

Proximate and Ultimate Concerns in Christian Ethical Responses to Artificial Intelligence

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Abstract

I argue here that Christian ethical responses to Artificial Intelligence (AI) ought to take on, largely, two different approaches. The first considers proximate ethical concerns related to AI. This ethical approach most often considers more immediate personal and socio-political repercussions and the kind of impact that is occurring now or in the very near future. Proximate ethics of this type includes discussion about fairness, accountability, sustainability and transparency. The second concerns ultimate ethics which focuses on the longer-term impact and implications of AI. Examples of this type might include issues of uniqueness, deep societal transformation and inequality, changes to personal character and even the role AI might have in God's ultimate economy of creation and grace. My contention is that the Christian church needs to attend to both approaches to AI and that when it focuses too myopically on one at the expense of the other it often eclipses the entire witness of the church in our technological society.

Keywords

Artificial intelligence, human rights, political theology, technology, information, human uniqueness, ecology, spirituality

Introduction

‘What indeed has Athens to do with Jerusalem’¹ has been a common refrain throughout Christian history. The quotation itself has traditionally focused on the role philosophy has

1. Coined first by Tertullian, *Prescription Against Heretics* VII (ANF 3:246).

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played in the development of Christian doctrine, particularly the role ancient and medieval philosophy played as a handmaiden to the development of core Christian belief, but also the way that it impacted ecclesial development as well. The quotation and the discourse associated with it signal that the development of Christian doctrine and matters within the church are never hermetically sealed from the surrounding socio-historical and philosophical issues at the time but that they find their meaning amidst, and indeed are influenced by, concepts and practices nascent in the wider culture and belief systems Christianity finds itself in. Of course, continuing to ask the question ‘What has Athens to do with Jerusalem?’ continues to carry weight today when we consider specifically philosophical and cultural issues impacting Christian belief and practices (e.g., atheism, materialism, embodiment, race, gender, ideology and pluralism). These remain incredibly timely issues but an often overlooked area is represented by a variant of that traditional question, namely: ‘What has Silicon Valley to do with Jerusalem?’ This question needs to be asked with greater urgency today because technology is playing a greater role in just about every area of life than in previous generations and because of that it is the unacknowledged *Sitz im Leben* of Christian theology and the church today. In other words, we aren’t asking this question enough and that is a real problem for Christianity and the church.

In this article I focus on one technology that is increasingly impacting society and, by extension, the church: Artificial Intelligence (AI).² Christian ethical responses to AI are just beginning to take shape today and the area is rather germinal.³ As such, I have explicitly taken a cartographic approach here—preferring an expansive and cursory overview of some of the most important ethical issues for the church rather than focusing more exhaustively on just a few. Doing so will allow the uninitiated in the church, and Christian ethicists in particular, to triage these issues for their unique context and more fully develop specific areas and responses to them. In brief, it is a more helpful resource at

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2. I rely on two working definitions of AI throughout this piece. The first focuses on the actual developed technology and what is distinctive about it. According to Michael Haenlein and Andreas Kaplan, AI is defined as ‘a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation’. M. Haenlein and A. Kaplan, ‘A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence’, *California Management Review* 61.4 (2019), p. 5. The second definition focuses more on the field of study that makes the technological production possible. According to David Poole and Alan Mackworth, AI ‘is the field that studies the synthesis and analysis of computational agents that act intelligently’. D.L. Poole and A.K. Mackworth, *Artificial Intelligence: Foundations of Computational Agents* (Cambridge: Cambridge University Press, 2010), p. 3. Throughout I will be relying more often on the first definition that considers the impact of the technologies produced themselves.
 3. Some of the most seminal and extended work to date comes from Noreen Herzfeld. N.L. Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis, MN: Fortress Press, 2002); N.L. Herzfeld, *The Artifice of Intelligence: Divine and Human Relationship in a Robotic Age* (Minneapolis, MN: Fortress Press, 2023). However, in very recent years the most wide-ranging interaction has been the development of principles and ‘statements on AI’ from specific Christian denominational committees (e.g., Southern Baptists and Roman Catholics).

such an early stage of development. However, to aid comprehension and provide structure to the issues, I argue that Christian ethical responses to AI ought to take on, largely, two different approaches. The first considers proximate ethical concerns related to AI. This ethical approach most often considers more immediate personal and socio-political repercussions and the kind of impact that is occurring now or in the very near future. Proximate ethics of this type includes discussion about fairness, accountability, sustainability and transparency. The second approach concerns ultimate ethics which focuses on the longer-term impact and implications of AI. Examples of this type might include issues of uniqueness, deep societal transformation and inequality, changes to personal character and even the role AI might have in God's ultimate economy of creation and grace. My contention is that the Christian church needs to attend to both approaches to AI and that if it focuses too myopically on one at the expense of the other it will eclipse the entire witness of the church in our technological society and limit the full remit of its pastoral care.

