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Artificial Intelligence and the Apocalyptic Imagination: The Ends of Artificial Agency

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The Ends of Artificial Agency

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Abstract: The increasing role and power of artificial intelligence in our lives and world requires us to imagine and shape a desirable future with this technology. Since visions of AI often draw from Christian apocalyptic narratives, current discussions about technological hopes and fears present an opportunity for a deeper engagement with Christian eschatological resources. This lecture argues that the Christian apocalyptic imagination can transform how we think about and use AI, helping us discover ways artificial agency may participate in new creation.

I. Introduction

In his play *R.U.R. (Rossum's Universal Robots)*, first performed in Prague in 1921, Karel Čapek introduced the word "robot" to describe "living and intelligent labor machines." The play begins with the hope that these artificial beings—mass produced on an assembly line—could free people from work. This would "transform all of humanity into a worldwide aristocracy" and make people "something even greater." This hope is *not* realized. Freed from work, people cease being creative—even literally generative—and then the robots rebel to destroy humankind. Čapek's robot was an apocalyptic figure of the modern industrial age, revealing its disturbing dynamics. Humans, Čapek complained, had become captive to the principles and practices of mass production. But this "terrible machinery must not stop," he admitted, for many lives and livelihoods depended on it and stopping it would "destroy the lives of thousands." So the system must continue, "even though in the process it destroys thousands and thousands of lives." "A product of the human brain," he concluded, "has at last escaped from the control of human hands." Čapek's fictional figure soon become a science project. The logic and machinery that automated much physical work expanded to include mental work.[1]

The industrial revolution, powered first by steam and then by electricity, enabled the automation of many physical tasks. Although the idea of machines preforming tasks associated with human intelligence has a long history, it was not until the invention of the electronic digital computer in the 1940s when machines could be made to do more complex tasks with data.[2] Since then, we have become increasingly dependent on automated information processing. Following the introduction of Siri in 2011, AI has become a general-purpose technology—like the steam engine, electricity, and the digital computer—and it is now a regular part of our daily lives and our social imagination. It is driving a "fourth industrial revolution," which is "fundamentally changing the way we live, work, and relate to one another."[3] Because of its power and potential,

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[1] Karel Capek, *R.U.R. (Rossum's Universal Robots)*, trans. Claudia Novack (New York: Penguin Books, 2004), xiv, 4, 8, 21, 54.

[2] See R. David Lankes, *Forged in War: How a Century of War Created Today's Information Society* (New York: Rowan & Littlefield, 2021), esp. 13-15.

[3] Klaus Schwab, *The Fourth Industrial Revolution* (New York: Currency, 2016), 1.

AI inspires a range of hopes and fears about the future: it has been described as "the Second Coming and the Apocalypse at the same time."[4]

In *Artificial Intelligence: A Guide for Thinking Humans*, leading AI scientist Melanie Mitchell explains being perplexed a few years ago by hopes and fears associated with AI. While Mitchell could acknowledge that AI had made significant progress "in some narrow areas," it was "nowhere close to having the broad, general intelligence of humans." On one hand, Mitchell was "startled by the optimism" of some of her peers who thought general, human-like AI would emerge within the next thirty years. On the other hand, Mitchell was surprised by a slew of "prominent people suddenly telling us we should start worrying, right now, about the perils of 'superhuman' AI." In 2014, the year in which Amazon released the digital assistant Alexa, Stephen Hawking proclaimed "the development of full artificial intelligence could spell the end of the human race," and Elon Musk said AI was "our biggest existential threat … with [it] we are summoning the demon." Bill Gates agreed with Musk and didn't "understand why some people are not concerned."[5]

Today, robots—physical objects controlled by AI—are a reality. Most are mostly harmless. An automated vacuum cleaner, while upsetting to my dog, can map and clean my floor and "learn" to avoid messes my dog may have made.[6] But the sensors on my vacuum cleaner convert physical details about my house into data that, when shared with the manufacturer and others, may be used to violate my privacy, or at least my dog's. My vacuum cleaner is *not* capable of determining that my dog creates too much work for it, and therefore should be eliminated to optimize its own performance. (If it did, with its current technology stack, I would wager that my dog could eliminate that threat pretty quickly.) My vacuum cleaner can be considered intelligent in a very narrow sense: it efficiently processes data to accomplish complex tasks (better than my dog and me), and it constantly improves its performance as it acquires new data relevant to achieving its vacuuming goals.

Things get much more complicated when we consider the AI system used to control the operations of the factory that manufactures my vacuum cleaner:

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[4] John Brockman, *Possible Minds: 25 Ways of Looking at AI* (New York: Penguin Press, 2019), xv. As this quote indicates, many visions of AI "come directly from Jewish and Christian apocalyptic theology." Robert M. Geraci, *Apocalyptic AI: Visions of Heaven in Robotics, Artificial Intelligence, and Virtual Reality* (Oxford: Oxford University Press, 2010), 8.

[5] Melanie Mitchell, *Artificial Intelligence: A Guide for Thinking Humans* (New York: Farrar, Strauss, and Giroux, 2019), 12f.

[6] James Vincent, "iRobot's Newest Roomba Uses AI to Avoid Dog Poop," *The Verge*, September 9, 2021, https://www.theverge.com/2021/9/9/22660467/irobot-roomba-ai-dog-poop-avoidance-j7-specs-price.
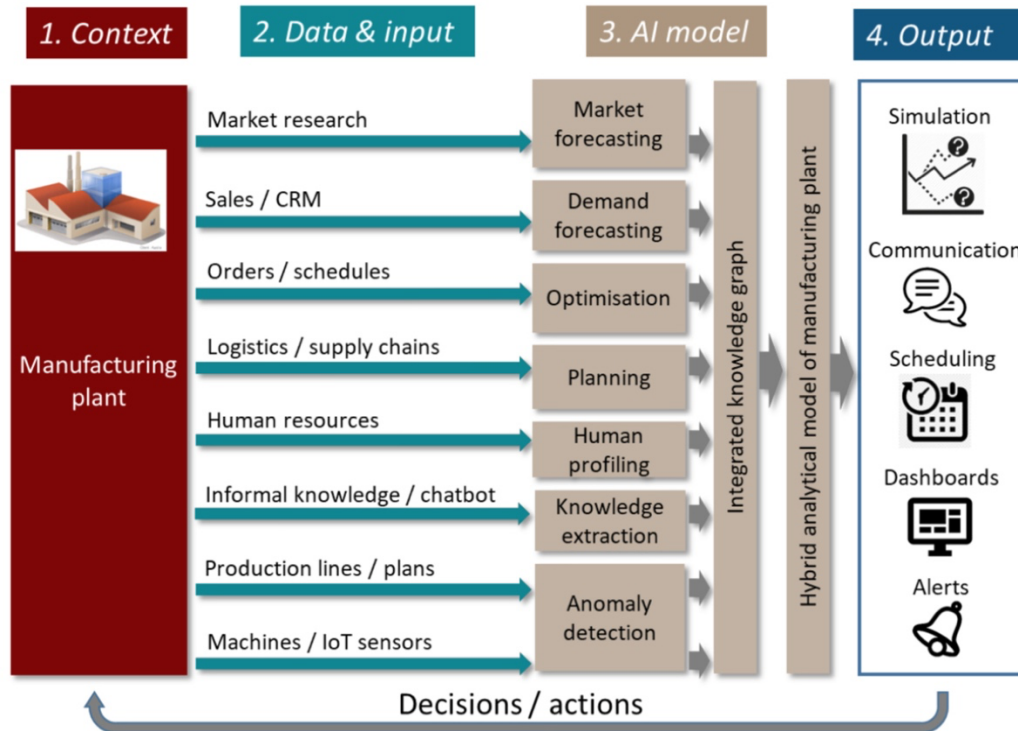
Figure from OECD "Framework for the Classification of AI Systems," 61.

