Book Reviews

Indeed, apart from its "something for everyone" approach, the book's true strength lies in its recognition of communication as a central focus of science. Yes, too many scientists forget the scientific method's all-important final step: to share one's findings. "The need to communicate well in science is not appreciated as much as it should be" (p. 110). The authors urge that scientists should be able to explain their work—what they do and why it matters—to parents or other family members. They further advise dedication of large blocks of time to writing. "Easy reading is damn hard writing" (p. 144).

However, the authors' mostly thorough exploration of communication leaves one huge boulder unturned, which exposes the book's central weakness. Much is made of the importance of scientists explaining their findings to other scientists, but in today's world it is just as crucial for scientists to communicate the relevance of their findings to critics outside science. How should one explain research to skeptics and deniers who question the legitimacy of scientific findings, let alone the need for science in the first place? Is a better poster, or even more data, really the best way to handle vaccination doubters and climate change deniers? Regrettably, the authors barely touch on this topic.

My second criticism of the book involves a different focus. Although the authors pointedly wished to steer clear of anything smacking of philosophy (or even academic debate), I found myself at times wishing they would have at least acknowledged some of the numerous and important philosophical ideas concerning the proper undertaking of science. For example, one of the topics they mention throughout the book, both directly and indirectly, involves how one knows when one has collected sufficient data to test one's hypothesis and justify conclusions. Unfortunately, this is never dealt with in depth or head on, with the result that some of the advice becomes contradictory ("Be thorough and don't take shortcuts" versus "Don't be a perfectionist"). How much trust should we put in our findings and conclusions? How do we know if they are true? How do we know when to stop doing replicates of experiments—do we base the decision on statistical inference alone? or on something more? I appreciate that the authors sought to provide practical guidance rather than venturing into potentially pedantic territory, but even simple recognition of such issues, with references as to where to explore further, would be a big boon to scientists of all levels in search of self-improvement. There is also virtually no mention of faith.

How to Be a Better Scientist is fun to read. It will provoke smiles, raise eyebrows, and bring useful rewards. Overall, there is much to recommend here, but like the best of science, there remains a never-ending list of further questions to be addressed.

Reviewed by Alexander J. Werth, Professor of Biology, Hampden-Sydney College, Hampden Sydney, VA 23943.

TECHNOLOGY

THE AGE OF AI: Artificial Intelligence and the Future of Humanity by Jason Thacker. Grand Rapids, MI: Zondervan Thrive, 2020. 192 pages. Hardcover; $22.99. ISBN: 9780310357643.

There are not yet many books that engage with artificial intelligence theologically. Jason Thacker's *The Age of AI: Artificial Intelligence and the Future of Humanity*, written for a general audience, provides an important start to much-needed theological discussions about autonomous and intelligent technologies. As an early effort in this complex interdisciplinary dialogue, this book deserves credit for its initial exploratory efforts. Thacker's book also points to the larger and more complex territory requiring further exploration.

Thacker, creative director at the Ethics and Religious Liberty Commission of the Southern Baptist Convention and project lead for their "Artificial Intelligence: An Evangelical Statement of Principles," is eager to draw attention to the pervasive and disruptive presence of artificial intelligence in our lives. While some may be distracted by images of AI that are speculative—the utopian Commander Data or the dystopian Terminator—many have not given much thought to the actual forms of AI that are part of our lives already, such as recommendation systems and digital assistants. "AI is everywhere," Thacker says; "And we aren't prepared." To help the unprepared understand AI, Thacker provides an orientation to current AI developments and explores the wide-ranging impacts of these on self-understanding, medicine, family, work, war, privacy, and the future. Along the way, he recalls biblical wisdom about old moral problems and imperatives, such as what the Ten Commandments prohibit and what Micah 6:8 prescribes (doing justice, loving mercy, and journeying attentively with God). He also offers a number of familiar biblical assurances, such as not being afraid and trusting in God.

All of this is helpful, to an extent. Thacker's major conclusions about AI are that we should not let our creations—our artificial agents—supersede human agency, and that we should not place too much hope in technology, for it alone cannot save us. Both of these are important points, although neither is very controversial nor necessarily theological: transparency is called for in many AI ethical frameworks, and we are well into a period of technological disenchantment.

Thacker starts *The Age of AI* by asking two significant questions. First, what does it mean to be human? Thacker looks to Genesis 1, which states—three times—that God created humans in the image of God. Clearly, this is an important theological claim; it is also a very complex one. There are various interpretations of what it means to be created in the image of God, and this is only the first chapter of the biblical narrative. Thacker

emphasizes a functional interpretation of Genesis 1: We are called to work to glorify God. Elsewhere, however, Thacker shifts to a more essentialist interpretation that emphasizes human dignity. He asserts that our dignity does not come from what we do and that "nothing in this world defines us" (p. 117). But what about the work we are called to do in and for the world?