We All Care about AI Ethics Now

The year 2016 was a significant year regarding the shifting public perception of tech companies and the public awareness of the potential power of AI.⁴ Two major political events caused incredible scandal in the West and shocked the world; namely the British Brexit vote to exit the European Union and the election of Donald Trump to the American presidency. Setting aside for the time being the massive political ramifications that have ensued in traditional terms, what is most important for my consideration here is the way information technology and AI were used to surveil and feed specific information to the voting populace. The tech company Cambridge Analytica, it could be argued, was the most powerful entity in 2016 because of how successful their targeted information campaigns were on swayable voters. As Brittany Kaiser, a former director and whistleblower of Cambridge Analytica, has stated: 'It's so abundantly clear our electoral systems are wide open to abuse' by AI.⁵ And lest we think this was a limited occurrence, in 2020 after Cambridge Analytica had been closed for two years, it was revealed that the company had been working to manipulate voters in 68 countries around the world.⁶ We have entered a new age of global politics because of AI and the targeted information it provides.⁷

4. Court Stroud, 'Cambridge Analytica: The Turning Point in the Crisis about Big Data', *Forbes* (2018), <https://www.forbes.com/sites/courtstroud/2018/04/30/cambridge-analytica-the-turning-point-in-the-crisis-about-big-data/?sh=60ffa33348ec>; Issie Lapowsky, 'How Cambridge Analytica Sparked the Great Privacy Awakening', *Wired* (2019), <https://www.wired.com/story/cambridge-analytica-facebook-privacy-awakening/>.

5. Carole Cadwalladr, 'Fresh Cambridge Analytica Leak "Shows Global Manipulation is out of Control"', *The Guardian* (2020), <https://www.theguardian.com/uk-news/2020/jan/04/cambridge-analytica-data-leak-global-election-manipulation>.

6. Cadwalladr, 'Cambridge Analytica'.

7. For a more extended reflection on how technology and information is of great concern for political theology see Michael S. Burdett, 'Technology and Information', in Peter Scott and William T. Cavanaugh (eds.), *The Wiley Blackwell Companion to Political Theology* (Oxford: Blackwell, 2019).

In the aftermath of the 2016 presidential election and the Brexit vote, public sentiment has changed towards Big Tech companies. While AI ethics and tech ethics more generally have been a feature of scholarly and minor public attention since the development of the technology, since 2016 we live in a world where AI ethics has garnered great public attention. We have gone from praising the power of information technology and AI to bring genuine goods to our common and personal lives (e.g., the Arab Spring) to one where we at least agree the issue of oversight and sober judgement and scrutiny are called for. Indeed, what these scandals and change in sentiment manifest is just how far-ranging and important AI ethics has become because of the drastic impact it can have on both our personal and communal lives.

Proximate Ethics

This change in public consciousness has led to the development of key principles and aims in AI ethics. Most of that discourse and development falls under what I have called here proximate ethics. What is proximate ethics?

The term itself is inspired by a distinction in the philosophy of biology and by Thomas Aquinas's moral/action theory. In philosophy of biology the term proximate cause is distinguished from ultimate cause to signify the different levels at which causes might occur and lead to particular explanations of events and effects.⁸ In evolutionary developmental biology, for example, 'immediate, individual-level mechanistic causes of development or physiology'⁹ are classified as proximate causes. Ultimate causes are those that are specified to 'historical, population-level statistical causes in evolutionary biology'. One of the major distinctions is the time-specific feature of the cause and potentially the disciplinary focus and level of cause (individual vs group). In a similar way, Thomas Aquinas makes a distinction in his theory of human action. Human activities, including moral ones, are specified and distinguished by their respective ends: notably 'proximate' and 'remote' ends.¹⁰ In order to know how to specify or categorise an activity (including whether it is morally praiseworthy, unjust or indifferent) we need to know how an act is motivated by a proximate, near-term end, such as picking up a glass of water, and potentially a remote end, for example, drinking it to slake my thirst.¹¹ The nuance Thomas gives to

8. Ernst Mayr, 'Cause and Effect in Biology', *Science* 134.3489 (1961), pp. 1501–1506.

9. Rachael L. Brown, 'Proximate versus Ultimate Causation and Evo-Devo', in Laura Nuno de la Rosa and Gerd Müller (eds.), *Evolutionary Developmental Biology: A Reference Guide* (Cham: Springer International, 2020), p. 1.

10. Joseph Pilsner, *The Specification of Human Actions in St Thomas Aquinas* (Oxford: Oxford University Press, 2006), pp. 70–140.

