

REVIEW

SCHMIDT, Eric; HUTTENLOCHER, Daniel; KISSINGER, Henry A. *The Age of AI and Our Future as Humans*. Rio de Janeiro: Alta Books, 2023. 244.¹

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“The Age of AI and Our Future as Humans” is the Portuguese translation of the 2021 Wall Street best-seller “*The Age of AI*”, written by Eric Schmidt, Daniel Huttenlocher, and Henry A. Kissinger. The book explores the changes that Artificial Intelligence (AI) has been promoting in human experiences across various fields of reality. It addresses the current state of innovations enabled by the interactions between humans and artificial intelligence, offering insights into a future mediated by AI, where the human capacity will no longer be the leading figure of the development of society.

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The book *The Age of AI and Our Human Future* offers a profound reflection on the impact of AI on contemporary society and the human condition. It delves into how AI has been shaping our experience of reality, as well as its implications in various spheres, such as politics, society, and international relations.

Authored by three individuals with remarkable careers, the book benefits from diverse perspectives. Eric Schmidt, who holds a Ph.D. in Computer Science from the University of California, is the former CEO of Google. He played a pivotal role in establishing the company as a global leader in the technology sector. Currently, he is a technology consultant and the host of the podcast *Reimagine with Eric Schmidt*. Daniel Huttenlocher was the inaugural dean of the Massachusetts Institute of Technology Schwarzman College of Computing and the founder of Cornell Tech, a graduate school focused on digital technology. Additionally, he has served on the boards of several prominent organizations, including Amazon.com. Henry Alfred Kissinger had a distinguished diplomatic career, serving as Secretary of State and National Security Advisor to the President of the United States. He was awarded the controversial 1973 Nobel Peace Prize for his role in the Vietnam ceasefire agreement. Kissinger passed away in November 2023.

Published by Alta Books, the book provides a meticulous analysis of how AI permeates various fields of knowledge. Spanning 244 pages, it chronicles an era of transition where AI emerges as a transformative force unparalleled in the history of human development. Structured into a preface and seven chapters, the book guides readers through a journey of discovery, offering a broad perspective on where we stand, the path we have taken, and the potential directions for human-AI experimentation.

The title of the book clearly conveys that the transformation into an era of human experimentation with AI is already underway. This interaction is continuous and aims to overcome the inherent limitations of human capabilities, enabling achievements previously unattainable without the aid of technology. Thus, when the authors refer to our future as humans, they acknowledge the disruptive impact of technology, which ushers us into a shared reality. In this new paradigm, skills are no longer measured solely by human potential but rather by the combined capabilities achieved through collaboration with AI.

The preface of the book plays a vital role in orienting the reader and outlining the revolutionary context in which the discussion unfolds. In this introductory section, the authors highlight their own awakening to the significance of AI for society, framing its emergence as a phenomenon capable of transcending the traditional boundaries of various fields. The focus is placed on understanding AI not merely as a business or a high-value

financial sector but also as a force capable of profoundly and innovatively shaping human identity and reality. In this context, accepting and understanding AI become crucial aspects of navigating a future filled with uncertainties. This debate raises questions connecting AI to various facets of humanity, such as health, science, warfare, and relationships. It also explores the capacity of AI to perceive aspects of reality beyond human reach, leading to the following question: “What does it mean to be human?” (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023).

The authors begin their narrative by aiming to present the current state of AI to the reader. To achieve this, the first chapter highlights technologies that are revolutionizing specific areas of knowledge. One example is AlphaZero, an AI that, with just four hours of training, became the most advanced chess program in the world, devising strategies that eluded even the logic of grandmasters. In the field of healthcare, the development of halicin, an innovative antibiotic whose discovery would have been economically unfeasible via traditional methods, is emphasized. In these and other cases, the authors underscore AI's ability to reveal aspects of reality that are imperceptible through conventional means. Furthermore, with increasingly powerful and affordable processing capabilities, AI is becoming more ubiquitous, taking on roles that were once exclusively human. However, while the authors acknowledge the potential for uncertain impacts, they choose to adopt a less alarmist perspective.

The reason we should not fear all-knowing, all-controlling machines lies in the current human-machine partnership, which requires both a definable problem and a measurable goal; such inventions remain the subject of science fiction. (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 39).

Although the authors express favorable views regarding collaboration between humans and AI, they do not shy away from highlighting the growing trust placed in machines, which leads us to passively accept an increasing dependence on them. At this point, a critical question is raised: are we moving closer to or further away from knowledge? This issue becomes even more central in a scenario where the number of people qualified to interact with AI grows faster than the number of those who contemplate its ethical implications.

