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And an Algorithm Shall Lead Them?

The Rise of AI, Machine Learning, Robotics, and Christian Hope

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Introduction

Our world is experiencing exponential advancements in artificial intelligence and the automation of society. We are in a "Fourth Industrial Revolution" a term attributed to Klaus Schwab, founder of the World Economic Forum, to describe our turn to smart technology. Schwab sees this revolution as fundamentally different from previous technological revolutions, with significant consequences for the Earth.[1] Technology is altering life on our planet, from working and interacting with one another to understanding what it means to be human. Many of these advancements are full of promise. Proponents of AI hope these technologies will solve humanity's most challenging problems, ending extreme poverty and solving economic disparity, eradicating diseases and preventing global pandemics, even slowing climate change and saving us from ecological disaster.

Some fear the worst from artificial intelligence. While every age of technological advancement has brought forms of prosperity to humanity, our advancements have also unleashed unforeseen consequences. Artificial intelligence may cure disease, lift billions out of poverty, and prevent environmental collapse, or AI may lead to global dictatorships, worldwide surveillance states, and levels of inequality and suffering beyond our imaginations. As Max Tegmark, a leading researcher in artificial intelligence and professor at MIT, states in the film *iHuman*, "AI will ultimately be either the best thing ever to happen to humanity or the worst thing ever to happen. . . . That's why this is the most important conversation of our time."[2]

In this essay, I want to discuss the rise of artificial intelligence (AI) and its import for Seventh-day Adventists. If Max Tegmark is correct, our society's growing dependence on AI is a critical issue we must recognize as a church. My essay seeks to begin a discussion in our denomination about the efficacy of artificial intelligence. Unfortunately, the limitations of the essay prevent a lengthy discussion on such a far-reaching issue as artificial intelligence. I hope to raise more questions than provide answers, as the increasing influence of AI is one of the most critical issues facing humanity.

I am using the term artificial intelligence broadly here to describe smart technologies that utilize deep, structured learning through static, rule-based algorithms, crucial to various types of automation.[3] For example, in *AI in the Wild: Sustainability in the Age of Artificial Intelligence,* Peter Dauvergne describes these technologies as follows:

> Very broadly, artificial intelligence is the ability of machines to mimic human thinking, learning, reasoning, planning, communication, and decision making. One day, this will reach a point where a machine equals and then likely exceeds in short order the intellectual ability of the brightest human on the planet—what some call human-level AI and others artificial general intelligence. But that day is still a ways off. What we have now, as with the AlphaZero chess engine, is an expanding constellation of narrow, domain-specific cognitive technologies, such as computer vision, natural language processing, virtual agents, recommendation engines, decision management software, predictive analytics, intelligent automation, and machine learning models.[4]

There is both promise and peril for our planet in these algorithm-driven technologies. In what follows, I question these technologies' effect on humanity. In doing so, I recognize two anthropological concerns. The first concern is formational: In what ways does technology form us as human beings? The second concern is ontological: What does our use of technology imply about the nature of humanity? Both concerns challenge our understanding of the *imago dei*. I conclude with some theological and ethical postures framed within Christian hope that may help us embrace AI both individually and communally as a church.

The Promise and Peril of AI, Machine Learning, and Robotics

Will machines be our salvation? Or should machines be feared, a common theme in science fiction films such as *The Matrix*? For better or worse, the machines are here to stay. In *Scary Smart: The Future of Artificial Intelligence and How You Can Save Our World*, Mo Gawdat, the former chief business officer of Google X, now called X Development, LLC, warns, "Three inevitables await us: 1. AI will happen, there is no stopping it. 2. The machines will become smarter than humans, sooner rather than later. 3. Mistakes will happen. Bad things will happen."[5] However, Gawdat is hopeful. The former Google X leader believes that humanity can create AI for good. He argues we should approach artificial intelligence as a parent approaches their children, seeing AI as "intelligent infants."[6] They will become smarter than us, so we need to raise them well.