11. References to proximate and remote ends are abundant and diffuse in Thomas's work. For example, lying is considered a proximate end for the sake of seeking gain or glory, the remote end, in *Summa Theologiae* II-II, q. 111, a. 3, ra 3. Similarly, acting bravely is a proximate end for the sake of happiness in *Summa Theologiae* II-II, q. 123, a. 7. Or in a less moral act, mixing medicine is a proximate end for the sake of health in *Summa Theologiae* I-II, q. 12, a. 3, cor. As Pilsner indicates, 'Thomas thinks that an act can be viewed from different vantage points, so the terminology used is relative'. Pilsner, *Specification of Human Actions*, 238.

ordering one to the other and the importance this would mean for classification is not that relevant for our purposes but the distinction is motivating here. Namely, in order to understand the scope of our ethical activities and the place of AI in it we need to consider both proximate, near-term activities, motivations, causes and ends and also more long-term, remote and ultimate ends. Just as Aquinas uses proximate and remote ends to help clarify and structure the scope of ethical activity in his work, so too am I utilising this model to organise ethical responses to AI. Part of what I am advocating for here is that the church needs to attend to both considerations to treat the issue of AI ethics appropriately and well.

What are some of the key principles and issues that might be classified as proximate ethics? Two recent reports on AI and tech ethics will guide my argument and provide ballast and form. First, David Leslie's 'Understanding Artificial Intelligence Ethics and Safety', commissioned by the Alan Turing Institute is the guiding policy for the UK government's use of AI in the public sector.¹² The second is explicitly Christian and is the report 'Big Tech: The Policy of the Church of England National Investing Bodies and the Advice of the Church of England Ethical Investment Advisory Group' commissioned by the Ethical Investment Advisory Group for the Church of England (EIAG) on the 'Big Tech' sector.¹³

Leslie's work exemplifies four key principles (termed FAST principles as an acronym for each term) in AI ethics that have become an industry standard and guide proximate ethical work in the deployment of AI: fairness, accountability, sustainability and transparency. Allow me to expand on each one in turn.

Fairness

AI systems are only as good as the computer programmers and datasets the AI is trained on. As such, the biases and contexts of the human creators likewise impact and influence the AI that is developed and employed. Biases are any preferences, prejudices or weight given to specific features of data. When these preferences or prejudices privilege certain outcomes over others in AI deployment it can lead to discrimination bias. Discrimination bias is one of the few very visible ethical issues that often gets reported on today and exemplifies just how important fairness is to AI ethics.

For example, in 2019 a healthcare algorithm in the USA showed a specific form of discrimination bias—racial bias¹⁴—that had been used on more than 200 million people. It was used:

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12. David Leslie, 'Understanding Artificial Intelligence Ethics and Safety: A Guide for the Responsible Design and Implementation of AI Systems in the Public Sector' (2019), <https://doi.org/10.5281/zenodo.3240529>. These principles, and Leslie's report specifically, are the standard policy and guidance as set out by the United Kingdom (UK) government. As such, they have specific application in the UK and the principles are common in industry around the world.
 13. Ethical Investment Advisory Group, 'Big Tech: The Policy of the Church of England National Investing Bodies and the Advice of the Church of England Ethical Investment Advisory Group' (2022), <https://www.churchofengland.org/sites/default/files/2022-09/Big%20Tech%20-%20Policy%20and%20Advice.pdf>.
 14. That is, certain people were discriminated against because of race.

to identify which patients would benefit from ‘high-risk care management’ programs which provide chronically ill people with access to specially trained nursing staff and allocate extra primary-care visits for closer monitoring. By singling out sicker patients for more organized and specific attention, these programs aim to pre-emptively stave off serious complications, reducing costs and increasing patient satisfaction.¹⁵

The algorithm analysed ‘previous patients’ health care spending as a proxy for medical needs’, which is common practice in this area. However, the shortcoming of this approach was that it was biased toward giving white people the extra care even though black people had 26.3 per cent more chronic illnesses than whites in the ‘very high risk’ category. Researchers claimed the proxy measure of healthcare spending for medical need was the main culprit that led to the bias, but the algorithm was also trained on samples that overwhelmingly came from white patients (7:1), which could also lead to such discrimination.¹⁶

The issue of bias and fairness was also visible in an AI tool Amazon developed to help with recruitment in 2014.¹⁷ The goal was to provide a sample of resumes to the AI and the top 5 would be identified by it to then be interviewed by a team of human persons. However, it became clear that the AI was not gender neutral but instead was preferring male candidates all else being equal: ‘It penalized resumes that included the word “women’s,” as in “women’s chess club captain.” And it downgraded graduates of two all-women’s colleges’.¹⁸ It became clear that the dataset the algorithm was trained on had led to such bias because it had observed ‘patterns in resumes submitted to the company over a 10-year period. Most came from men, a reflection of male dominance across the tech industry’.¹⁹

