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The Myth of Artificial Intelligence: Why Computers Can't Think the Way We Do. Erik J. Larson. Cambridge, MA: Harvard University Press, 2021. 320 pp. $29.95 (hardcover). (ISBN 9780674983519)

> "Is this the start of the great AI jobs bloodbath?" (The Daily Mail, 19th May 2023).
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> "AI is 'clear and present danger to education'" (The Times May 20th 2023)
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> "Scientists use AI to discover new antibiotic to treat deadly superbug" (The Guardian, 25th May 2023).
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> "AI creators fear the extinction of humanity" (The I, 31st May 2023)

This small sample of recent headlines in UK newspapers captures some of the fear and the hope around Artificial Intelligence (AI) today. It is unusual for 'technology' to hit the front pages, but AI is very much doing so at the time of writing. This intense public interest may reflect that, unlike many of the technologies that we use, AI is based on a deeply resonant idea, something one might say of mythic dimensions. Erik Larson's *The Myth of Artificial Intelligence: Why Computers Can't Think the Way We Do* prompts explorations of what it might mean to say that AI is a myth or approach it as a myth.

For Larson, the myth of AI is the claim that current development will inevitably achieve general AI (something akin to real human intelligence) as opposed to narrow AI (AI that has been trained for a specific task, such as to play chess). Larson is not suggesting that it is a myth that general AI is possible in itself, or even that it is the wrong aspiration, just that we should not believe it is inevitable or even likely on the current development path because it is based on a wrong idea of what human intelligence is. Regarding the history of AI, this book provides an accessible account and overview. Larson traces the history of AI thought as pursued by computer scientists, from the famous Dartmouth conference in 1956, and Turing's work prior to that, through to the present. The key point Larson seeks to make in rehearsing this history is that, in trying to identify what human understanding is, the criteria set to test it have always been reductive. For example, Turing's original focus on intelligence as problem solving concentrated on only one dimension of human intelligence.

Human intelligence, however, has three dimensions according to Larson. Much of computing is deductive – for instance, rule-based – which has taken us only so far with intelligent systems. The current phase of AI is based on inductive thinking, that is, on learning from data. Yet for Larson, such inductive systems can still only deliver narrow AI. This limitation is because they do not reproduce the other aspect of human thinking based on abductive logic that uses context to understand which is the most probable of possible explanations. Currently, it is not known how to enable a computer to perform this kind of so-called thinking. Larson briefly mentions the way that the earliest version of the web 2.0 myth of people power was overtaken by the idea of big data and the way that huge investments in data-driven AI has placed immense power in hands of a few powerful companies possessing the funds and data to develop it. However, he does not dwell on this issue of unregulated power. It is not his central concern, it seems. For Larson, the myth that inductive AI can create general AI is dangerous because the investment in the project is doomed to fail and diverts us from exploring the true scientific task of uncovering the mystery of human intelligence.

This seems to both downplay the achievements of data-driven AI and equally glosses over the many problems that feeding data reflecting social biases into data-driven systems seems to be creating with current AI. In multiple domains AI is already delivering on exciting

possibilities such as enabling new forms of scientific discovery or saving lives through filtering health data at scale. We seem to be far from reaching the limits of what this form of AI can achieve. So to focus so soon on the limits of this type of AI seems premature. Equally this such AI is mired in debate about bias, privacy impacts, effects on environmental sustainability and challenges to human autonomy. These are central to current debates so not to more fully explore them feels like a gap. Fundamentally, Larson assumes that achieving general AI should indeed be the ultimate goal. He does not consider the possibility that computation cannot ever replicate human thinking (partly because it remains unclear how it works) or that trying to reproduce human intelligence is an undesirable outcome because of the societal dangers that it creates.

Larson employs the term 'myth' in the sense of a widely held but false belief. Myths, however, can also be seen as traditional stories that carry deep cultural (or even universal) significance. Following this direction of thought, one could turn to Mayor's (2018) book *Gods and Robots*, for instance, to explore the depth of our fascination and fear with artificial life. As a historian of ancient science, Mayor seeks to demonstrate the importance of the myth of technology-made life in Greek mythology, philosophy, and literature to show how and why people were already imagining it long before it was technically feasible. For Ancient Greek myth appears to abound in stories of life that is made rather than born. Hephaestus created Talos, a bronze giant robot, to protect Crete from strangers. It patrolled the island's shores three times a day, and would throw boulders at intruders or roast them by squeezing them against its red-hot body. Talos obviously had some level of intelligence and autonomy to carry through its tasks, so it is no mere machine. In some versions of the legend, it is credited with emotions and imagination. Hephaestus also designed Golden Maidens that bustled about as servants, understanding his needs. Other artificial life included the 'living statues' created by the master craftsman, Daedalus. For Mayor, these myths are imagining genuine artificial life as products of technology - as life through craft - and are not based on magic or the will of a god. Mayor considers them ancient thought experiments. The development of these ideas may reflect recognition of the power of metallurgy and the ability of craftsmen to copy natural forms in a striking way. But in philosophy and literature, such myths were also material to explore deeper moral concerns about human freedom and choice. For example, Mayor notes that such automata are usually deployed by powerful tyrants, echoing our own fears that robots will promote surveillance and control. Such stories, Mayor also illustrates, appear in the mythologies of other cultures. These ancient stories seem to be evidence of a persistent human interest in the imagination of artificial life as a vehicle to pose fundamental existential dilemmas about the human condition. Interestingly, in her closing chapter, Mayor emphasises that these imaginings in ancient times produced emotions of "awe, dread and hope" (Mayor, 2018: 213). We seem to feel some of the same feelings around current AI. The project to produce AI that mimics human intelligence, endorsed by Larson, may be something that science will seek to achieve, but it should not be denied that it is emotionally provoking and will prompt profound questioning about what it means to be human.

