confident and swaggering as his critiques of scientists and scientism were withering. Among Jaki's more interesting and helpful contributions to scholarship are his translations and annotations of such important primary texts as Johann Heinrich Lambert's *Cosmological Letters* (1976), Immanuel Kant's *Universal Natural History and Theory of the Heavens* (1981), and Bruno's *The Ash Wednesday Supper* (1984).

Personally, I have found much of value in Jaki's *The Relevance of Physics* (1966); *Brain, Mind and Computers* (1969); *The Paradox of Olbers' Paradox* (1969); *The Milky Way* (1972); *Planets and Planetarians* (1978); *The Road of Science and the Ways to God* (1978); *Cosmos and Creator* (1980); *Genesis 1 through the Ages* (1998); *The Savior of Science* (2000); *Giordano Bruno: A Martyr of Science?* (2000); *Galileo Lessons* (2001); *Questions on Science and Religion* (2004); *The Mirage of Conflict between Science and Religion* (2009); and the second enlarged edition of his 1974 book, *Science and Creation: From Eternal Cycles to an Oscillating Universe* (2016).

Jaki also published studies of figures whose life and work most impressed him personally. These include three books (1984, 1988, 1991) on the Catholic physicist and historian of cosmology, Pierre Duhem, author of the ten-volume *Système du Monde*, and studies of English converts to Catholicism, John Henry, Cardinal Newman (2001, 2004, 2007) and G. K. Chesterton (1986, new ed., 2001).

Among Jaki's books not mentioned by Giostra but of interest to readers of this journal are *The Origin of Science and the Science of its Origin* (1979), *Angels, Apes, and Men* (1988), and *Miracles and Physics* (2004). For a complete Jaki bibliography, see http://www.sljaki.com/.

No translator is identified in the book under review; my guess is that Giostra, an Italian, was writing in English. Although generally clear and correct, the book contains enough small errors and infelicities to suggest that the services of a professional translator were not used. Not counting blank, title, and contents pages, this book has but 128 pages, including lots of block quotations.

For those unfamiliar with Jaki's work and not too interested in detailed studies in the history and philosophy of science and religion, this introduction is a decent start—and perhaps an end point as well. I strongly encourage curious readers to consult Jaki's own books, including his intellectual autobiography *A Mind's Matter* (2002). For other scholarly English-language perspectives on his work, see Paul Haffner, *Creation and Scientific Creativity: A Study in the Thought of S. L. Jaki* (2nd ed., 2009); *Science and Orthodoxy* [special issue of the *Saint Austin Review* on Jaki], vol. 14, no. 3 (2014); and Paul Carr and Paul Arveson, eds., *Stanley Jaki Foundation International Congress 2015* (2020).

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# TECHNOLOGY

**ATLAS OF AI: Power, Politics, and the Planetary Costs of Artificial Intelligence** by Kate Crawford. New Haven, CT: Yale University Press, 2021. 336 pages. Hardcover; $28.00. ISBN: 9780300209570.

*Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence* is Kate Crawford's analysis of the state of the AI industry. A central idea of her book is the importance of redefining Artificial Intelligence (AI). She states, "I've argued that there is much at stake in how we define AI, what its boundaries are, and who determines them: it shapes what can be seen and contested" (p. 217).

My own definition of AI goes something like this: I imagine a future where I'm sitting in a cafe drinking coffee with my friends, but in this future, one of my friends is a robot, who like me is trying to make a living in this world. A future where humans and robots live in harmony. Crawford views this definition as mythological: "These mythologies are particularly strong in the field of artificial intelligence, where the belief that human intelligence can be formalized and reproduced by machines has been axiomatic since the mid-twentieth century" (p. 5). I do not know if my definition of artificial intelligence can come true, but I am enjoying the process of building, experimenting, and dreaming.

In her book, she asks me to consider that I may be unknowingly participating, as she states, in "a material product of colonialism, with its patterns of extraction, conflict, and environmental destruction" (p. 38). The book's subtitle illuminates the purpose of the book: specifically, the power, politics, and planetary costs of usurping artificial intelligence. Of course, this is not exactly Crawford's subtitle, and this is where I both agree and disagree with her. The book's subtitle is actually *Power, Politics, and the Planetary Costs of Artificial Intelligence*. In my opinion, AI is more the canary in the coal mine. We can use the canary to detect the poisonous gases, but we cannot blame the canary for the poisonous gas. It risks missing the point. Is AI itself to be feared? Should we no longer teach or learn AI? Or is this more about

how we discern responsible use and direction for AI technology?