It is clear that bias and discrimination in AI systems are some of the most visible proximate ethical issues and pose some of the greatest ethical risks facing businesses that utilise AI.²⁰ David Leslie argues that contemporary AI ethics subscribes to the ‘Principle of Non-Harm’ in four distinct ways in the development and deployment of AI systems in the public to combat and mitigate such discrimination.²¹ Those responsible

15. Starre Vartan, ‘Racial Bias Found in a Major Health Care Risk Algorithm’, *Scientific American* (2019), <https://www.scientificamerican.com/article/racial-bias-found-in-a-major-health-care-risk-algorithm/>. For more information see Ziad Obermeyer et al., ‘Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations’, *Science* 366.6464 (2019), pp. 447–53.

16. See Vartan, ‘Racial Bias’.

17. Jeffrey Dastin, ‘Amazon Scraps Secret AI Recruiting Tool that Showed Bias against Women’, *Reuters* (2018), <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G>.

18. Dastin, ‘Bias against Women’.

19. Dastin, ‘Bias against Women’.

20. For an excellent overview and classification of bias in AI and computer systems, see Batya Friedman and Helen Nissenbaum, ‘Bias in Computer Systems’, *ACM Transactions on Information Syst* 14.3 (1996), pp. 330–47; Eirini Ntoutsi et al., ‘Bias in Data-Driven Artificial Intelligence Systems—an Introductory Survey’, *WIREs Data Mining and Knowledge Discovery* 10.3 (2020).

21. Leslie, ‘Understanding Artificial Intelligence’, pp. 14–19.

for developing and deploying AI might be asked a series of questions to counteract bias and promote fairness in each of these four domains:

1. *Data fairness*: Is the AI system trained on ‘properly representative, relevant, accurate, and generalisable datasets’?²² This will include considering not just the diversity of the training sample itself but the size, source integrity (where the data comes from) and timeliness of the data (expiration of its relevancy).²³
2. *Design fairness*: Have structural and design parameters been reviewed so that bias isn’t implicitly embedded in the system? What implicit motivations and judgements lie behind the formulation of the problem and expected outcomes? In terms of data pre-processing, what labels, annotations and classifications have been made in organising the training datasets which might introduce bias later? Have the attributes, features and variables for the model been selected such that they will mitigate bias and be more accurate?²⁴
3. *Outcome fairness*: What are the individual and social ramifications of deploying the AI system and do they have discriminatory and inequitable impact on the people they affect? Is there a ‘disparate impact’ on disadvantaged or protected populations of people? Is equal opportunity afforded to everyone in the group regardless of protected characteristics? Are all individuals within a group treated similarly if they show the same relevant characteristics?²⁵
4. *Implementation fairness*: Have users been sufficiently trained to utilise the AI system to not introduce bias? Do the users exhibit ‘automation bias/the technological halo effect’ and, thus, are not able to utilise the AI critically and recognise the limitations? Equally, do users manifest an ‘automation-distrust bias’ where real evidence from the AI system could potentially help correct such bias?²⁶

Fairness is a perennial issue within AI ethics and we are just beginning to see the strides these new principles are making in the real world. Christian articulation and interaction with these principles will be reserved for the end of this section but it is certainly noteworthy to mention

22. Leslie, ‘Understanding Artificial Intelligence’, p. 14.

23. For more on data fairness see Bart H.M. Custers and Bart W. Schermer, ‘Responsibly Innovating Data Mining and Profiling Tools: A New Approach to Discrimination Sensitive and Privacy Sensitive Attributes’, in Jeroen van den Hoven et al. (eds.), *Responsible Innovation 1: Innovative Solutions for Global Issues* (Dordrecht: Springer Netherlands, 2014).

24. See Brian d’Alessandro, Cathy O’Neil and Tom LaGatta, ‘Conscientious Classification: A Data Scientist’s Guide to Discrimination-Aware Classification’, *Big Data* 5.2 (2017), pp. 120–34; Faisal Kamiran and Toon Calders, ‘Data Preprocessing Techniques for Classification without Discrimination’, *Knowledge and Information Systems* 33.1 (2012), pp. 1–33.

25. Leslie, ‘Understanding Artificial Intelligence’, p. 19. See also Dana Pessach and Erez Shmueli, ‘A Review on Fairness in Machine Learning’, *ACM Computing Surveys* 55.3 (2022), pp. 1–44.