There is another direction we could take with the idea of AI as a myth. This alternate direction takes us back to Larson's idea of myths as false beliefs. Yet, we could see AI not as a myth taking us in a false path for science, but instead as a highly ideological narrative that serves to disguise the true, exploitative, and extractive nature of this technology. One example of this argument is in Crawford and Joler's (2019) dissection of the "anatomy" of the infrastructure that enables voice agents like the Alexa Echo to be able to answer questions or control our smart home. The authors draw the contrast between the Echo, as a rather non-descript plastic white cylinder, and the extensive industrial complex and global supply chains required to make it work. They reveal its reliance on mining operations and power

plants (with impacts for environmental sustainability), on low-paid and precarious labour, and on the exploitation of all forms of human knowledge as data (with its threat to social sustainability).

> "Each small moment of convenience – be it answering a question, turning on a light or playing a song - requires a vast planetary network, fueled by the extraction of non-renewable materials, labor and data". (Crawford and Joler, 2018).

The myth of AI here is that it is simply based on clever algorithms. Abstracted from its social and historical context, the myth masks the material impacts and powerful vested interests that lie behind it.

These insights are more fully articulated and extended in Crawford's 2021 book, *the Atlas of AI*. Like Larson, she locates AI in a historical context, but a much longer, deeper one in the history of technologies and power. One of the major extensions to the previous work is that she analyses the nature of bias in AI, particularly the myth that AI can be neutral. For instance, she illustrates how a number of attempts to classify people in the context of AI have been damagingly reductive, such as trying to identify profound and personal aspects of identity from photographs. While these classifications purport to be neutral or objective, they are actually simplistic and normative and often have deeply sexist and racist assumptions built into them. The systems trained on these classifications then reproduce their assumptions and in turn, can cause untold harm. Crawford's point is that the underlying idea of classifying populations is inherently problematic and usually linked to forms of coloniality. It is more than the data being used to train algorithms is biased; rather, it is a much deeper problem of how attempting to classify people 'objectively' can never succeed. Making decisions about how to train systems cannot therefore be within conceptions used in computer science. These problematic assumptions are a much more fundamental problem with Larson's general AI project than not fully understanding human intelligence.

Crawford (2021) also points to the pattern of AI often being used as a tool of surveillance and control over work, thereby consistently placing more power in the hands of employers. This pattern of impact of technologies like AI on work are explored further by Munn (2022) in *Automation is a Myth*. Munn's claim is that the pervasive story of impending automation advanced in the media today, and that has been promised for about one hundred years, is a myth. But it is a very powerful and dangerous myth because it presents the spread of technologies like AI as an apolitical story of technical progress masking its links to capitalism, coloniality, and patriarchy. The myth of automation, for Munn, is made up of three myths. First is the "myth of automated autonomy" (Munn, 2022: 9). This is the claim that any work can be fully automated. Munn argues that this is not possible. Whether automated autonomy is a utopian dream (of the freedom from work) or a dystopian nightmare (of loss of human control and a role) complete automation is always a fantasy. In reality, because work is often very complex, there are always gaps in what can be automated that have to be filled by human labour. Such a gap in the potential to automate is probably closer to what we feel than that there is a gap in our understanding of human intelligence as Larson claims. Computers can never really do everything humans do in multiple ways. These gaps, moreover, are generally filled by work that is often menial or unpleasant, such as the task of combing through content that is flagged for moderation because of toxic topics. It is usually precarious work and rendered invisible by being crowd-sourced and typically located in the global south. Munn does chart how the discourse about autonomy for AI is shifting thinking towards recognising the need to involve humans and for it to be more "human centred" (Munn, 2022: 21). But there are tensions because automation was always about efficiency

and productivity, which do not reflect the more holistic or rounded needs from work of humans.

The second myth is the “myth of autonomy everywhere” (Munn, 2022: 47). This myth claims that the wave of automation is happening inevitably and everywhere. Yet it ignores the reality of the patchiness of automation, and further denies the social and material contexts making automation possible as well as its actual impact in specific contexts.