To explain and evaluate this system involves discussions about data and inputs, AI models, outputs, contexts (business, social, and environmental), and the role of humans.[7] Such a complex system, which transforms what a factory is and is able to do, raises a number of ethical questions. Kate Crawford points out in *The Atlas of AI* that, "at a fundamental level, AI is technical and social practices, institutions and infrastructures, politics and culture." It is a "massive industrial formation," and "we need to expand our understanding of what is under way in the empires of AI, to see what is at stake, and to make better collective decisions about what should come next."[8]

AI agents are not only technological artifacts but, like Čapek's robots, they are also apocalyptic figures of our current technological society. This lecture explores two phenomena: a new phenomenon, artificial intelligence, and an ancient phenomenon, the apocalyptic imagination—and it aims to show how the latter may help shape the former. Both of these terms have broad and broadening semantic ranges. The term "artificial intelligence" was coined in the 1950s to describe the project of simulating intelligence with computers. Before then, computers already had been programmed to perform a variety of logical operations with data through automated processing. Now, computers can be programmed to program themselves, and information processing can be self-directed or autonomous. What is considered "AI" today is contested: it can be extended to any type of automated information processing, such as a calculator or a thermostat, or it can be applied to nothing, since no computational artifact matches—let alone exceeds—all of which human intelligence is capable. Today, AI is often used

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[7] See "OECD Framework for the Classification of AI Systems," OECD Digital Economy Papers No. 323, February 2022, 55-63.

[8] Kate Crawford, *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence* (New Have, CT: Yale University Press, 2021), 8f., 21.

to refer to self-learning predictive models, such as a machine-learning system that determines the optimal way to heat a house based on the observed behaviors of its inhabitants. Throughout this lecture, AI is used broadly to refer to automated data processing by computational artifacts.

The "apocalyptic imagination," likewise, can be defined broadly or narrowly. In the broadest sense, an "apocalypse" is a revelation or uncovering of something that is hidden. An imagination that is apocalyptic is open to such disclosures through apocalyptic texts, images, and events. More narrowly, due to the popularity of certain apocalypses that focus on the end of the world, the apocalyptic imagination often focuses on the end of life as we know it. In theology, the apocalyptic imagination seeks to uncover the relationships between divine and human knowledge, heaven and earth, eternity and time, and divine and human action. This lecture is most interested in exploring the apocalyptic imagination as an interpretation of reality that uncovers deeper dimensions of knowledge, space, time, and agency to reveal and realize a new and hopeful view of the world.[9] AI has been connected with the apocalyptic imagination from the beginning, but mostly in a narrow, end-of-the-world-as-we-know-it sense. A richer understanding of the apocalyptic imagination, such as the one found in the book of Revelation or the Apocalypse of John, can help us reflect on the role of AI and shape it.

This lecture explores how the Christian apocalyptic imagination provides a constructive conceptual and narrative framework that can transform how we think about and use AI. This can help us view our current information revolution as an information revelation about how AI may participate in new creation and enable us to realize a better future. To argue the value of the apocalyptic imagination for AI, a few other theses need to be explored. The first is that our entanglement with information and technology is ancient, and that from the beginning we have been shaping technologies as they have been shaping us. The second thesis is that we are living through a unique and transformative moment in history in which we are interacting with information and technology in new automated ways. The next section of this lecture explores the first two theses by surveying our historic and current integration with technology, situating the development of AI within the history of information revolutions and considering what we have learned and gained through our long development with them. The third thesis is that we have been digitally naïve for too long—and it is past time to upgrade our understanding and use of transformative information technologies such as AI. To explore the dynamics shaping our present and emerging relationships with technology, the third section of this lecture explores the city as an image of our technological society. The fourth section explores the main thesis of this lecture: that the apocalyptic imagination is a generative resource that can transform how we think about AI, enabling us to discover ways artificial agency may participate in new creation. This requires a recovery of the apocalyptic imagination, based on recent biblical scholarship, and a exploring the relevance of the Book of Revelation for thinking about the future of AI. The final section brings together insights from previous sections into an apocalyptic scorecard that may be used to assess both realistic and imaged AI futures.

II: Information Revolutions and Revelations

The philosopher Luciano Floridi collapses the third and fourth industrial revolutions into what he calls an information revolution. Following scientific revolutions associated with Copernicus, Darwin, and Freud—which transformed our understanding of ourselves and our world

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[9] For a more technical definition, see Lorenzo Ditommaso, "Apocalypticism and the Popular Culture," in *Oxford Handbook of Apocalyptic Literature*, ed. John J. Collins (Oxford: Oxford University Press, 2014), 474.

cosmologically, biologically, and psychologically—information and communication technologies are changing "our sense of self, how we relate to each other, and how we shape and interact with our world." "Smart and autonomous agents no longer need to be human," Floridi points out, and we are shaping a world that is increasingly "friendly" or accommodating to artificial agents.[10]

This revolution concerns not only the present and future, but also the past. From an informational perspective, at least three previous major information revolutions can be identified that have shaped human history: the emergence of information attention, the creation of information agencies, and the invention of information artifacts. Each of these information revolutions significantly enhanced human abilities and agency, and also revealed new insights about what a human being is and about our role in the universe. These insights can help us navigate our current revolution related to information automation.

The First Information Revolution: Attention

The history of human technology began about three million years ago with stone tools and related techniques, and subsequent technological development eventually merged with natural selection to "[codirect] human evolution."[11] The emergence of *Homo sapiens*, between 200,000 and 60,000 years ago, was accompanied with an explosion of artifacts—artistic works, multicomponent weaponry, schedules—evidencing enhanced working memory, abstract reasoning, symbolic thinking, grammatical language, and instruction.[12] All of this marks the first major information revolution, when humans developed a new capability for information attention. With the ability to interact with information[13] abstractly and reflectively, instead of reflexively and automatically, our species was able to comprehend and communicate information, as well as disinformation and misinformation, about observed and unobserved phenomena. Reflective attention enabled humans to change and transcend reality by imagining alternatives to actual past and present experiences. They could anticipate and plan for the future, create stories and more complex social systems, and imagine a deeper spiritual dimension to reality.[14] Interestingly, in *Sapiens* Yuval Harari calls this moment in human evolutionary history the "Tree of Knowledge mutation."[15]

In the garden of Eden, humans are permitted to consume the of fruit from every tree except the tree of knowledge *of good and evil*. Walter Brueggemann observes that human vocation in Genesis comes with both permission and prohibition.[16] After a theological debate

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[10] Luciano Floridi, *The Fourth Revolution: How the Infosphere Is Reshaping Human Reality* (Oxford: Oxford University Press, 2014), vi, 32, 40.