Another challenge of beginning in Genesis 1 is what happens in Genesis 3—humanity's rebellion against God. Thacker claims that "the image of God in us was not lost" (p. 19), though he does not address the extent to which this image was corrupted. For Christians, what is most important is Jesus's redemption and transformation of that fallen image. What does the image of God in Christ, the new Adam, reveal about the future of humanity?

Questions raised by Thacker's answer to his first question carry over into his answer to his second question, what is technology (including AI)? For Thacker, technology itself is morally neutral: "What's sinful isn't the sword but how people choose to use it" (p. 20). Given Isaiah's eschatological image of swords beaten into plowshares, many would argue that the sword is part of a system of weaponry and warfare that is immoral and must come to an end. Going beyond Isaiah, Jacques Ellul concluded that the biblical city, as an image of the technological society, must ultimately be destroyed: the city is an autonomous, multi-agent system with a diabolical power that exceeds the power of the human agents who created it. (Ellul almost seems to suggest that there is something like a rogue AI in the Bible!) Ellul goes too far with this, missing the good in the city and the transformative power of new creation over sinful systems, but he rightly points to the deformative power of technology. Thacker acknowledges that technology profoundly changes us and our world, positively and negatively, but he seems to suggest that humans can easily remain in control of and essentially unchanged by it.

Thacker's emphasis on Genesis, "where everything began," appears to close off any discussion about evolution and its insights into the role of technology in our emergence as a species. Indeed, the archeological record reveals that the use of simple stone tools shaped ancient human bodies and brains. Technology not only preceded the arrival of *Homo sapiens*, it shaped our understanding of what a human being is in form and function. Furthermore, throughout human history, technology has continued to change us fundamentally. Consider, for example, Walter Ong's insight that the technology of writing restructured consciousness. From the perspective of evolution and cultural development, technologies have been shaping and changing what we are from the beginning.

Thacker critiques Max Tegmark and Yuval Noah Harari for conflating evolution and cultural development, but that misses their interest in how humans might continue to outrun natural selection through innovation—a path our species has been on for many millennia, at least since the agricultural revolution and the creation of the complex artificial environments we call cities. As controversial as they may be, Tegmark and Harari point to how a deeper historical and philosophical understanding of technology enables us to explore questions about the holistic transformation of humans and human agency.

Thacker's view of technology encourages pursuing "technological innovation to help push back the effects of the fall" (p. 70). He worries that we might be tempted to "transcend our natural limitations," although it is not clear how far we are permitted to push back against the corrupted creation. He also fears "the people of God buying the lie that we are nothing more than machines and that somehow AI will usher in a utopian age" (p. 182). Educating people to resist being reduced to the status of machines (or data or algorithms) should be a learning outcome in any class or discussion about AI. As for ushering in a utopian age, this is one way of describing (in a kingdom-of-God sense) the Christian vocation: participating with God in the new creation. And perhaps AI has a role in this.

Thacker is absolutely right that we need a foundational understanding of who we are and of what technology is, and his answers provoke a number of questions for further exploration. The Bible reflects a rich interplay between human technological and spiritual development, from Edenic agriculture through Babelian urban agencies. And, as a technology itself, the Bible participates in these developments through its origin, nature, and function to mediate divine agency that transforms human agency. The biblical narrative makes it clear that we are not going back to the primordial garden in Genesis; we are moving toward the eschatological city, New Jerusalem, imaged in Revelation—"and what we will be has not yet been revealed" (1 John 3:2). How we understand the relationship between technological transformation and the transformation of all things through the new creation deserves much more attention within Christian theology.

With AI, it is clear that we are facing an even more profound restructuring of our lives and world—and of ourselves. Rather than looking back to the *imago Dei* corrupted in the beginning, Christians might find it more generative to look to the *imago Christi*. As N. T. Wright powerfully argues in *History and Eschatology: Jesus and the Promise of Natural Theology* (SPCK, 2019), the new creation inaugurated through the resurrection of Jesus provides a radically new perspective on creation. This includes us and our artificial creations. While Thacker believes "nothing will ever change fundamental aspects of the universe" (p. 168), some of us may imagine AI participating in the new creation.

For someone just beginning to think about AI and Christianity, *The Age of AI* might be a good place to

Book Reviews

start. But more needs to be read and written to explore the theological and technological questions this book raises.