26. See John D. Lee and Katrina A. See, ‘Trust in Automation: Designing for Appropriate Reliance’, *Human Factors* 46.1 (2004), pp. 50–80.

here that issues of fairness, bias and equality are championed by Christian ethical accounts as well even if the motivations for these principles may come from different quarters.

Accountability

The issue of accountability in AI ethics is pertinent because of the sophistication of the AI in developing correlations, judgements and outcomes that might not be fully intended by creators of the AI system. In other words, what is so attractive about AI systems is that they develop their own heuristics and correlations using a ‘bottom up’ approach to the datasets instead of requiring more explicit ‘top down’ design from programming teams. As the outcomes and judgements of the AI system become less transparent even to the programmers, and as they get taken up in more areas of our individual and social lives, accountability becomes a central proximate ethical issue. We want to know who is responsible when things go both right and wrong because of the influence of AI systems.

Four items are important when considering accountability in AI ethics:²⁷

1. *Answerability*: To remain accountable, the creators and users of AI systems need to be answerable and held responsible.²⁸ Answerability also implies transparency to anyone that requests it. As Leslie says: ‘Answerability also demands that explanations and justifications of both the content of algorithmically supported decisions and the processes behind their production be offered by competent human authorities in plain, understandable, and coherent language’.²⁹
2. *Auditability*: Answerability relates to the ‘who’ of accountability and auditability relates to the ‘how’ of accountability. ‘This aspect of accountability has to do with demonstrating both the responsibility of design and use practices and the justifiability of outcomes.’³⁰ AI systems need to be created to be audited at any point during development and deployment so that they can be assessed and the proper people can be held accountable.
3. *Anticipatory accountability*: This form of accountability takes into consideration the kind of accountability required before deployment takes place. It ‘entails that you take as of primary importance the decisions made and actions taken by your project delivery team prior to the outcome of an algorithmically supported decision process’.³¹
4. *Remedial accountability*: While anticipatory accountability is preferred because it anticipates issues before they occur, remedial accountability can be an eventuality

27. Leslie, ‘Understanding Artificial Intelligence’, pp. 23–26. For a further overview of the issues involved with accountability see Reuben Binns, ‘Algorithmic Accountability and Public Reason’, *Philosophy & Technology* 31.4 (2018).

28. Responsibility is a component of accountability and not necessarily interchangeable with it since accountability in AI ethics can refer to justification, reporting and traceability as well. For an excellent treatment of the various components of accountability in AI ethics, see Ramya Srinivasan and Beatriz San Miguel González, ‘The Role of Empathy for Artificial Intelligence Accountability’, *Journal of Responsible Technology* 9 (2022).

29. Leslie, ‘Understanding Artificial Intelligence’, p. 24.

30. Leslie, ‘Understanding Artificial Intelligence’, p. 24.

31. Leslie, ‘Understanding Artificial Intelligence’, p. 25.

for any AI system. As such, compensatory action might be required once a problem has been faced which requires giving explanations and potentially practical justifications for certain design decisions.

Sustainability

Sustainability in AI ethics refers to the longevity and potential long-term impacts of the AI systems when deployed in society. As such, it may begin to impinge on ultimate ethics because of the proximity and level of impact (long-term societal considerations) but the principles that are most often related to sustainability relate more immediately to proximate ethics. For example, AI safety is grouped under sustainability and an AI system is technically sustainable when it is accurate, reliable, secure, and robust.

1. *Accuracy*: Accuracy in AI denotes how successful a model is in producing a correct output and the error rate signifies the fraction of cases where a false output is generated.
2. *Reliability*: Reliability refers to the way an AI system performs according to the intended design of its creators. An AI system is reliable if it consistently carries out the work it was programmed to do without failure, breakdown or unintended consequences.
3. *Security*: Security is a perennial feature of any information technology and AI is no exception. For an AI system to be sustainable it needs to be secure from malvolent attacks on its programming and architecture as well as the information that it processes. It maintains its integrity and remains functional and accessible to its users while keeping personal data safe.³²
4. *Robustness*: Robustness refers to the AI system continuing to function ‘reliably and accurately under harsh conditions. These conditions may include adversarial intervention, implementer error, or skewed goal-execution by an automated learner (in reinforcement learning applications).’³³

Of course, sustainability of an AI system includes more than just considering its technical sustainability that makes it safe to use. Sustainability also relates to the impact the AI system is making on the users and populations where the AI is deployed. As such, recommendations are made by Leslie and others for constant engagement with stakeholders such as direct users and others impacted. They recommend a ‘Stakeholder Impact Assessment’³⁴ that involves consulting stakeholders at the design, implementation, and deployment stages. Doing so can help the populations affected build more confidence

32. See Marco Barreno et al., ‘The Security of Machine Learning’, *Machine Learning* 81.2 (2010), pp. 121–48.

33. Leslie, ‘Understanding Artificial Intelligence’, p. 31.

34. Leslie, ‘Understanding Artificial Intelligence’, p. 26. See also recommendations by Alessandro Mantelero, ‘AI and Big Data: A Blueprint for a Human Rights, Social and Ethical Impact Assessment’, *Computer Law & Security Review* 34.4 (2018), pp. 754–72; D. Schiff et al., ‘Explaining the Principles to Practices Gap in AI’, *IEEE Technology and Society Magazine* 40.2 (2021), pp. 81–94.

in the AI system, aid with public accountability and, importantly, can help brainstorm unforeseen risks and consequences.