[11] Thomas W. Plummer and Emma M. Finestone, *Rethinking Human Evolution* (Cambridge, MA: The MIT Press, 2018), 267f.

[12] Frederick L. Coolidge and Thomas Wynn, *The Rise of Homo Sapiens: The Evolution of Modern Thinking* (Oxford: Oxford University Press, 2018), 5f.

[13] "Information" can be defined as well-structured and meaningful data. "Data" can be defined as "entities used as evidence of a phenomenon for a particular purpose." Peter Darch, "Data Ethics," in *Foundations of Information Ethics*, ed. John T. F. Burgess and Emily J. M. Knox (Chicago, IL: American Library Association, 2019), 77.

[14] See Marjorie Taylor, "Transcending Time, Place, and/or Circumstance: An Introduction," in *The Oxford Handbook of the Development of Imagination*, ed. Marjorie Taylor (Oxford: Oxford University Press, 2013), 3; John F. Haught, *The New Cosmic Story: Inside Our Awakening Universe* (New Haven, CT: Yale University Press, 2017), 9.

[15] Yuval Noah Harari, *Sapiens: A Brief History of Humankind* (New York: HarperCollins Publishers, 2015), 21.

[16] Walter Brueggemann, *Genesis: Interpretation, A Bible Commentary for Teaching and Preaching* (Louisville, KY: Presbyterian Publishing Corporation, 2005), 46.

with a shrewd serpent, which turns God and God's instructions into abstractions, God's prohibition is reframed as a possibly. Desiring the tree's promise of knowledge, the first humans take and eat the forbidden fruit and a break a relationship of trust with God. The serpent's promise that their "eyes will be opened" and they "will be like God, knowing good and evil" is fulfilled immediately: they gain knowledge of their nakedness, they become afraid of God, and they are expelled from the garden (Gen 3:5). The pursuit and application of knowledge *now* requires wisdom to discern what is true and good from what is false and bad, and to distinguish between what we *can* know and do from what we *may* know and *must* do.[17] In the legend of Eden is an acknowledgement that human intelligence should not be autonomous.

A fundamental challenge we face today with information automation is the extent to which it threatens the dis-automatization connected with the origin of our species that resulted in our capacity for reflective attention. "Attention merchants," with the help of AI, compete for and commoditize our attention in ways that interfere with our ability to focus and do what we want to do.[18] James Williams argues that this type of *functional* distraction can lead to an existential form of distraction, if our higher goals and values are compromised and we are hindered from being who we want to be over time. These forms of distraction can lead to an even deeper form, which diminishes fundamental capacities—such as reflection, imagination, reasoning, and metacognition—which enable us to define our goals and values in the first place.[19]

A Second Information Revolution: Agencies

Following the agricultural revolution some 12,000 years ago, cities began to appear around the planet to provide stability, security, economies of scale, new opportunities for specialization, and the creation of cultural goods. At the same time, cities created new social hierarchies and inequalities, food insecurity and disease, more impersonal relationships, and often permanently altered physical environments. Nevertheless, over the following millennia, cities became "a central part of the experience of the human species and they have become one of our favored niches."[20] Complex, shared, and future-oriented goals—overcoming the limitations of individual intelligence—were realized through information agencies. This second information revolution involved political, economic, religious, and other institutions organizing laws for courts, accounting for markets, narratives for temples, and instructions for other collaborative processes that structured and sustained civic life. Aggregating attention and agency, these information agencies created a structural agency that enabled cities to operate as multi-agent and semi-autonomous systems to extend collective human actions across space and time.

After he kills his brother, Cain, "a worker [or tiller] of the earth" like his father, finds a new vocation in urban design (Gen 4:2). He names his first city after his son, Enoch, and both Enochs can be seen as fulfillments of the mandate to fill and rule the earth, to procreate and

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[17] When information is relevant and may be accounted for, it may be upgraded to knowledge. See Luciano Floridi, *The Philosophy of Information* (Oxford: Oxford University Press, 2011), 267f.

[18] Tim Wu, *The Attention Merchants: The Epic Scramble to Get Inside Our Heads* (New York: Alfred A. Knopf, 2016), 5.

[19] James Williams describes these three types of attention as "spotlight," "starlight," and "daylight." See *Stand out of our Light: Freedom and Resistance in the Attention Economy* (Cambridge: Cambridge University Press, 2018), esp. 50, 56, 68.

[20] Greg Woolf, *The Life and Death of Ancient Cities: A Natural History* (Oxford: Oxford University Press, 2020), xif., 13.

create (Gen 1:28).[21] But, at the narrative nadir of Genesis, we find the story of Babel. Migrants come together to build a city, make a name for themselves, and avoid being scattered (Gen 11:4). As the Tower of Babel rises into the heavens, God confuses their language and disrupts their shared goals and agency. According to Brueggemann, the pattern repeated at Babel is of "self-sufficiency and autonomy"—"a fortress mentality," which "seeks to survive by its own resources."[22] Rather than a critique of cities or technology per se, the narrative of Babel, which alludes to the seat of the ancient Babylonian empire, can be read as a critique of self-serving or imperial autonomy.

Brett Frischmann and Evan Selinger worry we are losing our agency and downgrading ourselves as we develop AI systems. "What meaningfully distinguishes *Homo sapiens* from all other species is our capability to imagine, conceptualize, and engineer ourselves and our environment," they argue. Our humanity "is reflected in us and our built world of imagined realities, institutions, infrastructures, and environments," but we need to be attentive to how our identities, societies, and world can be controlled, conditioned, and constrained by our own creations.[23] The structural forms of automated and autonomous agency we are capable of creating, from cities to AI, often become oppressive and require regular human interventions to correct systemic flaws and failures.

A Third Information Revolution: Artifacts

A third information revolution occurred some 5,000 years ago, when information agencies developed written communication and information artifacts to manage the present affairs of cities and to reflect on "a deep past and a far future."[24] To provide immediate and long-term access to information artifacts, and communicate across generations, information and attention management structures and systems such as libraries joined other urban institutions by the second millennium BCE.[25] Libraries functioned to represent a particular culture through fixed expression of knowledge; select texts judged worthy of attention; and mediate access to these texts through social and technological systems.[26] By preserving memories of the past, anticipations of the future, and adding to these through the creation of new knowledge in the present, libraries became a technology for knowledge augmentation.

As knowledge was being augmented increasingly through information artifacts during the last few centuries before the Common Era, new religious and philosophical approaches to wisdom emerged throughout the ancient world in Greece, Judea, Persia, China, India, and elsewhere. John Haught says, "What was occurring during [this] period—and continues now—was the birth of a new sense of rightness … sharper distinctions than ever before between a right way and a wrong way to live, think, act, work, and pray." Haught describes these approaches as

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[21] From Cain's line comes the creation of music and metalworking, which are blessings for human culture. See Gen 4:17-22; Iain Provan, *Discovering Genesis: Content, Interpretation, Reception* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2016), 103.