Kevin Roose, a technology journalist for the *New York Times*, describes himself as a "suboptimist": a term he created to express how he feels about the future of AI.[7] Although, on the one hand, Roose is optimistic about the benefits of artificial intelligence for humanity, on the other hand, he is pessimistic about humanity's ability to use AI for good.

There are many reasons for optimism. For example, healthcare, a sector of the economy that is adopting forms of artificial intelligence the fastest, is already employing AI to save lives, like technologies that can find previously undetectable heart arrhythmia or diagnose breast cancer more accurately. Another example is the efforts to slow global warming, from AI's ability to help increase the utilization of renewable energies to finding creative ways to protect wildlife from poachers in the rainforests of Africa. Ada is a machine-learning robotic platform created to mitigate climate change by a team of researchers in Canada. The robot can work ten times faster than human researchers, performing experiments, analyzing data, developing hypotheses, and pursuing new directions for environmental research. Ada's creators claim the robot is "alive and training itself."[8]

However, despite the potential benefits AI offers humanity, there are reasons to be pessimistic, especially when considering the observations of leading thinkers in artificial intelligence, like Ben Goertzel, an AI researcher and the CEO and founder of SingularityNET, a company that is seeking to democratize AI technologies. Goertzel says, "Almost all the AI development on the planet today is done by a handful of big technology companies or by a few large governments. If we look at what AI is mostly being developed for," he says, "I would say it's killing, spying, and brainwashing."[9]

Formed by Technology? Our Algorithms and the *Imago Dei*

While artificial intelligence presents humanity with many questions, some of the most significant questions are anthropological. The first question I will explore here is formational: How does technology form us as human

beings? Most of us own one of the most advanced forms of AI on earth—our smartphones, the predominant form of AI we experience on a daily basis. These supercomputers have the power to harness more data than required to land on the moon. They are not passive forms of technology. Intelligent algorithms control our phones. These algorithms are designed to seek our full attention, to keep us evermore beholden to our devices, to mine our data, the new gold, all the while leading us, shaping us, forming us, into a particular kind of human being.

We tend to think of AI more like the sentient computer HAL in Stanley Kubrick's *2001: A Space Odyssey*, when in reality, most forms of artificial intelligence are lines of computer code that exist as algorithms, beyond our sight, often unnoticed, as Lisa Kinstler observes in her recent essay in the *New York Times* on AI and religion, "Can Silicon Valley Find God?". Kinstler, who writes about culture and technology, reminds us that,

> A.I. is already embedded in our everyday lives: It influences which streets we walk down, which clothes we buy, which articles we read, who we date and where and how we choose to live. It is ubiquitous, yet it remains obscured, invoked all too often as an otherworldly, almost godlike invention, rather than the product of an iterative series of mathematical equations.[10]

Many are growing concerned about our dependence on these algorithms embedded in every area of our lives, questioning what these technologies are doing to humanity, such as Kevin Roose in *Futureproof: 9 Rules for Humans in the Age of Automation*, who writes, "If we consider how many of our daily decisions we outsource to machines, it's hard not to think that a historic, species-level transformation is taking place."[11]

Artificial intelligence was originally designed to read our minds, but now AI is designed to change our minds. Technology scholar Christian Sandvig refers AI's shift to persuasion as "corrupt personalization."[12] How am I making my choices? Am I choosing to watch that Netflix movie because I want to or am persuaded to for reasons I am not fully aware? Kevin Roose warns us of machine drift, allowing technology to shape our identities incrementally, without our full awareness, and he warns,

> It is not enough to accompany us to the store, whispering into our ears about which brand of toothpaste or toilet paper we should buy. In the eyes of engineers and executives who use recommendation algorithms to steer our choices, all of our actions must be part of the machine's model. There is no space, in this vision of the automated future, for developing new tastes, or starting over with a clean slate. Who you are is who the machines think you are, which is also who they want you to be.[13]

