Book Review

Making Sense of AI:
Our Algorithmic World, by Anthony Elliot (2022) Polity Press

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ABSTRACT

How can we understand consequences and make sense of an event when we are in its epicentre? Would it be possible to gain a deep understanding of the situation without putting it into a certain perspective or broader context? The book Making Sense of AI *invites us to resist a natural inclination to make fast inferences based on the proximity and salient experiences and instead engage in slow thinking and pondering on the evolution of human technology. An effortful exercise, as this reading may turn out to be, is worth, nevertheless, undertaking for 21st-century students interested in recognizing future opportunities, coping with challenges, and understanding complex phenomena such as AI.*

KEYWORDS

AI, Cyber-Physical Systems, Human-AI Co-Creation, Humbots, Intelligence, Offloading, Trust

INTRODUCTION

How can we understand consequences and make sense of an event when we are in its epicentre? Would it be possible to gain a deep understanding of the situation without putting it into a certain perspective or broader context? The book *Making sense of AI* invites us to resist a natural inclination to make fast inferences based on the proximity and salient experiences and instead, engage in slow thinking and pondering on the evolution of human technology. An effortful exercise, as this reading may turn out to be, is worth, nevertheless, undertaking for 21st century students interested in recognizing future opportunities, coping with challenges, and understanding complex phenomena such as AI.

Being by definition a process inseparable from learning, meaning-making consists in perceiving affordances (i.e., possibilities for action) of the concepts in the light of one's personal history and experience (Zittoun & Brinkmann, 2012). The search for personal intrinsic values will not be readers' solo travel, however. The book provides us with the possibility to forge comprehension of the term AI through numerous dialogic inquiries with technological experts who express their hopes, fears, and expectations in relation to artificial mind. Heteroglossia of tech gurus introduces readers to the most pressing social issues of the AI field, such as increasing defence funding, technological unemployment, biased algorithms, and their reinforcement of existing inequalities.

Beyond passive contemplation, readers will also have the opportunity to personally *enact* the meaning of the term artificial intelligence by *doing* mental exercises, like changing perspectives, considering converse definitions, assessing probabilities, and imagining alternative scenarios. Kahneman & Tversky (1982) covered these mental actions under the term *simulation heuristic*. The advantages of such mental investments and cognitive engagements are hard to overestimate: counterfactual thinking and simulation have shown the potential to raise awareness of alternative possibilities and stimulate elaborated and unbiased judgement (Hirt & Markman, 1995).

The author should be credited for the tentative to adopt systems thinking approach by putting technological advances in a broader context of human activity across many sociocultural domains. These lenses are particularly suitable for an audacious enterprise of appropriating the meaning of AI. From the system perspective, sociocultural, political, economic, and environmental facets of AI are strongly interconnected. While some links would be explicitly featured and articulated by the author, many hidden interdependencies and relationships await to be noticed by attentive and curious minds. Here, most probably, lies the primary outcome of the book: it nourishes readers' cognitive and motivational mechanisms for self-exploration and sensemaking of AI phenomena[1]. Much like an experimenter in Maier's (1931) classical problem-solving task, the author deliberately but inconspicuously puts the pendulum in slight motion, thus triggering readers' reflections and search for hidden layers of meaning.

WHAT IS INTELLIGENCE?

'A fundamental problem in artificial intelligence is that nobody really knows what intelligence is' (Legg & Hutter, 2007, p. 391). The variety of selected definitions of AI presented in the book (pp. 2–11) perfectly illustrates this issue. Without entering a century-long discussion where a definitional consensus is still lacking, the book prompts two additional questions crucial for understanding the nature of human intelligence and its artificial analogue. Particularly, if intelligence is limited to mental activity, does it mean that the human body should be eliminated from the intelligence equation? Alternatively and ultimately, shouldn't physical action and embodied interactions between the individual and the environment be considered as important variables of intelligence? The author proposes that studying the relationship between society and technology may be the most relevant path for pursuing these queries.

THE AGE OF HUMBOTS AND CYBER-PHYSICAL SYSTEMS

A lot of digital encounters that we are now witnessing have previously been thought of as a prerogative of the science fiction domain. Virtual personal assistants, unmanned aerial vehicles, autonomous robotic agents, and self-driving cars are now part of our lives.

The author makes it clear, however, that this technological outbreak is not a product of our modern scientific advances (p. 8). Since ancient times humans have been seeking ways to amplify their action capabilities by inventing new and useful tools and techniques. Such artifacts were to compensate for the limitations of human physical and cognitive abilities. *Intoolligence* (Osiurak & Heinke, 2018), i.e., the process of human tool use and construction is, probably at the heart of human cumulative technological evolution (Tomasello et al., 1993).

The technological innovation, in turn, also transforms how the human mind works, extending and amplifying human intelligence but also blurring the boundaries between humans and machines. These blends, known as cyber-physical systems or 'humbots' (Lubart et al., 2021), like Mars Exploration Rovers, enable humans to physically distribute and extend their minds and imaginations to explore outer space (p. 88).

COGNITIVE OFFLOADING STRATEGIES AND THE RISE OF ARTIFICIAL AGENCY

Delegating cognitively demanding tasks to external tools is intimately related to issues of automation and technological agency. What would be the right amount of information to handoff? What is the difference between cognitive offloading (Risko & Gilbert, 2016) and complete handoff (p. 84) of a task or activity to automated intelligent machines? Ultimately, what would be the consequences of extensive delegating and overreliance on automated aids? These questions transpire from the book and invite readers to reflect on possible answers.