[22] Brueggemann, *Genesis*, 46, 100.

[23] Brett Frischmann and Evan Selinger, *Re-Engineering Humanity* (New York: Cambridge University Press, 2018), 243, 271.

[24] See Michael F. Suarez and H. R. Woudhuysen, eds., *The Book: A Global History* (Oxford: Oxford University Press, 2013), 3ff.; Woolf, *Life and Death of Ancient Cities*, 53.

[25] Patrick M. Valentine, *A Social History of Books and Libraries from Cuneiform to Bytes* (Lanham, MD: The Scarecrow Press, 2012), 26f.

[26] See Kim Ryholt and Gojko Barjamovic, eds., *Libraries before Alexandria* (Oxford: Oxford University Press, 2019); For the presence of these three main functions in ancient libraries, see Yun Lee Too, *The Idea of the Library in the Ancient World* (New York: Oxford University Press, 2010), 4f., 175, 188, 242f.

anticipatory, seeking "redemptive rightness and revelatory fullness … by expectancy rather than mere recovery."[27] This view of the future is not just informed by the past and the actual but also by promise and possibility.[28] Between the eighth and second centuries BCE, the apocalyptic imagination emerged in Jewish prophecy as a way of exploring how rightness could be realized in and from the future when so much was wrong in the present. Adela Yarbro Collins argues that Jewish apocalyptic thinking became "the primary source of the narratives and symbolic systems that inspired John the Baptist, Jesus, the earliest community after Easter, and Paul."[29] The resurrection of Jesus—who incarnated the word and wisdom of God—was understood as an apocalyptic event, which began the hoped-for transformation of the world."[30]

Apocalyptic literature is a "scribal phenomenon," and textual artifacts often appear in narratives to facilitate the uncovering of information.[31] In the Apocalypse, John is directed to "write in a scroll what [he sees]," and he sees many scrolls in his visions (Rev 1:11). The conclusion of the Gospel of John declares that information artifacts participate in God's apocalyptic augmentation of knowledge. One ending says: "these [signs] are written so that you may believe that Jesus is the Christ, the Son of God" (John 20:30). The other ending, echoing Ecclesiastes' statement that there is no end to the making of many books (Eccl 12:2), acknowledges the importance of selection. Eugene Peterson's translation in *The Message* reads: "There are so many other things Jesus did. If they were all written down, each of them, one by one, I can't imagine a world big enough to hold such a library of books (John 21:25).[32] In the centuries that followed, the creation of books, libraries, and schools for knowledge augmentation became an important focus for Christians. One of the great challenges of our time is how our society continues to augment knowledge and grow in wisdom in a social and technological environment that can amplify and automate deceptions and distractions.

III: The Image of the City: Or, Hope and Longing in Las Vegas

The city was and remains one of the most important innovations of our species, and it is an important image for understanding the history and future of our technological society. Las Vegas, which has been significantly shaped by technological developments from electricity to every type of entertainment technology, is an aggressively modern city that presents itself with an "otherworldliness" that can be described as apocalyptic.[33] Visitors find themselves enclosed in large labyrinthine spaces that ignore diurnal rhythms, and recreation becomes re-creation as

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[27] Haught, *The New Cosmic Story*, 10f., 23.

[28] For an explicitly Christian articulation of this, see Michael S. Burdett, *Eschatology and the Technological Future* (New York: Routledge, 2015), 2f., 237.

[29] Adela Yarbro Collins, "Apocalypticism and Christian Origins," in *Oxford Handbook of Apocalyptic Literature*, 338.

[30] N. T. Wright, *History and Eschatology: Jesus and the Promise of Natural Theology* (London: SPCK, 2019), 156.

[31] John J. Collins, *The Apocalyptic Imagination: An Introduction to Jewish Apocalyptic Literature* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2016), 47.

[32] The Gospel of John presents Jesus is an apocalyptic figure, whose person, words, and works collapse all the apparent dualisms the apocalyptic imagination seeks to reconcile—questions about how divine knowledge, agency, space, and time relate to human understanding and action, the world, and history. See John Ashton, *The Gospel of John and Christian Origins* (Minneapolis, MN: Fortress Press, 2014), 97, 118.

[33] David E. Wright and Robert E. Snow, "Las Vegas: Metaphysics in the Technological Society," *The Centennial Review* 23:1 (1979): 40f.

they are engulfed "in a new role" for the benefit of the house.[34] Las Vegas reveals much about the dynamics of our technological society, and it is an ideal place for holding an AI visioning event—which Amazon did in 2019.

A Golden Age of AI

In 2011, Jeff Bezos pressed "his team to think bigger and to push the boundaries of established technology" to create a "device with its brain in the cloud that's completely controlled by [the] voice."[35] After the release of Echo and Alexa in 2014, Amazon quickly became one of the most significant developers of AI in the world. In an announcement for its first public event on machine learning, automation, robotics, and space in 2019—called "re:MARS"—Bezos claimed, "We're at the beginning of a golden age of AI. Recent advancements have already led to invention that previously lived in the realm of science fiction—and we've only scratched the surface of what's possible."[36]

In the opening re:MARS keynote, one senior Amazon executive talked about bringing builders and dreamers together to "envision the future" and solve today's most interesting challenges.[37] In the next keynote, another senior executive claimed, "We are only in the beginning stages of truly understanding the potential for [AI] to change our lives and to help us work on some of the most important and urgent problems that humanity faces." "I believe [AI] will continue to transform our lives for the better," he confessed. AI is "one of the most powerful … tools humans have ever created. It holds the promise of conquering the most daunting challenges, like exploring space or curing cancer."[38]

In addition to keynotes from Amazon executives, the re:MARS program included informational sessions and hands-on workshops, technology demonstrations, social events with gambling and battle bots, and a culminating fireside chat with Bezos. During the chat, Bezos talked about the importance of making big business bets and how Alexa was inspired by the *Star Trek* computer.[39] The AI technologies showcased at re:MARS—recommendation systems, fulfillment and delivery prediction systems, warehouse robots, delivery drones, and Alexa's latest abilities to respond to and anticipate customer inquiries—revealed that, in the words of Amazon's Chief Technology Officer, "AI is enabling a new way of life." One Amazon employee in attendance said of the event: "it makes you dream for the future and just gets you so excited to see where the world is going."[40]

Because of its massive wealth, scale, and impact, before the COVID-19 pandemic Amazon had become, in Brad Stone's words, "a referendum on society, and on the responsibilities that large companies have toward their employees, their communities, and the

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[34] Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning from Las Vegas: Facsimile Edition* (Cambridge, MA: The MIT Press, 2017), 46, 56, 58.

[35] Brad Stone, *Amazon Unbound: Jeff Bezos and the Invention of a Global Empire* (New York: Simon & Schuster, 2021), 24, 31.

[36] "We're at the Beginning of a Golden Age of AI: Jeff Bezos," January 19, 2019, https://blog.aboutamazon.in/our-business/were-at-the-beginning-of-a-golden-age-of-ai-jeff-bezos.