Ironically, Netflix is among those raising concerns about the effects of artificial intelligence on humanity in their recent docudrama, *The Social Dilemma*.[14] The film attempts to show how smart technologies, primarily through social media, have led to a mental health crisis around the world. Fear, anxiety, and depression have increased significantly, especially among adolescents, evidenced by rising suicide rates among teens. *The Social Dilemma* features interviews with many individuals who have worked in technology companies such as Facebook, Google, and Twitter. Mostly former employees of these social media companies, they claim the algorithms employed to increase users nurture our addictions and manipulate the ways we see the world, our emotional states, and our behaviors. The film also features addiction specialist Anna Lembke, a physician who serves as Stanford University's director of addiction medicine. Lembke believes that we can become addicted to technology in the same way we can become addicted to drugs or alcohol. Since the release of *The Social Dilemma*, Lembke has written *Dopamine Nation: Finding Balance in an Age of Indulgence*, in which she argues that our understanding of addiction needs to be broadened. As Lembke writes,

> we've transformed the world from a place of scarcity to a place of overwhelming abundance: Drugs, food, news, gambling, shopping, gaming, texting, sexting, Facebooking, Instagramming, YouTubing, tweeting . . . the increased

> numbers, variety, and potency of highly rewarding stimuli today is staggering. The smartphone is the modern-day hypodermic needle, delivering digital dopamine 24/7 for a wired generation. If you haven't met your drug of choice yet, it's coming soon to a website near you.[15]

A few years ago, *Spectrum* hosted an online discussion of James Williams's book, *Stand Out of Our Light: Freedom and Resistance in the Attention Economy*. *Spectrum*'s discussion of *Stand Out of Our Light* is one of the most significant discussions to date among Seventh-day Adventists about the effects of technology. Williams joins a growing body of work questioning what technology is doing to humanity, such as Nicholas Carr's, *The Shallows: What the Internet is Doing to Our Brains*, written over a decade ago. Williams, a former Google advertising strategist, is concerned with AI's growing influence and its impact on our humanity, warning, "these new attentional adversaries threaten not only the success but even the integrity of the human will, at both individual and collective levels."[16] Zane Yi, Associate Dean, School of Religion, Loma Linda University, discussed Williams's concerns in his essay, "Dis-ordered and Re-ordered Loves," recognizing how the influence of artificial intelligence extends beyond the ability to affect our attention.[17] The threat of AI, Yi suggests, is existential, lying below the surface of every issue confronting humanity's existence, calling into question what it means to be human. Summarizing one of Williams's key arguments, Yi writes that, "the stakes in question are the fundamental capacities—beyond our actions—that make us distinctively human; the constant connection and information technology offers us, disrupts and disorders our lives at deep levels, both individually and collectively."[18]

The Rabbit Hole, a *New York Times* podcast, also by Kevin Roose, provides a chilling example of the ways technology "disrupts and disorders our lives."[19] We are introduced to a young man radicalized to the alt-right while viewing YouTube content about his favorite video games. Consequently, he is led down a dark hole of misinformation and hate-filled content, exposing him to ever more fanciful conspiracy theories, including QAnon. Who is leading him? A form of AI, a Google algorithm, designed to keep him viewing more content on YouTube. The story is illustrative for all of us. We may not be the lonely, isolated adolescent who spends hours a day locked in their bedroom binge-watching YouTube videos, but are we entirely aware of the ways technology is forming us?

In *Desiring the Kingdom: Worship, Worldview, and Cultural Formation*, Christian philosopher James K. A. Smith refers to humans as "liturgical animals" because we are "embodied, practicing creatures, whose love/desire is aimed at something ultimate."[20] "We are what we love," writes Smith, "and our love is shaped, primed and aimed by liturgical practices that take hold of our gut and our heart to certain ends."[21] Smith sees our most significant practices as thick or meaningful, observing,

> These are habits that play a significant role in shaping our identity, who we are. Engaging in these habit-forming practices not only says something about us, but also keeps shaping us into that kind of person. So habits often both signal and shape our core values or our most significant desires.[22]

One may recognize the influence of Augustine's anthropology of desire in Smith's argument: "You rouse them to take delight in praising you: for you have made us for yourself, and our heart is restless until it comes to rest in you."[23] Following Smith's line of thought, how does our use of technology function as liturgical practice, often without our full awareness, luring us away from being formed by our Creator and diminishing the *imago dei* in us?