The third myth is the “myth of automating everyone” (Munn, 2022:81). This myth points to the unequal effects of automation on different groups. Because they already have fewer resources, some black workers, for example, may have less ability to ride the shockwave of automation. After all, automation happens in already racialised workplaces. Similarly, automation has a high impact on already precarious work in which women are over-represented. Automation effectively reproduces existing inequalities in labour markets rather than enhancing all work. Critically, the automation myth is dangerous because it masks the reproduction of capitalism, colonialism, and patriarchy behind a story of progress. So it is not just a false belief but a powerful ideology that breaks down resistance to human values.

This is an incisive and partly convincing argument to cut through the hype around AI. Perhaps it is also an oft repeated myth that automation, including AI, can only impoverish work. This impoverishment may indeed be a tendency and it is one that we need to be constantly reminded of because the myth of automation has an ideological role in masking exploitation. At the same time, this account does appear somewhat one dimensional. The effects of automation, including AI, are likely to be rather drawn out and complex, with wholly new jobs and types of jobs being created as others decline, and some work groups gaining job enrichment and freedom from mundane tasks, others losing control, status or identity (Willcocks, 2020).

The myths of AI and of automation are versions of a rather familiar myth of technological determinism and solutionism. This recurring myth is that technological innovation in itself drives social change (ignoring the social construction of technology), that it is progressive and inevitable, and promotes the idea that by itself technologies can solve complex social problems. Recognising and challenging examples of this myth is an important dimension for everyone working in the information sciences and indeed beyond. Critical information literacy must rest on an appreciation of this myth. Raising understanding of the infrastructures that make the apparent ‘magic’ of AI possible is central to what information professionals need to promote. Tools like Chat GPT do not simply pop up as free resources that one might choose to use or not; instead, it is important to recognise that they are created by humans, often with profit in mind. A full understanding of these facts could be described as algorithmic literacy.

Algorithmic literacy in this context may have multiple components. It implies explaining how to use Chat GPT effectively, recognising the need to formulate queries in the best form, and to recognise its information limits, such as that it is inaccurate and does not give its sources, was fed with data only up to September 2021. It is not irrelevant to acknowledge Larson’s point that current AI reproduces only parts of what makes up human intelligence. Algorithmic literacy also implies prompting users to reflect on its impact on their experience: is it making learning processes too easy? How does it make them feel? This reflection would be to acknowledge the questions for the human condition that Moon traces back to ancient myths about artificial life. And also, fundamentally, drawing on the critiques of AI myths from Crawford and Joler (2018) and Munn (2022), we should be prompting users to consider whether they want to use it at all when they realise the environmental impact (Ludvigsen, 2022); the ghost labour of Kenyan workers used to detoxify content (Perrigo, 2023); the way it was trained on copyrighted material without permission; the biases created within the

system by the data it was fed with; the way our current use of it is training it further (our use of systems is data labour (Li et al. 2023); the privacy risks of sharing our data with it. Ultimately points to the unregulated power of so-called 'big tech' companies to control our world and critical algorithmic and AI literacy must involve understanding and responding to such power.

We are used to hearing stories about technology. However, they are often bland marketing stories. AI is fascinating because it has a much more complex and ambivalent story, rooted in the quest for human self-understanding. The story of AI is a central myth of our time. Larson's book is a good starting point for accessible insights into the story of AI from a computer science perspective. It offers an important commentary on the myth of AI based on asking about the nature of human intelligence.

References

Burruss, M. 2020. "The (Un)ethical Story of GPT-3: OpenAI's Million Dollar Model" Last updated 27 July, 2020. https://matthewpburruss.com/post/the-unethical-story-of-gpt-3-openais-million-dollar-model/

Crawford, K. & Joler, V. (2018). Anatomy of an AI system. https://anatomyof.ai/,

Crawford, K. (2021). Atlas of AI: power, politics and the planetary costs of artificial intelligence. New Haven: Yale University Press.

Li, H., Vincent, N., Chancellor, S., & Hecht, B. (2023, June). The Dimensions of Data Labor: A Road Map for Researchers, Activists, and Policymakers to Empower Data Producers. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency* (pp. 1151-1161).

Ludvigsen, K. 2022. The carbon footprint of Chat GPT. Last updated December 21, 2022. https://towardsdatascience.com/the-carbon-footprint-of-chatgpt-66932314627d

Mahari, R., Fjeld, J. and Epstein, Z (2023). Generative AI is a minefield for copyright law. The Conversation, https://theconversation.com/generative-ai-is-a-minefield-for-copyright-law-207473

Mayor, A. (2019). *Gods and robots: Myths, machines, and ancient dreams of technology*. Princeton University Press.

Munn, L. (2022). *Automation is a myth*. Stanford University Press.

Perrigo, B. (2023). "Exclusive: OpenAI Used Kenyan Workers on Less Than $2 Per Hour to Make ChatGPT Less Toxic." Time, January 18, 2023. https://time.com/6247678/openai-chatgpt-kenya-workers/

Webb, M. (2023) Exploring the potential for bias in Chat GPT JISC blog https://nationalcentreforai.jiscinvolve.org/wp/2023/01/26/exploring-the-potential-for-bias-in-chatgpt/

Willcocks, L. (2020). Robo-Apocalypse cancelled? Reframing the automation and future of work debate. Journal of Information Technology, 35(4), 286-302.