There is another author who speaks to similar issues. In *Weapons of Math Destruction,* Cathy O'Neil states it this way,

> If we had been clear-headed, we all would have taken a step back at this point to figure out how math had been misused … But instead … new mathematical techniques were hotter than ever … A computer program could speed through thousands of resumes or loan applications in a second or two and sort them into neat lists, with the most promising candidates on top. (p. 13)

Both Crawford and O'Neil point to human flaws that often lead to well-intentioned software developers creating code that results in unfair and discriminatory decisions. AI models encode unintended human biases that may not evaluate candidates as fairly as we would expect, yet there is a widespread notion that we can trust the algorithm. For example, the last time you registered an account on a website, did you click the checkbox confirming that "yes, I read the disclaimer" even though you did not? When we click "yes" we are accepting this disclaimer and placing trust in the software. Business owners place trust in software when they use it to make predictions. Engineers place trust in their algorithms when they write software without rigorous testing protocols. I am just as guilty.

Crawford suggests that AI is often used in ways that are harmful. In the *Atlas of AI* we are given a tour of how technology is damaging our world: strip mining, labor injustice, the misuse of personal data, issues of state and power, to name a few of the concerns Crawford raises. The reality is that AI is built upon existing infrastructure. For example, Facebook, Instagram, YouTube, Amazon, TikTok have been collecting our information for profit even before AI became important to them. The data centers, CPU houses, and worldwide network infrastructure were already in place to meet consumer demand and geopolitics. But it is true that AI brings new technologies to the table, such as automated face recognition and decision tools to compare prospective employment applicants with diverse databases and employee monitoring tools that can make automatic recommendations. Governments, militaries, and intelligence agencies have taken notice. As invasion of privacy and social justice concerns emerge, Crawford calls us to consider these issues carefully.

Reading Crawford's words pricked my conscience, convicting me to reconsider my erroneous ways. For big tech to exist, to supply what we demand, it needs resources. She walks us through the many resources the technology industry needs to provide what we want, and AI is the "new kid on the block." This book is not about AI, per se; it is instead about the side effects of poor business/research practices, opportunist behavior, power politics, and how these behaviors not only exploit our planet but also unjustly affect marginalized people. The AI industry is simply a new example of this reality: data mining, low wages to lower costs, foreign workers with fewer rights, strip mining, relying on coal and oil for electricity (although some tech companies have made strides to improve sustainability). This sounds more like a parable about the sins of the tech industry than a critique about the dangers of AI.

Could the machine learning community, like the inventors of dynamite who wanted to simply help railroads excavate tunnels, be unintentionally causing harm? Should we, as a community, be on the lookout for these potential harms? Do we have a moral responsibility? Maybe the technology sector needs to look more inwardly to ensure that process efficiency and cost savings are not elevated as most important.

I did not agree with everything that Crawford classified as AI, but I do agree that as a community we are responsible for our actions. If there are injustices, then this should be important to us. In particular, as people of faith, we should heed the call of Micah 6:8 to act justly in this world, and this includes how we use AI.

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**SYSTEM ERROR: Where Big Tech Went Wrong and How We Can Reboot** by Rob Reich, Mehran Sahami, and Jeremy M. Weinstein. New York: HarperCollins Publishers, 2021. 352 pages. Hardcover; $27.99. ISBN: 9780063064881.

Remember when digital technology and the internet were our favorite things? When free Facebook accounts connected us with our friends, and the internet facilitated democracy movements overseas, including the Arab Spring? So do the authors of this comprehensive book. "We shifted from a wide-eyed optimism about technology's liberating potential to a dystopian obsession with biased algorithms, surveillance capitalism, and job-displacing robots" (p. 237).

This transition has not escaped the notice of the students and faculty of Stanford University, the elite institution most associated with the rise (and sustainment) of Silicon Valley. The three authors of this