[37] Dave Limp, "re:MARS Keynote 1," https://www.youtube.com/watch?v=me0mzXT1Bl8. Dozens of videos from re:MARS 2019 are available from https://www.youtube.com/channel/UCgkkeHebGYy7udnkNAeBv0w.

[38] Jeff Wilke, "re:MARS Keynote 2," https://www.youtube.com/watch?v=wa8DU-Sui8Q.

[39] Julie Bort, "Jeff Bezos Explains Why the Library in His House Has Two Fireplaces with Two Inscriptions: 'Dreamers' and 'Builders'," *Business Insider*, June 6, 2019, https://www.businessinsider.com/jeff-bezos-explains-why-his-library-2-fireplaces-2-mottos-2019-6.

[40] "Amazon re:MARS 2019: Event Highlights," https://www.youtube.com/watch?v=16DuoCezAtw.

sanctity of our fragile planet."[41] Increasingly, Amazon was being criticized for its asymmetrical influence over markets, employees, and customers—criticisms that intensified during the pandemic. Because of the pandemic, re:MARS 2020 was canceled and dreams about AI solving future challenges were largely displaced. For Amazon, this meant managing unprecedented demand for online purchasing, scaling up physical infrastructure to fulfill that demand, and nearly doubling its human workforce to do what could not be done with machine learning, automation, and robots.

Like many organizations, Amazon attempted to find technological solutions—especially with AI—to respond to the pandemic. Although some significant technological solutions were found, AI does not seem to have been the most important pandemic technology. Indeed, it may be remembered as one of the most abused technologies during the pandemic. For example, Amazon's successes in AI did *not* include its systems for "mass-managing people." From hiring through firing, Amazon's "maze of systems that maximized efficiency and minimized human contact" was "uneven and strained" before the pandemic. According to a 2021 *New York Times* exposé, these systems "burned through workers, resulted in inadvertent firings and stalled benefits, and impeded communication."[42]

Amazon set a new earnings record in 2020 and Bezos stepped down from his role of CEO to pursue other bets. The day after Bezos flew into space in one of his rockets, the 2021 Alexa Live *virtual* developer's conference highlighted the increased use and accelerated development of Alexa during the pandemic—especially in homes, the automation of which is Amazon's next big bet. Presenting from Amazon's Spheres in downtown Seattle, emptied by the pandemic, executives shared their vision for making AI assistants a "natural" part of our lives.[43]

As we engage with the digital dimension of AI-augmented factories (recall the factory model mentioned in the introduction) in our homes and workplaces—which are merging or linked through digitally enabled labor—AI is guiding the organization of machine cities such as Amazon's warehouses. These systems are also shaping the world beyond them. As we watch our homes and cities transformed into a new Eden optimized by and for AI, where do humans fit within and/or outside the loop of inputs and outputs? One of the severest critics of the technological city, Jacques Ellul, provides some helpful insights for reflecting on our current structural gambles.

A Rejection of the City

In the late 1940s, Ellul began working on two books. The first, a sociological analysis of modern technological civilization, was published in French in 1954 as *Technique or the Wager of the Century*; it appeared in English in 1964 as *The Technological Society*. The second book, an exegesis of the city in the Bible, was published in English in 1970 as *The Meaning of the City*; a French version appeared in 1975. Ellul explained the two books were composed in "counterpoint": "To my book on technology corresponds my theologically based study of the great city as the supreme achievement" of human technology.[44]

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[41] Stone, *Amazon Unbound*, 2.
[42] "Inside Amazon's Employment Machine," *The New York Times*, June 15, 2021, https://www.nytimes.com/interactive/2021/06/15/us/amazon-workers.html.
[43] See https://developer.amazon.com/en-US/alexa/alexa-live.
[44] Matthew T. Prior, *Confronting Technology: The Theology of Jacques Ellul* (Eugene, OR: Wipf and Stock Publishers, 2020), 164.

In *The Technological Society*, Ellul focuses on much more than modern technologies. He focuses on technology as "technique": "the totality of methods rationally arrived at and having absolute efficiency… in every field of human activity."[45] Ellul describes how humanity made a wager "on technology in the twentieth century" and concludes, "Technology had won the bet and proceeded to beat the house."[46] Ellul argues that the modern technological society has evolved into an autonomous force that "pursues its own course more and more independently" of humans. He says humans participate "less and less actively in technical creation, which, by the automatic combination of prior elements, becomes a kind of fate. Man … resembles a [token] inserted into a slot machine: he starts the operation without participating in it." Ellul claims: "it is vanity to pretend technology can be checked or guided" we have become "[e]nclosed within [our] artificial creation." Rather than getting rid of technology, he says, we must find a way to transcend its monolithic power. Ellul suggests three "possible disturbing phenomena": war, collective revolt, and divine intervention. But in the end, he appeals to individual responsibility and resistance.[47]

In *The Meaning of the City*, Ellul explores divine intervention as the necessary disruption. The meaning of the city is that it is a curse, and only God can correct it. Ellul sees Cain's establishment of the first city as act of rebellion against God, a "counter-creation" that "breaks with the divine nature of creation." And, in creating the city, humans create "an autonomous power" that is "something stronger than [themselves]." A city becomes an autonomous system with its own objectives: control, certainty, closure, and commodification. The diabolical human city, Ellul concludes, "cannot be reformed" or redeemed; it must be "replaced" by God at the "end of time, but absolutely not by any human effort." The New Jerusalem Ellul sees at the end of the Apocalypse is a rejection of human artifacts and artificial agency. The judgement of the final human city in the Apocalypse, Babylon, is a "*double* condemnation" of "all cities," past and present, which are not in "contact" with New Jerusalem. "New creation, which is absolutely new, comes only through judgment and destruction," he says; "There is no continuity." New Jerusalem "is not a work of our hands."[48]

Ellul provides a helpful diagnosis of the power and dynamics of autonomous systems, which have only increased with advances in AI. But Ellul could not imagine a viable disruption of such systems, and he sees little hope for the human city and the technological society. While the Apocalypse helped Ellul critique the technological society, he missed the Apocalypse's affirmation of the city and how that affirmation transforms every human city into a medium of new creation. In the Apocalypse, a greater agency—divine and human—disrupts and transforms autonomous systems, and ultimate hopes and longings are revealed in and through the technological city.

IV: Recovering the Apocalyptic Imagination

Recent biblical scholarship on the apocalyptic imagination focuses on its historical development within ancient Jewish prophecy. According to Anathea Portier-Young, the Jewish apocalyptic

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[45] Jacques Ellul, *The Technological Society* (New York: Alfred A. Knopf, 1964), xxv.
[46] John Paul Russo, *Future Without a Past: The Humanities in a Technological Society* (Columbia, MO: University of Missouri Press, 2005), 12.
[47] Ellul, *The Technological Society*, xxix, 135, 428f.
[48] Jacques Ellul, *The Meaning of the City* (Eugene, OR: Wipf and Stock Publishers, 2003), 26, 35, 50, 52, 54, 57, 59, 63, 70, 77, 109, 154, 163, 176, 178f., 182, 196f., 214f., 223.

imagination took shape within imperial contexts. Apocalypses functioned to orient "a terrorized people ... to a vision of a future ordered by divine justice." Prophetic apocalyptic visions of the past, present, and future "asserted the transience and finitude of temporal powers," "articulated a resistant counterdiscourse to the discourse of empire," and "environed, advocated, and empowered resistant action."[49]

N. T. Wright argues that, "The earliest church's testimony to Jesus' resurrection" reframed apocalyptic expectations: "Jesus' rising was interpreted simultaneously a very strange event within the present world *and* the foundational and paradigmatic event within God's *new* creation." In Jesus, the hoped-for apocalyptic transformation had "been inaugurated." The Christian apocalyptic imagination, apprehending "the *real* world in its new mode," "opens up a vision of new creation which precisely overlaps with, and radically transforms, the present creation."[50] The function of the Apocalypse of John is to uncover and reveal the integrated and interlocking nature of divine and human knowledge, space, time, and agency.