Felicia Wu Song, a cultural sociologist of media and digital technologies, also draws on Smith's notion of habit-forming liturgies in her recent book, *Restless Devices: Recovering Personhood, Presence, and Place in the Digital Age*, where she makes a similar connection to how technology forms us. Wu Song sees the ways we interact with technology as "embodied practices that possess the power to cultivate the stuff of our imaginations and the very longings of our being."[24] She argues that "our digital routines and habits—so pervasive in their range—are no longer merely matters of incidental preference or personal inclination"; as we see in the story of the young

man above who is led down a rabbit hole of hatred and conspiracy theories, "the lens of liturgy reveals our digital routines to be the consequential matters of personal and soul formation that they actually are."[25] Wu Song sees a "deeply embodied anthropology" here, and we often fail to see how our daily activities and routines shape us bodily. Drawing on the Aristotelian notion that we are morally developed not only by ideas and beliefs, she argues that we are also formed by "the cumulative manifestation of our corporeal actions and behaviors."[26]

How then does technology form us as human beings? In seeking to answer the question, Wu Song contends that "the actions we take with our bodies—what we say, what we wear, how we behave—have the steady effect of ever shaping our imaginations, our very understanding and experience of reality." She asserts,

> It may well be the case that our body's routine behaviors and actions not only reveal our deepest desires but also regularly shape our taste for where we want to go. If we begin to pay attention to not only the cerebral and cognitive content of our lived experience but also the visceral and bodily, we might begin to see how our mundane digital practices are hardly docile or inconsequential. They are in fact doing a work on us, developing in us capacities, desires, and longings for a particular version of the good life. Any liturgy, whatever its content or intention, functions to shape us. It just depends on whether it points us toward the kingdom of God or something else in which we are resting our security and hope.[27]

Here we may recall Ellen White's oft-cited statement from her book *Patriarchs and Prophets*: "It is a law of the human mind that by beholding we become changed."[28] Jeffrey Schwarz, a research psychiatrist for the David Geffen School of Medicine at UCLA, who often writes about the intersection of neuroscience and spiritual formation, may agree with White. Schwarz contends, "there is significant experimental evidence that directing your attention towards spiritual growth changes your brain."[29] However, he also warns the opposite is true. Our brains can become increasingly controlled by what he calls the "animal brain mechanisms," forming us in undesirable ways. In other words, Schwarz is suggesting the things we give our attention to have the potential to dehumanize us, often without our conscious awareness.

Useless People? The Automation of Society and Human Worth

Another question for artificial intelligence is ontological. What do AI-driven technologies mean for the nature of humanity? As Kevin Kelly, one of the co-founders of *Wired* magazine, has observed in his book, *The Inevitable: Understanding the 12 Technological Forces that Will Shape Our Future*, artificial intelligence is going to redefine what it means to be human. While Kelly is optimistic about the future, believing AI will level the playing field, essentially democratizing every aspect of life, creating a new kind of "socialism," he poignantly observes what advances in AI will mean for humanity.[30]

> Over the past 60 years, as mechanical processes have replicated behaviors and talents we thought were unique to humans, we've had to change our minds about what sets us apart. As we invent more species of AI, we will be forced to surrender more of what is supposedly unique about humans. Each step of surrender—we are not the only mind that can play chess, fly a plane, make music, or invent a mathematical law—will be painful and sad. We'll spend the next three decades—indeed, perhaps the next century—in a permanent identity crisis, continually asking ourselves what humans are good for. If we aren't unique toolmakers, or artists, or moral ethicists, then what, if anything, makes us special? In the grandest irony of all, the greatest benefit of an everyday, utilitarian AI will not be increased productivity or an economics of abundance or a new way of doing science—although all those will happen. *The greatest benefit of the arrival of artificial intelligence is that AIs will help define humanity. We need AIs to tell us who we are.*[31]

Whether we remain optimistic about the future of AI or not, our growing dependence on artificial intelligence challenges our understanding of what it means to be human. Transhumanists like Ray Kurzwell believe we will eventually become a posthuman species.[32] The term transhumanism was originated by Max Moore over thirty years ago. Moore defined transhumanism as,