Following this initial reflection, the authors, in the second chapter, trace a chronological narrative from a Eurocentric perspective of how humans have understood reality over time. This began in ancient Greece and Rome, where reason was employed as a tool for comprehending the world. It was followed by a decline during the rise of

monotheistic religions in the Middle Ages, which made reality accessible only indirectly and partially under the custody of the Church. The authors emphasize the importance of the printing press and the scientific method as catalysts for significant ruptures that produce divergent interpretations of reality. They also highlight Kant's Enlightenment ideals, which frame reality as an object filtered through human experience, leaving us only with approximations. According to the authors, increasingly precise observation and extensive classification prevailed for years until Ludwig Wittgenstein illuminated the limitations of classification, advocating for generalization as a means of acquiring knowledge. He argued that analyzing similarities and familiarities is necessary to understand reality. For the authors, this marked the gateway to AI:

[...] this line of thought introduced AI and machine learning theories. These theories posited that AI's potential lay, in part, in its ability to scan large datasets to learn models and patterns [...] and then make sense of reality by identifying networks of similarities and resemblances to what the AI already knew (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 61).

The effectiveness of this mechanism leads the authors to conclude that we are at a tipping point. Cognitive capacity is approaching its limit, prompting humans to delegate aspects of their own minds to technology. As a result, innovations are reduced to mere extensions of what we already know.

In the third chapter, which adopts an approach that intertwines the past and future, the authors explore the potential of AI. They reference Alan Turing, regarded as the father of computing, who described AI as an intelligence with human-like capabilities. The authors, however, emphasize AI's ability to surpass human faculties, though only in specific areas of knowledge. To illustrate this, they highlight machine learning, which, through supervised or unsupervised training and leveraging large volumes of data, enables AI to achieve such advancements. The foundation of machine learning lies in neural networks inspired by the structure of the human brain, made possible by advances in computational power. Among these possibilities, the authors emphasize generative networks, or generators:

The applications of these so-called generators are remarkable. When properly applied to coding or writing, a book author could simply draft a manuscript and let the generator fill in the text's details. Similarly, an advertiser or filmmaker could provide a few images or a storyboard to a generator and allow the AI to create a concise advertisement or a commercial. (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 84).

Another point addressed by the authors is personalization. While they present it in a favorable light, citing examples such as improved search engines or recommendation services on streaming platforms, they do not shy away from highlighting certain risks. They noted that personalization "facilitates access to certain topics and sources while, for the sake of convenience, completely excluding others" (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 84). This tendency to steer users into cycles of similar content leads to the formation of filter bubbles or, as the authors call them, echo chambers. Managing these risks was one of the key motivations behind the writing of the book.

AI lacks the ability to reflect on its findings or explain how it arrives at its conclusions. According to the authors, this makes issues such as database biases for underrepresented groups critical. Its fragility lies in the superficiality of its learning, which requires demonstrations of reliability for its application. In this context, while the authors point to positive advances such as cures for rare diseases, improved communication, reduced traffic fatalities, or enhanced logistics, they also make it clear that emerging risks must be addressed.

In Chapter Four, the authors delve deeper into the challenges of the use of AI in digital networks. They take a balanced and descriptive approach, examining the relationships between governments, platform operators, and users. The authors emphasize the significant influence that digital platforms have on society, whether through content recommendations, facilitating social connections, or generating new insights. They also highlight how platforms can pursue interests that diverge from those of governments. Since networks do not adhere to geographical borders, the authors note that they can become tools for geopolitical maneuvering. Moreover, the rules defined by platform operators can conflict with governmental objectives, such as the regulation of which content should or should not circulate.

The authors highlight the ethical dilemmas that arise with the application of AI on digital platforms. Users' interactions with the internet result in an accumulation of information that feeds the platforms' databases, whose goal is to expand their user base at any cost. This raises critical questions about the purpose for which AI is developed, the regulations that guide it, and the impact of these technologies. In this context, to soften the critique, the authors argue that the technologies designed by platform operators were initially intended to enhance their services to better meet user expectations. However, as these platforms grew, they began to influence various sectors of society, expanding their political influence on a global scale:

By having complex effects on sectors such as defense, diplomacy, commerce, healthcare, and transportation, and posing strategic, technological, and ethical dilemmas that are too complex for any single agent or discipline to address alone, the advent of AI-powered digital platforms is raising issues that should not be considered exclusively as national, partisan, or technological in nature. (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 141).

In the fifth chapter, the discussion delves deeper into issues of security and the global order. To this end, the authors construct a historical overview of warfare based on technologies, culminating in cyberwarfare and the potential of AI to make it more complex. They argue that halting the development of AI in security contexts would not lead to a safer world; rather, it could destabilize existing power dynamics.