Transparency

According to Leslie, ‘The principle of transparency entails that design and implementation processes are justifiable through and through. It demands as well that an algorithmically influenced outcome is interpretable and made understandable to affected parties.’³⁵ Transparency in AI ethics refers to two things. First, often referred to as product transparency, transparency here refers to making manifest the way a given AI system comes up with a given outcome and the explanation for why it might have done so in a particular context (i.e., seeing into ‘the black box’).³⁶ Second, often referred to as process transparency, transparency here also means explaining and justifying the processes that went into the design and implementation of the AI system that led to the particular outcome. So, it is both a technical explanation of how the AI arrived at a given conclusion and how the AI was built and deployed.³⁷

Transparency is important because it indicates the motivating principles behind the development of the AI and the reason for design decisions and processes. According to Leslie, transparent explanations of the AI system ‘should involve making intelligible to affected individuals the rationale behind the decision or behaviour as if it had been produced by a reasoning, evidence-using, and inference-making person’.³⁸ This kind of explanation will require the following elements:

1. *Logic*: In what way does the AI system follow a formal and reasonable structure that gives rise to particular outcomes?
2. *Semantics*: In what way does the AI system function the way it does and what does each component mean in producing given outcomes?
3. *Social understanding*: In what way have practices, beliefs and intentions in society been considered in the creation of the AI system and the impact it makes on society in each of these areas with its deployment?
4. *Moral justification*: In what way have certain moral frameworks been employed throughout the design, creation and deployment of the AI system?

All of these four principles (fairness, accountability, sustainability and transparency) are currently the industry standard in the UK when AI systems are created in the public sector. Much of proximate AI ethical concerns have been borrowed from bioethics and

35. Leslie, ‘Understanding Artificial Intelligence’, p. 13.

36. For more on how opacity and the ‘black box’ figures in AI, see Jenna Burrell, ‘How the Machine “Thinks”’: Understanding Opacity in Machine Learning Algorithms’, *Big Data & Society* 3.1 (2016).

37. For an excellent overview of the different components of transparency in AI ethics see Matteo Turilli, and Luciano Floridi, ‘The Ethics of Information Transparency’, *Ethics and Information Technology* 11.2 (2009), pp. 105–112.

38. Leslie, ‘Understanding Artificial Intelligence’, p. 40.

a strong ‘human rights’ component motivates and underlies these principles.³⁹ For example, transparency is one of the central principles the independent tech watchdog organisation ‘Ranking Digital Rights’ uses to score tech companies on their ethical mandate in society and their ranking indicators come directly from the UN’s ‘Guiding Principles on Business and Human Rights’.⁴⁰ Fairness (‘discrimination risks’) is another major indicator for the Ranking Digital Rights organisation as well.⁴¹ A specifically Christian construal of these FAST principles will likely affirm much of what is motivated by human rights principles and policy but will often be more explicit as to the origin of such human rights and potentially be more expansive in its remit.⁴² As the EIAG report ‘Big Tech’ states, Christian accounts:

are broader and deeper than human rights. They also indicate, amongst other things: why it is that we should respect people’s rights—ultimately because they are made in the image of God; that protection of rights enables human beings to flourish; that rights are set in the context of human beings as relational beings, who are called to love one another; that human responsibilities extend to the created world, not just to other human beings; that rights are (partially) constitutive of but also oriented to the common good.⁴³

Indeed, the committee and authors of the report came up with five high-level theological principles that ground proximate Christian ethics when dealing with technology.⁴⁴

1. *Flourishing as persons*: This means considering the way in which the whole person lives well and promotes the thriving of the distinct constitutive aspects

39. Leslie, ‘Understanding Artificial Intelligence’, pp. 8–10.

40. See Amy Brouillette et al., ‘2020 Ranking Digital Rights Corporate Accountability Index Research Indicators’ (2020), pp. 5, 29, <https://rankingdigitalrights.org/wp-content/uploads/2020/06/2020RDRIndicators.pdf>.