> the intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities.[33]

In his book, *Sapiens: A Brief History of Humankind*, Yuval Noah Harari, one of the most prominent transhumanists today, takes a more pessimistic view of the future. Harari describes a future where only highly qualified specialists are useful to society.[34] In an article written several years ago, titled "Will People Still be Useful in the 21st Century?", Harari envisions a future where,

> Economic and political power might be concentrated in the hands of a tiny elite. Most people might become economically useless and politically powerless. As biotechnology improves moreover, it will be possible to extend human lifespans and to upgrade human abilities, but the new wonder treatments might be expensive, and might not be freely available for everybody. Therefore human society in the 21st century may be the most unequal in history since the upper classes will not only be richer than the rest of humankind, but will also live much longer and be far more talented. For the first time in history, economic inequality will be translated into biological inequality. Hence humankind will split into biological castes—an upper caste of upgraded superhumans, and a massive lower class of useless people.[35]

Such predictions about transhumanism can sound like science fiction. However, there are more pressing concerns about how AI is impacting humanity, mainly through automation. In his book *The Singularity Is Near*: *When Humans Transcend Biology*, Kurzwell predicts that "over the next couple of decades, virtually all routine physical and mental work will be automated."[36] More recently, Harari predicted that automation would impact every level of society. For example, even medical doctors, once believed to be an automation-proof profession, could see a decline in general practitioners, favoring more specialized forms of medicine.[37] These types of predictions about automation inevitably lead to fears of technological unemployment, an idea first developed by the economist John Maynard Keynes in the 1930s, where advances in technology would replace many forms of labor, leading to mass unemployment. Keynes described this as "Unemployment due to the discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour."[38]

The British economist Daniel Susskind believes many of the predictions about automation will never be realized. Yet, there are still reasons for concern about AI-driven technologies and our increasing dependence on automation. In his recent book, *A World Without Work: Technology, Automation, and How We Should Respond*, Susskind asserts, "It is not a coincidence that, today, worries about economic inequality are intensifying at the exact same time that anxiety about automation is growing."[39] Susskind argues that fears about the inequality of society and technological unemployment are related. He claims that:

> The vast inequalities we already see in the labor market, with some workers receiving far less for their efforts than others, show that this approach is already creaking. Technological unemployment is simply a more extreme version of that story, but one that ends with some workers receiving nothing at all.[40]

For Susskind, an underlying concern is what these economic trends say about human worth and value. He contends that "These problems will require us to engage with some of the most difficult questions we can ask . . . about the nature of our obligations to our fellow human beings, about what it means to live a meaningful life."[41]

We do not need to imagine Yuval Noah Harari's dystopian future of "useless people" described above to understand the dehumanizing effects automation can have on people. In *Futureproof*, Kevin Roose warns us that AI-driven technologies, like automation, already "disproportionately affect people in low-income occupations, and exacerbate existing racial and gender disparities."[42] Roose believes most of the discussion around AI and automation is farsighted, focusing on the effects of technology decades from now, when in reality, it is already present in our lives. These technologies exist in the form of algorithms,

> that rank our social media feeds and power our interactions with virtual assistants like Alexa and Siri, the dynamic pricing software that determines how much we pay for hotel rooms and airline tickets, the opaque algorithms that are used to determine eligibility for government benefits, the predictive policing algorithms that law enforcement agencies use to patrol our neighborhoods.[43]

Our current AI-driven technologies, Roose states,

> harm vulnerable and marginalized groups even when it "works," by subjecting them to new forms of data-gathering and surveillance and encoding historical patterns of discrimination into automated systems. This harm can take many forms—a résumé-screening algorithm that learns to prefer men's qualifications to women's, a facial-recognition system that has a hard time correctly identifying gender nonconforming people, a predictive riskmodeling system that learns to charge higher interest rates to Black loan applicants—and any responsible discussion of AI and automation needs to grapple with these issues, too.[44]