Delegating warfare functions to AI, whether in the cyber realm or in controlling physical weapons, promises a faster and more precise response, capable of operating and responding autonomously. Its use introduces a high level of uncertainty, given the implementation of novel strategies never conceived by humans. For the authors, the opacity in which an AI can be trained makes it nearly impossible to measure the potential of an enemy. Generative intelligence, for example, can create false information, including photos and videos that are artificially crafted. These resources "will extend beyond traditional battlefields to, in a sense, anywhere connected to a digital network" (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 170). Furthermore, the landscape of war could be altered, as nations with limited military power could gain immense strength by investing in AI. Moreover, AI is a technology viable not only for military use but also for civilian applications, which adds an extra layer of complexity, whether in terms of governmental control or its destructive potential. In this way, the authors deem it necessary to avoid escalations and unwanted crises, as well as to control the proliferation of AI for military use, focusing on early alerts and responses, with an emphasis on dialog among the great powers.

In the sixth chapter, the authors address human identity in a future permeated by AI, where tasks once carried out by humans are no longer exclusive, and where personal and societal meaning, as well as the way reality is perceived, are altered. The AI-mediated or directed experience becomes dual: it is empowering, with imminent advancements in various fields, and disempowering when it leads to conflict or fails to bring benefits to its users, diminishing their sense of autonomy. These individuals may choose to distance themselves

from AI; however, "as AI becomes increasingly dominant, disconnection will become an increasingly solitary journey" (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 194).

For the authors, the shift in experience directly affects areas such as science, where machine learning removes human naivety's exclusivity in driving research and enables the discovery of previously unknown aspects of reality. In education, AI assistants will begin interacting with children, providing personalized teaching, and ensuring they are constantly challenged. Moreover, preferential interaction with machines devoid of human sensitivity and emotion could reduce social interaction, yielding uncertain results for future generations and potentially leading to less contemplation or moderate reasoning. In terms of communication, the dominance of AI is shaping the human experience. In this context, the authors point to traditional institutions of content curation, such as newspapers, academic journals, and universities. These institutions can explain why one type of information is treated differently from another, in contrast to social media platforms, where AI is not transparent about why a certain piece of information is being recommended, especially in cases of misinformation dissemination. Furthermore, for the authors:

AI can exploit human passions more effectively than traditional advertising. By adapting to individual preferences and instincts, it generates responses that its creator or user desires. [...] As a result, information that is believed to be what users want to see is prioritized, distorting a representative image of reality. (SCHMIDT; HUTTENLOCHER; KISSINGER, 2023, p. 200).

To address the dilemmas presented, the authors advocate for a shift in perception, moving the focus away from reason and placing it on human dignity and autonomy. This shift translates into the limitations on the use of AI, with the aim of establishing a balance in each new technological application. This implies maintaining the human qualities of democracy and freedom of expression, which should not be extended to AI.

In the seventh chapter, the authors offer a final argument about the future of AI, comparing the effects of its implementation to the changes brought about by the advent of the printed book, but with unprecedented speed. Machines, which are now faster and smarter, provide access to an unexplored spectrum of knowledge, fostering scientific advancements while simultaneously paving the way for controversial AI applications. From this perspective, the authors examine the possible individual choices regarding AI, which can either be explained as a source of almost transcendental wisdom or rejected owing to its potential risks. They argue that resistance to AI could incur high costs, as new technological practices are progressively adopted by society. In considering humanity, the text highlights the pressing

need for universal ethics in the context of AI. For the authors, restricting AI in some fields is an urgent demand owing to the unpredictability of its outcomes, as well as the necessity of shaping it according to a desirable human future. AI should not be allowed to act automatically and without supervision. The need for such interventions brings numerous global regulatory challenges, which, for the authors, are currently more defined by questions than by answers.

With the presentation of the chapters concluded, it can be affirmed that the book is situated in a context where discussions about AI are becoming increasingly relevant across various fields. This work makes important contributions to the field, heightening the awareness that in-depth reflections must be developed to guide the implementation of AI in ways that align with truly human interests. While not disregarding the real possibilities for advancement in various areas of knowledge—and even emphasizing them—the authors make clear the immediate need for continuous preparation for an era of uncertainties that extend beyond human reason.

The book was published in a pre-explosion context of generative AI. Therefore, while it addresses issues related to this technology, the authors' view remains modest concerning its impacts and consequences for human life, especially in applications such as ChatGPT. Nonetheless, important insights emerge from the work, both regarding the individual and collective impacts of this new technology, whether in science, communication, or international relations. However, for some readers, the book may adopt an overly balanced approach between the risks and benefits of AI. In this regard, it is worth noting that the authors try not to take an excessively critical stance, which may discomfort certain groups of readers. Moreover, perspectives that are overly focused on issues from the Global North tend to marginalize discussions about challenges pertinent to less advantaged regions. Highlighting these aspects, the book is consistent and relevant work, providing a solid understanding of AI's implications for our society. It is recommended for a better understanding of the field and is suitable for both those looking to acquire a basic understanding of AI's influence and readers interested in expanding their debate with a multidirectional view of the technology's applications.

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