41. Brouillette et al., ‘Research Indicators’, pp. 16–20.

42. Of course, the alignment and appropriateness of utilising rights discourse in Christian ethics has, in the last few decades, been a contested issue. I agree with critics that contemporary human rights discourse may too readily focus on individual autonomy and subjectivity in vouchsafing and grounding secular human rights that would make it too thin to ground a robust Christian ethic. And yet the consideration of human beings and their dignity—hallmarks of human rights discourse—is surely a step forward in the tech sector which tends to be governed by more consequentialist and functionalist approaches. As such, Christian ethics can dialogue with secular notions of human rights and note areas of real consonance while avowing a deeper appreciation of a communitarian ethic and human rights deriving from God. See Nicholas P. Wolterstorff, ‘Christianity and Human Rights’, in John Witte and M. Christian Green (eds.), *Religion and Human Rights: An Introduction* (Oxford: Oxford University Press, 2011); Nigel Biggar, *What’s Wrong with Rights?* (Oxford: Oxford University Press, 2020); Sarah Shortall and Daniel Steinmetz-Jenkins (eds.), *Christianity and Human Rights Reconsidered* (Cambridge: Cambridge University Press, 2020).

43. Ethical Investment Advisory Group, ‘Big Tech’, p. 46.

44. For a more complete expansion of the theological underpinnings of these principles see Ethical Investment Advisory Group, ‘Big Tech’, pp. 17–20.

of being a person in mind, body and spirit.⁴⁵ It means limiting or eradicating those features which cause deficiency or lack to this promoted *shalom*.

2. *Flourishing in relationship*: If the first principle tends to focus on the individual this second recognises that persons are thoroughly relational and can't flourish except in a robust relational environment founded on love and care. Indeed, persons are inherently relational from the beginning because they are created and have been invited into a relationship with God. Furthermore, as the report rightly states, 'we are created not as individuals, but as persons for each other ... people's identities exist in a nested series of communal belongings, a complex interweaving of familial, geographical and associational ties which provide them with a sense of belonging.'⁴⁶ A specifically Christian construal of flourishing in relationship will emphasise how persons find their identity and development within Christ, Israel and the church.⁴⁷
3. *Standing with the marginalised*: This third principle recognises that we and our relationships are fallen and that we, through inaction or explicit activity, wreak havoc on ourselves and those around us. As such there are specific members of our communities that particularly suffer and are vulnerable. Christ's message and ministry was 'to bring good news to the poor, release to the captives, and freedom to the oppressed'.⁴⁸ As such, in the domain of tech ethics, Christians are called to give special consideration to the weakest, smallest and least powerful and to paramountly promote their flourishing.⁴⁹

45. At the end of this article I consider how AI deployment can impact personal, pastoral, spiritual, and virtue development. Shannon Vallor has done some of the most impressive work on technology and the virtues; see Shannon Vallor, *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting* (Oxford: Oxford University Press, 2016).

46. Ethical Investment Advisory Group, 'Big Tech', p. 19.

47. For an excellent treatment regarding how human life is to flourish in relationship see Kathryn Tanner, 'The Shape of Human Life', in *Jesus, Humanity and the Trinity: A Brief Systematic Theology* (Minneapolis, MN: Fortress Press, 2001). Additionally, Brent Waters has provided one of the most compelling arguments for how attendance to mundane, everyday practices and virtues that recognises our place before real neighbours and God both breaks us out of the technological valuation of being extraordinary and grounds us as the creatures we truly are who flourish precisely in relationship. See Brent Waters, *Common Callings and Ordinary Virtues: Christian Ethics for Everyday Life* (Grand Rapids, MI: Baker Academic, 2022).

48. Ethical Investment Advisory Group, 'Big Tech', p. 19.

49. Christian philosopher of technology Albert Borgmann argues that contemporary human beings suffer from 'advanced poverty' because of rampant technological proliferation in their lives and the way tech companies design these technologies. See Albert Borgmann, *Power Failure: Christianity in the Culture of Technology* (Grand Rapids, MI: Brazos Press, 2003), pp. 104–106. This invites substantial work on whether and how themes of marginalisation, oppression and liberation—particularly found in liberation theology—need to be updated for application to technological societies. See A. Scott McPeak, 'A New Frontier for Liberation Theology? A Critical, Theological Investigation of Attention

4. *Caring for creation*: As an extension of the second principle, Christians recognise they belong to a fellowship of creation that extends to non-human creatures. Creation is not just the backdrop or environment in which humanity acts but each creature has its own worth, agency and relation to God. Creation is not ours. However, God has purposes for each creature and creation as a whole and has invited humanity to play a specific role in cultivating the well-being of specific non-human creatures and managing the network of relationships it has with them. As such, due consideration should be given to the inherent worth of creation beyond just its utility for us when acting in and on it.⁵⁰
5. *Serving the common good*: These purposes God has for all of creation and the way God's blessing is distributed amongst His creatures can be captured in part by the idea of the common good.⁵¹ As the EIAG report states: 'All of the different dimensions of *shalom* that we have discussed are encompassed within a holistic condition of peace and justice that is shared by all. It is a vision of the good that is held in common by all, from which all benefit and to which all contribute.'⁵² The common good is exemplified well by the spirit of Catholic social teaching and by the notion of the 'kingdom of God', where each creature contributes to God's economy and is sustained by it under His reign of justice and peace.