Mo Gawdat believes the kind of dystopian future imagined by Harari and others is speculative. Rather, Gawdat imagines a series of milder dystopias based on the ways society is already using AI-driven technologies, primarily through automation.[45] Gawdat argues that some of the artificially intelligent machines we are building are "good machines" contributing to human flourishing. However, we are also building "bad machines," meant for "killing, cyber theft or for other forms of crime," or they are just "built with good intentions but with bugs and mistakes left in the core code."[46] His point is that machines reflect the nature of their masters. They are either being built by "good masters, who want to succeed at their intentions while doing good, or evil masters, who just want to succeed regardless."[47] Machines reflect the views and biases of their creators for better or worse. We get out of our machines what we put into our machines.

In their book *The Ethical Algorithm: The Science of Socially Aware Algorithm Design*, Michael Kerns and Aaron Roth discuss how "blind, data-driven algorithmic optimization of a seemingly sensible objective can lead to unexpected and undesirable side effects."[48] For example, when AI algorithms are used for predictability, we should not be surprised "when it produces a model that has wildly different false positive rates when applied to different demographic groups."[49] Nor should we be surprised, they assert, when our algorithms encode the "identities of the individuals whose data was used for training, when it incentivizes people to misreport their data, or when it turns out to be gameable by data analysts seeking to make their research findings look more significant than they are."[50] Kerns and Roth see these issues as part of the same problem—the attempt to optimize procedures across complicated domains, often lead to dehumanizing outcomes. "While mathematicians debate the effects of tweaking the error statistics of machine learning algorithms," they assert, "real injustice is being done by the very use of those algorithms in the first place."[51] This compounds injustice, they conclude: "What might appear fair from a myopic point of view is seen to be unfair when one takes into account the societal context: a lending algorithm designed like this would be part of a larger system that further punishes people for being poor, resulting in a feedback loop."[52]

Becoming Human: Christian Hope

In light of the concerns about artificial intelligence in this essay, how might we respond as a church? To begin, we need to recognize that AI will only become

more ubiquitous in our lives, and frankly, very few of us want to return to the way things used to be. I personally appreciate the benefit of many of the algorithms in my life, especially the new music or podcasts Spotify often recommends to me. So, I am not one to suggest we join the nineteenth-century Luddites.[53] Rather, I offer a few ethical postures framed within the lens of Christian hope, seeking a third way for the Church to approach these ever-present forms of technology in our lives.

In their book *Humility Is the New Smart: Rethinking Human Excellence in the Smart Machine Age*, Edward Hess and Katherine Ludwig suggest that we need to embrace a different kind of intelligence to confront the ways technology challenges our humanness by seeking "behaviors that enable the highest levels of human thinking, learning, emotionally engaging with others, and making meaning together."[54] For Hess and Ludwig, this begins with identifying what humans can do that machines cannot do, at least right now. These "smart machine age" skills include "critical thinking, innovative thinking, creativity, and high emotional engagement with others that fosters relationship building and collaboration."[55] One of the most significant skills we can embrace is our humanity. In other words, we must become more human. Hess and Ludwig believe embracing our humanness begins with humility, which they define as "a mindset about oneself that is open-minded, self-accurate, and 'not all about me,' and that enables one to embrace the world as it 'is' in the pursuit of human excellence."[56]

When I first read *Humility Is the New Smart*, Jesus's Sermon on the Mount (Matthew 5–7) came to mind. Jesus offers an "alternative intelligence," a radically different approach to life, based on the gracious invitation to participate in the Kingdom of God. In *Kingdom Ethics: Following Jesus in Contemporary Context*, Glenn Stassen and David Gushee see an alternative intelligence in God's gracious deliverance, especially in the Beatitudes where, "those who mourn will be comforted, the humble will inherit the earth, those who hunger for righteousness will be filled, mercy will be shown, people will see God, peacemakers will be called children of God, and the faithful will be members of the kingdom of God."[57]