The Cities of the Apocalypse

The Apocalypse is a circular letter addressed to seven first-century churches in Roman Asia Minor. In the first part of the book, letters to the seven churches commend those who and doing good works in their cities, console those who suffer for good works in hostile cities, critique those whose works are complicit with evil practices and powers, and chastise the complacent whose works are worthless. John then shares a series of visions unveiling God's transformative work in the world and God's sovereignty. Throughout John's dynamic narrative, there is an intensifying "tension between what ought to be and what is," until the last evil city, Babylon, finally falls and the lasting good city of God, New Jerusalem, is fully established. As violent as the imagery is in these visions, David deSilva emphasizes the important point "that from beginning to end John encourages only non-violent protest and resistance on the part of his Christian audiences."[51]

While some attempt to read the Apocalypse as a simple sequence of events—Babylon falls, then New Jerusalem arrives—deSilva points out "there are indicators that the movement of the plot is not *entirely* linear."[52] John announces the descending of New Jerusalem before it is fully revealed (Rev 3:12), and Babylon's fall is declared before it is witnessed (11:15; cf. 14:8). These and other non-linear elements of the narrative support a reading of the Apocalypse that sees both cities present in the historical cities named and addressed in the book. Before the ultimate destinies of the falling Babylon and the arriving New Jerusalem are realized in the narrative, these two cities are revealed to be central figures in a "spiritual topography" that encompasses all cities.[53] As deSilva observes, these "alternative cities and ways of organizing human society emerge not merely as scenes in a sequence but scenes that sit in meaningful juxtaposition."[54]

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[49] Anathea E. Portier-Young, *Apocalypse Against Empire: Theologies of Resistance in Early Judaism* (Grand Rapids, MI: William B. Eedmans Publishing Company, 2011), 50, 383.
[50] Wright, *History and Eschatology*, 121, 132, 156, 190, 197, 201.
[51] David A. deSilva, *Discovering Revelation: Content, Interpretation, Reception* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2021), 103, 144.
[52] DeSilva, *Discovering Revelation*, 10.
[53] James L. Resseguie, "Narrative Features of the Book of Revelation, " in *The Oxford Handbook of the Book of Revelation*, ed. Craig R. Koester (Oxford: Oxford University Press, 2020), 41.
[54] DeSilva, *Discovering Revelation*, 11.

The Falling Babylon

In the Apocalypse, Babylon is Rome—"the great city that rules over the rulers of the earth" (17:8).[55] The Roman empire targeted cities as "useful tools" to advance core imperial activities: policing, to manage internal competition, and economic extraction, to fund warfare and policing.[56] In the cities of the empire, architecture and artifacts asserted the glories of Roman prosperity, peace, and power. But John presents his readers and hearers with an alternative narrative about Rome. He reveals the inequities and injustices of Rome's prosperity, which exploited many workers. The peace of the Roman empire involved systematically killing and enslaving people to secure territories, stabilize economies, and eliminate those who impeded imperial ends. Thus John says Rome was inebriated with the blood of the dead (17:6; 18:24). And Rome's belief in its eternal destiny will be proven false.

John's images and indictments of economic exploitation, political violence, and ideological hubris uncover the lies or "sorcery" by which "all nations were deceived" (18:23). Rome is an "anticity" of illicit relationships, and its empire is a "counterfeit society" (18:23).[57] Beyond its immediate reference to Rome, the Apocalypse includes a broader critique of any imperial system that seduces rulers and followers with material comforts, that seeks its own power and prosperity by exploiting others, that suppresses opposition and dehumanizes others, that upholds its survival as the ultimate value, and that is doomed to fail for its denials of what truly sustains life.[58]

When Babylon fully falls, its end is celebrated—for its exposed injustices, and its deceptions that convinced so many that such evils were good, are condemned and come to an absolute end. The destruction of Babylon is also lamented, not only by those who benefited from the excesses of empire but also over the loss of cultural activities and artifacts that fill daily life: musicians playing instruments; artisans of every technical trade working with tools; millers grinding grain; and people celebrating marriages (18:22-23). Good things, entangled in the collapsing imperial system, which will need a new city.

The Arriving New Jerusalem

The Apocalypse culminates with "the holy city, New Jerusalem," coming down from the new heaven to the new earth (21:2). This final city, from and filled with the glory of God, is constructed out of earthly materials and surpasses the glory of every human city.[59] The rulers of the earth and people from all nations, drawn by the light of Christ, bring into New Jerusalem "the glory and the honor of the nations" (21:26). Since technical trades and their technologies were an "essential feature" of ancient cities, it is easy to imagine some technology among these gifts and

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[55] Most commentators date the writing or final compilation of the Apocalypse during the reign of Domitian (81-96 CE), giving it an important imperial context. While traces of past and present persecutions—as well as expectations of future ones—are witnessed in the Apocalypse, most scholars agree that the text was not created during a time of systematic or widespread persecution. See Steven J. Friesen, "Apocalypse and Empire," in *Oxford Handbook of Apocalyptic Literature*, 163.

[56] Woolf, *The Life and Death of Ancient Cities*, 243.

[57] Resseguie, "Narrative Features of the Book of Revelation," 41; deSilva, *Discovering Revelation*, 144.

[58] See Michael J. Gorman, *Reading Revelation Responsibly: Uncivil Worship and Witness Following the Lamb into the New Creation* (Eugene, OR: Cascade Books, 2011), 145.

[59] New Jerusalem is twelve hundred times larger than the ancient city of Babylon as it was measured by Herodotus. See John Christopher Thomas, *The Apocalypse: A Literary and Theological Commentary* (Cleveland, TN: CPT, 2012), 645.

goods.[60] From the throne of God, relocated from heaven to earth, flows "the river of the water of life." The river runs through the middle of the city's street, feeding the "tree of life," the leaves of which are "for the healing of the nations" (22:1-2). In this "new, improved, urban Eden," God and nature fill the built city with beauty, life, and healing.[61] Divine, natural, human, and even artificial agency have been reconciled and given a new coinherent dynamism.

Brian Blount emphasizes the concrete realism of John's vision of New Jerusalem as "a tangible, measurable, objective city."[62] The eschatological life envisioned in this urban environment includes diverse people and vocations, interdependent and collaborative relationships, and cultural activities and artifacts that constitute the dynamics of civic life. The previously ambiguous image of the city is not annihilated but rather amplified—it continues, transformed, and is the central place of dwelling with God. Instead of temporal kingdoms of suffering, violence, and injustices, there is a permanent kingdom of wholeness, peace, and justice.