Coactive human-machine interactions imply a new distribution of functions between human and artificial actors and bring forth the trade-off between automation and control (pp. 29, 85). On the one hand, too much automation leads to the lack of transparency, deskilling (Manzey et al., 2012), and gradual vanishing of unpractised cognitive capacities (Bainbridge, 1983)—the processes that entail human's 'out-of-the-loop' unfamiliarity and loss of control. On the other hand, beyond economic benefits, automation and transfer of routine tasks to external aids release human cognitive resources, enabling coping with novel ambitious tasks and 'achieving performance gains that have previously not been possible' (p. 35).

AI agents that gradually climb the autonomy ladder accentuate the need for thoughtful frameworks for human-technology teaming. Instead of competition and quest for full artificial autonomy, these frameworks propose that technology and humans complement each other and thus could cooperate and build on each other's strengths (Wu et al., 2021), emphasizing trust, turn-taking, and shared information space.

PRIVACY, TRUST, AND DIGITAL REALITIES

Sharing information with gadgets is inevitable and technology already mediates a huge part of our everyday public and private lives (p. 144). Our smartphones and laptops may already know us better than our partners. Recent Alexa advertising makes this point clear https://www.dailymotion.com/video/x87qdm0. Privacy issues and the question of digital surveillance have been the author's recurrent topics throughout the book (pp. 23, 77, 145-164). The author's main argument is that new technologies and intelligent algorithms threaten and undermine our privacy and freedom. Translated into predictive analytics, personal and behavioural data may be used by tech giants and governments, making us vulnerable as citizens, customers, and community members. Elliot draws on Michel Foucault's notion of the Panopticon to metaphorically illustrate the extent of digital control and transparency in the contemporary world (p. 145). If data is the new oil, the owners of the data gain a huge power—statistical governance—by analysing and trending private information and manipulating behaviour. The author points to possible stakeholders of data and prompts readers to question who are real data-owners today: those who generate data or those who store and process our digital imprints?

The impact of recommendation systems, targeted advertising, and hidden data collection on our representations of reality has not been studied yet. Nevertheless, the picture drawn by the author suggests that we may already be living in a distorted reality of fake news and deepfakes, much like prisoners in Plato's cave.

FORWARD-LOOKING NATURE OF SENSEMAKING

The chapter 'The futures of AI' examines some (over-blown) claims about AI and discusses possible long-term impacts and consequences of technologies. If our world is algorithmic, as the title of the book argues, then the future should be predictable. By contrast, numerous existing definitions and operationalizations of AI naturally imply multiple open-ended scenarios. By drawing potential futures, the author acknowledges the risks and opportunities of AI in relation to global issues like power race,

climate change, and inequalities, concluding that AI has an equal probability of helping humanity to solve these complex problems and exacerbating them (p. 195). This chapter may be one of the best sections of the book as it represents a creative exercise of anticipating the future and shows how our current interpretations of AI influence our aspirations about the future and what action strategies we can envision. Futures thinking may be a powerful technique for those who want to be better prepared for future uncertainties and recognize action possibilities before they emerge and evolve.

CONCLUSION

Overall, the book is an interesting attempt at building a multidimensional account of AI as a social phenomenon. The reading could be particularly useful for social science students and researchers who might be triggered to think of how AI redefines basic human notions like intelligence, privacy, sexuality, autonomy, and trust.

Psychologists and scholars of human cognition may take a particular interest in making sense of AI because it allows them to consider classic psychological issues from a new angle, question assumptions, and elaborate more holistic and interdisciplinary inquiries. For example, one may envision artificial intelligence as a human cognition which is offloaded to external tools. This would resonate strongly with the extended cognition account (Clark & Chalmers, 1998; Clark, 2005), according to which external tools, human cognitive processes, and their interactions constitute dynamic cognitive systems that augment human performance. Through this perspective, it becomes clear that the AI phenomenon may not be limited to computer software, machine learning techniques and other disembodied technologies, but may embrace a larger space including humans and artifacts aimed to enhance human mental and physical capacities. Moreover, with this emphasis on extended systems, one may envision that a more ecological assessment of AI (in contrast to the classic Turing test) would consist in a comparison of such a human-machine system's performance to the unaided human condition.

Two limitations of the book should also be highlighted. Content-wise, one may regret that such important sociocultural dimensions as education and art are just briefly mentioned and have not received the systematic attention they deserve. This omission has not been explained in the book and is hard to justify. The second drawback concerns the general composition of the book and the way the author presents and frames the narrative. Structured as a collection of ideas of prominent essayists, technologists, and AI pioneers, a substantial part of *Making sense of AI* simply paraphrases existing accounts. Bewildering reliance on experts' vision often makes reading reassemble binge-watching of Ted talks, where the author settles for the role of a mere moderator of the debates. Given the fact that the author explicitly denies the ambition to present a current state of AI (p. 1), the author's position seems to be a deliberate choice. Despite these shortcomings, the book still keeps its promise to intelligently compress the wealth of meanings of AI and, as already mentioned, does its job of stimulating readers' interest for further exploration of the topic.

CONFLICT OF INTEREST

FUNDING AGENCY

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ENDNOTE

[1]   Although not featured in the author's further reading list, the OECD (2017) report *Computers and the Future of Skill Demand*, written by the author's homonym—Stuart Elliot—deserves a special mention.