Perhaps humility, suggested by Hess and Ludwig above, is one of the most essential Kingdom virtues as we think about an ethical posture toward artificial intelligence. Here we may think of Jesus's very first beatitude, "Blessed are the poor in spirit, for theirs is the kingdom of heaven" (Matthew 5:3). Or, as Luke says, "Blessed are you who are poor, for yours is the kingdom of God" (Luke 6:20. As Stassen and Gushee remind us, "Followers of Jesus participate in God's reign by humbling themselves before God, giving themselves over to God, depending on God's deliverance, and following God in caring for the poor and oppressed."[58]

Jacob Shatzer also sees humility as an important virtue in the age of AI. In his book *Transhumanism and the Image of God: Today's Technology and the Future of Christian Discipleship*, Shatzer writes,

> While our technologies encourage liturgies of power and control, tempting us to consider moving beyond the human altogether, Jesus's words point in a very different direction. Pursuing salvation, pursuing the kingdom of heaven, does not mean evolving beyond what we are. It means becoming like little children. . . . The transhuman self is one that has pursued physical transformation, overcoming physical limitations in order to open up new intellectual and spiritual possibilities. The new self of Christianity, however, is one that has been given new spiritual life, having been made righteous and being renewed in knowledge. This reshapes the new human in a much deeper and profound sense than changing biological elements can hope to do.[59]

In *Futurepoof*, Kevin Roose cites Frank Chen, a venture capitalist who invests in AI start-ups. Chen believes we must return to analog ethics, the skills celebrated in Robert Fulghum's classic book, *All I Really Need to Know I Learned in Kindergarten*, "the elementary, pre-literate skills of treating other people well, acting ethically, and behaving in prosocial ways."[60] In the Sermon on the Mount, Jesus offers an ultimate analog ethic, based on the hope of God's "grace and deliverance, justice and righteousness, peace and presence," the source of our true worth. Here is where we discover what it means to be truly human. "People should be treated with love and justice," Stassen and Gushee remind us in *Kingdom Ethics*, "because they

are sacred in God's sight; other creatures (even 'the birds of the air') also should be treated with appropriate respect because these created beings also have a share in divinely given sacred worth."[61] David Gushee later expounds on this concept of human worth by citing his book, *Sacredness of Human Life*, where he explains,

> Human life is sacred: this means that God has consecrated each and every human being—without exception and in all circumstances—as a unique, incalculably precious being of elevated status and dignity. Through God's revelation in Scripture and incarnation in Jesus Christ, God has declared and demonstrated the sacred worth of human beings and will hold us accountable for responding appropriately. Such a response begins by adopting a posture of reverence and by accepting responsibility for the sacred gift that is a human life. It includes offering due respect and care to each human being that we encounter. It extends to an obligation to protect human life from wanton destruction, desecration, or the violation of human rights. A full embrace of the sacredness of human life leads to a full-hearted commitment to foster human flourishing.[62]

As Dietrich Bonhoeffer was writing *Discipleship* in 1936, his nation was consumed with progress. At the time, most Christians in Germany saw the rise of National Socialism and the Nazi Party as good for their nation.[63] Except for a minority of Christians like Bonhoeffer, most failed to care about the useless people left in the wake of Nazi progress. No doubt this weighed on Bonhoeffer as he reflected on the meaning of Jesus's Sermon on the Mount and God's gracious invitation to participate in the incarnation, death, and resurrection of Christ. For Bonhoeffer, to participate in the life of Christ meant there was another way to be human—a participatory ontology.[64] In an oft-cited passage on the incarnation from *Discipleship*, Bonhoeffer writes,

> In Christ's incarnation all of humanity regains the dignity of bearing the image of God. Whoever from now on attacks the least of the people attacks Christ, who took on human form and who in himself has restored the image of God for all who bear a human countenance.
> . . . In as much as we participate in Christ, the incarnate one, we also have a part in all of humanity, which is borne by him. Since we know ourselves to be accepted and borne within the humanity of Jesus, our new humanity now also consists in bearing the troubles and the sins of all others. The incarnate one transforms his disciples into brothers and sisters of all human beings.[65]