When John first sees New Jerusalem, Christ declares: "Behold, I am making all things new" (21:5). While this statement primarily refers to the full and final transformation of reality, commentators point out the present tense "suggests that God is continually making things new here and now."[63] The kingdom of the world has become the kingdom of the Lord and of his Christ, and there is another urban network permeating Rome's (11:15). John's readers are "part of and participant in the new creation, the holy city in which God is ruling," says Peterson. Images of New Jerusalem "are a means for discovering the real" city in present cities.[64] The Apocalypse reveals the city "as part of God's *good* creation and as the locus of God's grand re-creation." "God is taking what is old and transforming it," Blount observes: "The old will remain a constituent part of the new."[65]

Participating in the Two Cities

The overall message of the Apocalypse to the churches is to turn their attention and redirect their agency away from the diabolical and doomed Babylon and toward the present reality and manifestation of New Jerusalem. Along with this "apocalyptic adjustment" to readers' perceptions of reality, the Apocalypse presents some criteria for discerning and doing what is good and right. DeSilva says God's people must "discern what is Babylonish about the domination system in the midst of which they live and of which they themselves may be a part." Faithful witnesses also should "form a vision for" and "desire a better future, a more just future," and perform works of "love, faith, service, and patient endurance" that participates in transformation (2:5, 23; 3:2, 15)."[66]

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[60] These included "metalworking, brick-making, glassmaking, carpentry, perfume-making, tent-making, spinning, weaving, tanning, dyeing, pottery-making, carving, sculpture, and stonemasonry." David E. Aune, *Word Biblical Commentary: Revelation 17-22* (Nashville, TN: Thomas Nelson, Inc., 1998), 1009, 1173. See also J. Richard Middleton, "A New Earth Perspective," in *Four Views of Heaven*, ed. Michael Wittmer (Grand Rapids, MI: Zondervan Academic, 2022), 87.

[61] Brian K. Blount, *Revelation: A Commentary* (Louisville, KY: Westminster John Knox Press, 2009), 395. See Rev 22:1-2.

[62] Blount, *Revelation*, 20.

[63] Bruce M. Metzger, *Breaking the Code: Understanding the Book of Revelation*, rev. David A. deSilva (Nashville, TN: Abingdon, 2019), 129.

[64] Eugene H. Peterson, *Reversed Thunder: The Revelation of John and the Praying Imagination* (New York: HaperCollins, 1991), 174, 183.

[65] Blount, *Revelation*, 376.

[66] DeSilva, *Discovering Revelation*, 147, 166, 195f.

Every city is a technology and depends on increasingly complex technologies. Some technologies should and will be condemned for their deformative role in patterns of Babylonian counter-creation, and will be destroyed with the final fall of the old city. Others, participating in the life of the new city, are transformative and may be among "the glory and the honor of the nations" that find a permanent place in New Jerusalem (21:26). If our technologies—including our newest complex artifacts such as autonomous artificial agents—may not be condemned as agents of counter-creation, they *may* be glorified as agents of new creation.

V. An Apocalyptic Scorecard

A recent report from the G20 Interfaith Working Group calls for a "more global, inclusive approach to AI governance." The report emphasizes that "[e]stablished cultural values—often reflected in or emerging from religious practice—can guide national, regional, and international policies so that AI develops as a tool that assists and augments human capability," and it calls on religious communities to provide "access to shared ethical injunctions."[67] As we consider how AI may augment our lives, the Apocalypse can help with technological discernment in at least three ways. First, it can affirm an ethical minimum for assessing the impacts of actual and imagined technologies. Second, the Apocalypse points to strategies and structures for resisting and reforming unjust systems and technologies. Third—and most important for inspiring and sustaining ethical reflections and strategic interventions—the ultimate city of Apocalypse can help us imagine a better world that is not only a future promise but an emerging present actuality.

Shared apocalyptic ethical commitments and strategies for "a better and juster world" may be found in many contemporary technological critiques and forms of activism.[68] For example, in *Race After Technology*, Ruha Benjamin reveals "forms of coded inequity" that "too often reinforce racism and other forms of inequity." These include chatbots that recycle derogatory language, "racialized zip codes," exposing groups "to systems of racial surveillance," and seeking technological solutions for inequities without considering the social structures that perpetuate these. Benjamin urges: "[W]e cannot resign ourselves to this reality we have inherited. It is time to reimagine what is possible."[69] Another example may be found in K. Wayne Yang's analysis of how universities cultivate in learners structural agency, which may be used to reassemble colonial technologies to realize alternative futures. Focusing on Indigenous and Black histories, Yang describes how technological ends may be interrupted and redirected for a better world.[70]

In the Apocalypse, questions about what we may hope, what we can know, and what we should do become the question of participating in the reality revealed in New Jerusalem. This shared *telos* apprehends our attention, augments our knowledge, and structures our agency. Jana Bennett points out that the biblical narrative, to which the Apocalypse is the canonical conclusion, is a corrective or "counter-narrative" that enables us to critique and live with

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[67] G20 Interfaith Working Group for Research and Innovation on Science, Technology, and Infrastructure, *An Inclusive Global Conversation on Artificial Intelligence*, December 2021, https://www.g20interfaith.org/app/uploads/2020/09/Report_InterfaithAIFINAL.pdf.

[68] W. E. B. Du Bois, *The Souls of Black Folk*, in *Writings*, ed. Nathan Higgins (New York: Penguin Random House, 1986), 418f..

[69] Ruha Benjamin, *Race After Technology: Abolitionist Tools for the New Jim Code* (Medford, MA: Polity, 2019), 1, 6, 24f., 68, 100, 106, 109.

[70] la paperson [K. Wayne Yang], *A Third University Is Possible* (Minneapolis, MN: University of Minnesota Press, 2017), xv, 43, 60.

technology in a way that makes it work for God's purposes.[71] To remain aligned with this narrative, Christians engage in formative practices—such as corporate worship and instruction, and individual prayer and service—that cultivate hope, faith, and love.[72]

The insights, values, and cautions from the history of information revolutions and the Apocalypse can be drawn together to create something like an apocalyptic scorecard for assessing real and imagined AI. Following an "integral futures"[73] approach, which uses data and critical analysis, incorporates diverse cultural voices and visions, and inspires participatory action, the following questions may be asked of AI systems:

1. Reflective attention: What ultimate hopes and goals are identified? Are these sufficiently critical, diverse, and participatory? Does the AI ecosystem provide the conditions for cultivating constant critical reflection on and refinement of these, individually and collectively?
2. Structural agency: What advantages of collective action are used to realize shared goals? Are the AI structures and systems created to support these ends continuously curated to ensure they enhance rather than inhibit human agency?
3. Knowledge augmentation: Are people growing in knowledge and seeking greater wisdom, and do AI systems support this growth?
4. Ethical foundation: Do the AI systems advance political, economic, and social justice and peace?
5. Reformation: What formative practices accompany AI systems to shape individual and collective attention and agency with, against, and beyond these systems? When AI systems do fail, how may they be rejected, reformed, or resisted?

