprint. That book was about glimpsing a distant horizon—this one is about the last miles along the path to reach it. Luckily, we can now see the path much more clearly."

"During the 2030s, self-improving AI and maturing nanotechnology will unite humans and our machine creations as never before—heightening both the promise and the peril even further. If we can meet the scientific, ethical, social, and political challenges posed by these advances, by 2045, we will transform life on Earth profoundly for the better. Yet, if we fail, our very survival is in question. And so, this book is about our final approach to the Singularity—the opportunities and dangers we must confront together over the last generation of the world as we knew it."

The book has eight Chapters: *Where Are We in the Six Stages; Reinventing Intelligence; Who Am I; Life is Getting Exponentially Better; The Future of Jobs: Good or Bad; The Next Thirty Years in Health and Well-Being; Peril; and Dialogue With Cassandra*.

I was intrigued by the entire book, but I especially liked the first two chapters, which describe the history of our species and the evolution of the universe itself. His description of the development of the human brain is especially instructive. It lays out some of his theories around the value of augmenting our relatively slow processing ability compared to digital technology.

He notes man's progress through the Third Epoch, where animals formed brains, which themselves stored and processed information. Additionally, this development added evolutionary advantage, coupled with opposable thumbs, which gave early hominids tremendous advantage over millions of years. And yet, our brains are limited. "With brains, we added roughly one cubic inch of brain matter every 100,000 years, whereas with digital computation, we are doubling price-performance about every 16 months."

He takes us through the development of the neocortex itself and illustrates the significance of this event and its impact on our ability to reconfigure the cerebellum in our brains. As he notes throughout the book, we are limited by the biology of our bodies, which limits the size of our skulls and the space allowed for our brains...all limits imposed by the size of the birth canal.

You'll be taken through a tour of the development of AI and learn about Marvin Minsky, Alan Turing, and many others, including John McCarthy of Dartmouth College, who actually named "AI"—a term that Kurzweil does not like, by the way.

His chapter, *Who Am I?* poses a few of the philosophical and ethical questions we will face along this journey. Kurzweil is an optimist by nature, and the chapter, *Life is Getting Exponentially Better*, illustrates (with timely metrics) just how our planet is progressing in significant ways and notes why humans are reluctant to accept such data, focusing on the negatives instead.

The medical opportunities presented are astonishing, as he notes in the chapter, *The Next 30 Years in Health and Well-Being*. "In the 2040s and 2050s, we will rebuild our bodies and brains to go vastly beyond what our biology is capable of, including their backup and survival. As nanotechnology takes off, we will be able to produce an optimized body at will: we'll be able to run much faster and longer, swim and breathe under the ocean like fish, and even give ourselves working wings if we want them. We will think millions of times faster, but most importantly, we will not be dependent on the survival of our bodies for our selves to survive."

In this chapter, he notes that we are "now in the later stages of the first generation of life extension, which involve applying the current class of pharmaceutical and nutritional knowledge to overcoming health challenges. In the 2020s, we are starting the second phase of life extension, which is the merger of AI and biotechnology. The early stages of this have already begun, and with these techniques, we will be able to discover very powerful new therapies in days rather than years. The 2030s will usher in the third phase of life extension, which will use nanotechnology to overcome the limitations of our biological organs altogether. As we enter this phase, we'll greatly extend our lives, allowing people to greatly transcend the normal human limit of 120 years." He shares some amazing predictions from the world of LEV (*Longevity Escape Velocity*), such as a quote by Aubrey de Grey's sensational declaration that the first person to live 1,000 years has already been born.

There is so much more.

He concludes with an imaginary conversation with Cassandra, the Greek priestess dedicated to Apollo, who was fated by him to deliver prophecies but never believed. This short dialogue is the 'elevator pitch' for his thinking and gives the contours of his

message. He uses this imaginary dialogue to address many of the anticipated objections to his thinking.

And, as in all of his books, his notes make up 107 pages of very interesting reading themselves.

Kurzweil states early in the book: **"These are the most exciting and momentous years in ALL OF HISTORY."**

This book is exciting and momentous as well and certainly helps build understanding. I cannot stop thinking about it. I highly recommend this book!