Conclusion

In this essay, I have considered the promise and peril in the rise of artificial intelligence, machine learning, and robotics. The emergence of AI is one of the most critical issues of our time. I have only been able to explore two crucial questions related to artificial intelligence; both are anthropological. A formational question: how is our technology shaping us as human beings? And an ontological question: what does our technology say about our value as human beings and what it means to be human? AI is only becoming more ubiquitous in our world. We cannot avoid these technologies. Therefore, we must continue to ask ourselves how artificial intelligence is shaping us. Are we being led by algorithms with the power to change our minds by appealing to our base emotions, dehumanizing us, dividing us into tribes, preventing us from seeing one another as neighbors, decreasing our capacity for empathy, and inhibiting our ability to treat one another with compassion? Or are we being led by the One who truly knows us, the One who calls us by name, the true source of our worth? The One who truly makes us human, Jesus Christ.

Endnotes

1. According to Klaus Schwab, "The fourth industrial revolution, however, is not only about smart and connected machines and systems. Its scope is much wider. Occurring simultaneously are waves of further breakthroughs in areas ranging from gene sequencing to nanotechnology, from renewables to quantum computing. It is the fusion of these technologies and their interaction across the physical, digital and biological domains that make the fourth industrial revolution fundamentally different from previous revolutions." Cf. Klaus Schwab, *The Fourth Industrial Revolution* (Geneva, Switzerland: World Economic Forum, 2016), https://perma.cc/Z7ZL-26NN.

2. Tonje Hessen Schei, et. al., *iHuman* (UpNorth, 2019). The 2019 film *iHuman* provides a helpful overview of the issues raised by the advancement of AI. *iHuman* is produced, directed and written by Schei, a Norwegian film maker who focuses much of her work on technology and human rights.

3. Any discussion about artificial intelligence is challenging, due in part to the complexity of the topic. There are currently three types of AI: Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), and Artificial Super Intelligence (ASI). We are currently in the Artificial Narrow Intelligence (ANI) stage of AI, sometimes referred to as Weak AI, where technology is limited to a narrow set of specific tasks, e.g., Siri, Alexa, self-driving cars, Alpha-Go, Sophia the humanoid, The

Internet of Things, etc. AI still cannot make decisions like humans, as in AGI or ASI. Cf. Zulaikha Lateef, "Types of Artificial Intelligence You Should Know," *Edureka!* blog, July 29, 2021, https://perma.cc/YM6Q-NFGZ.

4. Peter Dauvergne, *AI in the Wild: Sustainability in the Age of Artificial Intelligence* (Cambridge, MA: MIT Press, 2020), XII.

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63. Bonhoeffer reflected on the rise of technology in his time. For example, while writing the "Heritage and Decay" chapter for his *Ethics* manuscript in 1940, Bonhoeffer reflected on the advances of technology in the West, concluding, "It is the liberation of reason for dominance over creation that has led to the triumph of technology. The technological age is a true heritage of our Western history, with which we must grapple, and which we cannot reverse." (Emphasis mine). Cf. Dietrich Bonhoeffer, *Ethics*, ed. by Ilse Tödt, et. al., trans. by Reinhard. Krauss, et. al., Dietrich Bonhoeffer Works English Edition (Minneapolis, MN: Fortress Press, 2005), VI, 117.

64. Jens Zimmermann, "Being Human, Becoming Human: Dietrich Bonhoeffer's Christological Humanism," in *Being Human, Becoming Human: Dietrich Bonhoeffer and Social Thought*, eds. Jens Zimmermann and Brian Gregor (Cambridge: James Clark & Co, 2010), 33.

65. Dietrich Bonhoeffer, *Discipleship*, eds. Martin Kuske, et. al., trans. Barbara Green and Reinhard Krauss, Dietrich Bonhoeffer Works English Edition (Minneapolis, MN: Fortress Press, 2003), IV, 285. For Bonhoeffer, God's gracious invitation is patterned after the entire Christ event; just prior to this statement, he writes, "It is Christ's own form which seeks to manifest itself in us. Christ does not cease working in us until he has changed us into Christ's own image. Our goal is to be shaped into the entire form of the incarnate, the crucified, and the risen one."

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