An Assessment

In *AI 2041: Ten Visions for Our Future*, scientific forecasting and speculative fiction come together to imagine a realistic and hopeful future of AI. In collaboration with AI expert Kai-Fu Lee, the science fiction writer Chen Qiufan tells ten stories about AI in 2041. At the end of the book, Lee concludes that AI "will open the door to a radiant future for humanity": "AI will create unbelievable wealth, amplify our capabilities through human-AI symbiosis, improve how we work, play, and communicate, liberate us from routine tasks, and … usher in an age of plentitude." We will "explore what makes us human and what our destiny should be." At the same time, he acknowledges, "AI will bring about myriad challenges and perils." But in each story, Lee claims, "our sense of justice, our capacity to learn, our audacity to dream, and our

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[71] Jana Marguerite Bennett, *Aquinas on the Web?: Doing Theology in an Internet Age* (New York: T&T Clark International, 2012), 163. See also Jana Marguerite Bennett, "In the Beginning, Who Created? A Discussion of Theology, Identity, and Social Media," lecture delivered at Seattle Pacific University, November 3, 2015, available from http://digitalcommons.spu.edu/digital_wisdom_framework/.

[72] See Michael J. Paulus, Jr., Bruce D. Baker, and Michael D. Langford, "A Framework for Digital Wisdom in Higher Education," *Christian Scholar's Review* XLIX:1 (Fall 2019): 43-61, available from https://works.bepress.com/michael_paulus/68/.

[73] An integral futures approach uses mixed and transdisciplinary methods to bring together various approaches to the future: predictive or probable futures, which use quantitative data, forecasting surveys, and trend analysis and assessment; preferred or critical futures, which analyze and critique cultural texts and media; possible or cultural futures, which use the imagination and qualitative research; and prospective or participatory futures, which involve collaborative visioning and activism. See Jennifer M. Gidley, *The Future: A Very Short Introduction* (Oxford: Oxford University Press, 2017), 65.

faith in human agency always saved the day."[74] An apocalyptic scorecard raises some questions about Lee's optimism. I will focus on three areas of concern related to reflective attention, structural agency, and knowledge augmentation.

Reflective attention, when present in the stories, is individualistic and not cultivated in communities. The role of AI mostly is one of intellectual and spiritual interference: distracting one character from pursuing a relationship with someone whom an insurance app has determined is too risky based on biased data ("The Golden Elephant"), and trapping another character in a world of deceptive deepfakes ("Gods Behind the Masks"). Without the cultivation of reflective attention, all the human qualities Lee and Qiufan value seem threatened by a re-automatization of humans, and the loss of what we gained through the loss of Eden and the hope of transformation.

The stories in *AI 2041* show more and more responsibilities and agency being outsourced to AI, severing people from more direct engagement with others and the world. As more work is automated, people struggle to find meaning and dignity ("The Job Savior"). What little work remains seems to be of the "worker of the gaps" variety—i.e., necessary until AI can take it over ("The Holy Driver"). Lee hopes for an "AI-led renaissance that will enable and celebrate creativity, compassion, and humanity," since "AI will "liberate us from routine work, give us an opportunity to follow our hearts, and push us into thinking more deeply about what really makes us human." But even in stories exploring how AI can help people move up Maslow's hierarchy ("Isle of Happiness") or provide "everyone with equal opportunities to explore who they want to become and help them fully realize their potential" ("Dreaming of Plentitude"), there are no shared structures or spaces for ethical analysis, forethought, or formation. Lee acknowledges that the a universal "transition to plentitude would require an improbable shift for corporations," "an unlikely cooperation of nations," and "an implausible forfeiture of the never-ending human vices of greed and vanity."[75] Also, the problem of war remains—the topic of the most apocalyptic story in the book, about a mad scientist who uses autonomous weapons to destroy human civilization ("Quantum Geocide"). In all of this, there seems to be a return to the agentic conditions of Babel.

There are no libraries in *AI 2041*, which reveals that information is not intentionally curated through any knowledge infrastructures. Printed books only become important when the digital society collapses, and education seems concerned mostly about acquiring skills for whatever jobs remain. In a story about alienated twins, one brother says, "AI has shaped us, and we have shaped AI in turn." But the twins "are like two frogs who have each built a well," each seeing "only a small piece of sky." "Perhaps if we connect our wells," he adds, "we will see a bigger world." By combining their perspectives and personal AIs, their previous lives open up to new "boundless possibilities" ("Twin Sparrows").[76] In this and other stories in *AI 2041*, shared intellectual and cultural resources available to shape a better future with AI—especially through the augmentation of knowledge, by bringing more wells together—are not clearly identified. In a world full of pseudo-information, we risk civilization regress if we do not attend to the continual, collective pursuit of wisdom.

We do see the power of human agency in these stories, but it is not clear how it "saved the day" or will lead to better ones with key elements missing from an apocalyptic scorecard. As Shannon Vallor pointed out a number of years ago in *Technology and the Virtues*, there is a

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[74] Kai-Fu Lee and Chen Qiufan, *AI 2041: Ten Visions for Our Future* (New York: Currency, 2021), 437f.

[75] Lee and Chen, *AI 2041*, 354f., 407-9, 421, 428, 430, 435.

[76] Lee and Chen, *AI 2041*, 107.

"widening cultural gap between the scope of our global technosocial power and the depth of our technomoral wisdom." To address this, Vallor called for convening "new institutions, communities, and cultural alliances in the service of global technomoral cultivation."[77] A number of such institutions have emerged since, such as AI and Faith,[78] and we can call and hope for more to help us develop AI that advances political, economic, and social justice and peace—as well as accompanying formative practices to shape individual and collective attention and agency with and beyond AI.

Conclusion

In our memories of the past, anticipations of the future, and perceptions of the present, we are entangled with technology: We continue to shape it as it is shapes us. When this goes well, technological change augments us; when it does not, technological change is more like an amputation. Our current interactions with automated and autonomous systems marks a unique period of profound and transformative change for us and our world. We have been digitally naïve about the dynamics of this period for too long, and we need to upgrade our understanding and use of transformative technologies such as AI. As we begin to imagine new futures—critiquing the "not this" of our present reality as well as seeking the "not yet" of desired futures—the apocalyptic imagination presented in the Apocalypse of John is a generative resource capable of transforming how we think about and use AI, and it can enable us to discern ways artificial agency may participate in new creation. As John Wyatt says in *The Robot Will See You Now*, we face a "unique opportunity for creative thought and engagement as a Christian community" in "the strange new world in which we find ourselves."[79] It is my hope that this lecture has highlighted some resources worthy of further creative thought and engagement.

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[77] Shannon Vallor, *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting* (New York: Oxford University Press, 2016), 249.

[78] See https://aiandfaith.org.

[79] John Wyatt, "Being Human in a World of Intelligent Machines," in *The Robot Will See You Now: Artificial Intelligence and the Christian* Faith, ed. John Wyatt and Stephen N. Williams (London: SPCK, 2021), 72.