Reviewed by Michael J. Paulus Jr., Dean of the Library, Assistant Provost for Educational Technology, and Director and Associate Professor of Information Studies, Seattle Pacific University, Seattle, WA 98119.

2084: Artificial Intelligence and the Future of Humanity by John C. Lennox. Grand Rapids, MI: Zondervan Reflective, 2020. 124 pages. Hardcover; $19.99. ISBN: 9780310109563.

Oxford mathematician and science philosopher John C. Lennox has been active in Christian apologetics for more than ten years. Best known, perhaps, for his debates with Richard Dawkins, Christopher Hitchens, Michael Shermer, and others (many of these debates are readily available online), Lennox has written numerous books defending the rationality of Christian faith. Many of his books address relationships between science and Christianity, such as his 2009 release: *God's Undertaker: Has Science Buried God?*

Lennox firmly believes that science and faith are compatible, as demonstrated by his easy way of integrating knowledge from science and theology. He often uses argument from design logic for God's existence. From his mathematical perspective, he points to the improbability of biogenesis to argue for the direct, non-evolutionary creation of life by God. As a result, he is often associated with advocates of intelligent design (ID). While the merits of ID with respect to creation matters are contested, it is indispensable when considering a future that will be (intelligently?) designed and built by human society. This is the central focus of *2084*, its title a leap forward from George Orwell's *1984*.

In chapters 1–3, Lennox cites many secular writers, utopian and dystopian, to highlight future possibilities. Their work accords with the assertion that artificial intelligence (AI) is of central importance; "AI will inevitably affect us all," so it is of interest not only to developers, but also to "philosophers, ethicists, theologians, cultural commentators, novelists, and artists" (p. 16).

But what is AI? Lennox offers his answer in two parts. Part one, chapters 4–5, examines "narrow" AI: computer systems designed to fulfill specific tasks, such as analyzing vast amounts of data or assisting in diagnosing illnesses. Narrow AI is operational now, providing great benefits to society, and its future potential is even greater. Unfortunately, like most technologies, it can also be corrupted by human sin. Lennox is not a Luddite, but he is realistic about AI's risks, and he lauds Christians involved in developing AI, such as Rosalind Picard at MIT.

Part two, chapters 6–7, describes the wider hopes some people have for AI, such as fundamental changes to human life. Indeed, transhumanists believe AI will eventually solve *all* the problems that beset human beings, including the "technical" problem (p. 85) of death itself. This hope is based on the development of Artificial General Intelligence (AGI): a conscious, self-improving, *superintelligent* computer system. Human creativity would, in effect, bestow life on a technological artifact, just as God breathed life into the dust of the earth in Adam. These aspirations reveal, according to Lennox, a hope to become gods, the realization of the false promise of the serpent in Genesis 3.

In chapter 8, Lennox interprets such utopian hopes as rejecting God and his promises. He notes the irony "that those who are seeking to create a superintelligence do not realize that there is good evidence that a superintelligence, *the* superintelligence, already exists: God the Creator and Sustainer of the heavens and the earth" (p. 117). By rejecting the creator, the creatures made in God's image are diminished and at risk of being made "useless" (p. 128).

From a traditional Christian perspective, chapters 1–8 (more than half the book) provide a good overview of AI as the cornerstone of transhumanism. Anyone unfamiliar with such matters will benefit from the account Lennox offers. Nevertheless, he skips over many of the details to get to his main interest: chapters 9–13, in which he develops his theological and eschatological perspectives on AI and its potential impacts.

Lennox is neither a preterist nor a post-millennial. Instead, he integrates the apocalyptic passages of Daniel, 2 Thessalonians, and Revelation to visualize what lawless progress in AI could produce. Ultimately, Lennox connects dystopian views of advanced technology, especially AGI, to the apocalyptic "beasts" in Daniel and Revelation. The mysteries of the apocalyptic genre do not concern Lennox; he is confident that the full meaning of such mysteries will become apparent as events unfold (p. 205). In the meantime, the prophecies encourage believers to be watchful and to guard against deception. With this call for watchfulness, Lennox moves to his conclusion: "There is no way to a glorious future that bypasses the problem of human sin, and the only one who has offered a viable solution to that problem is Jesus Christ, who faced it head-on on the cross" (p. 227).

For too long, many Christians have focused exclusively on matters of human origins, but the *future* of human life is ignored. Yes, all Christians look for the return of Christ, but what of the time between now and then? It seems that few believers are even aware of the challenges they will face later this century. By examining the future from a biblical perspective, Lennox offers an important corrective.

Christians will disagree over the future of human life, just as they do about human origins. In *2084*, Lennox offers his views of the future, in accordance with his