These five principles governed the consultation with theologians, church members and business leaders which led to the EIAG report. The following four recommendations were made to the tech sector which show an uncanny resemblance to the FAST principles outlined by the public sector derived from more secular human rights discourse:

1. *That they commit to verifiable transparency*. Much like the FAST principle of transparency discussed, the report states that terms and conditions, policies and consent processes should be clear, concise and in terms that any user could understand. Indeed, transparency for both the EIAG report and the FAST principles isn't just about what data is collected and how it gets processed, but extends to transparency regarding the potential and likely impacts on society as a whole. As such both are committed to holding AI development accountable for individual and social impact that recognises the power imbalance between larger tech companies and individuals. Transparency for both holds AI developers accountable to not only their end users, but to all in society that, as least for a Christian

Colonisation in Advanced Technological Societies' (PhD dissertation, University of Manchester, 2023).

50. Pope Francis provides one of the most compelling elucidations of this issue in chapters 3 and 4 of Francis, *Laudato Si'* (Vatican City: Vatican Press, 2015), https://www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_encyclica-laudato-si.html.
51. See V. Bradley Lewis, 'Catholic Social Teaching on the Common Good', in E. Christian Brugger and Gerard V. Bradley (eds.), *Catholic Social Teaching: A Volume of Scholarly Essays* (Cambridge: Cambridge University Press, 2019).
52. Ethical Investment Advisory Group, 'Big Tech', p. 20.

construal, claims they must consider the common good when developing and deploying their technology.

2. *They commit to promote human-centred design.* The report specifically mentions that safety and fairness should be paramount when designing and deploying AI systems which are both FAST principles as well (safety is a component of sustainability). The EIAG report suggests users should be able to exert greater agency when utilising AI systems by, for example, limiting or even turning off algorithms that curate the online experience through social media, advertising and recommendations and nudging. As such it seeks to do more than just inform the user in a passive way to the technological processing, but instead the AI system has to adapt to the user and human beings and their values and choices.
3. *They commit to enable the flourishing of children and other vulnerable groups.* In many ways this commitment is a deepening of the last commitment to human-centred design but privileges a particular set of the population who are often neglected here. Indeed, this commitment is borne from the Christian principle to stand with the marginalised. It is similar to the FAST principle on fairness that seeks to overcome discrimination bias in AI systems. However, the Christian consideration of vulnerable groups, and children in particular, places consideration of those who have traditionally suffered in societies at the very heart of assessment, design and deployment. In a way, we might say Christian AI ethics has a ‘preferential option for the poor’⁵³ that doesn’t seem as motivating in the FAST principles even if it seeks to promote fairness.
4. *They commit to foster a flourishing and well-governed tech ecosystem that serves the common good.* This commitment aligns well with the FAST principles of accountability and sustainability. The EIAG report maintains that tech companies need to establish board responsibility to ensure that these ethical principles are mobilised and operational across their entire work, including the impact they make on individuals and society. This will ensure they are held accountable for instituting and auditing their AI ethical mandates. Indeed, considering how AI might contribute to the common good is an issue of long-term impact on individuals and society which are significant features of the FAST principle, sustainability.

Proximate ethics is deeply important when considering the design, creation and deployment of AI systems in our world and the church has a pastoral duty to be at the forefront, championing better AI systems that do not just prevent harms but that actively promote the flourishing of persons in community and all of creation both today and in the near term. However, proximate ethics does not exhaust the constellation of potential interactions the church needs to have with AI and its impact on our lives. Instead, ultimate ethical issues need to be considered here as well.

53. See Gustavo Gutiérrez, *A Theology of Liberation: History, Politics, and Salvation*, trans. John Eagleson and Caridad Inda (London: SCM, 1988).

Ultimate Ethics

Before attending to some of these ultimate ethical issues it is worth clarifying a distinction made in AI regarding the development of artificial general intelligence (AGI) and artificial narrow intelligence (ANI) because in moving to ultimate ethics we will be broaching territory that is often the domain of artificial general intelligence. Most of the AI ethics considered so far has been as a result of artificial narrow intelligence. ANI aims to create systems that ‘demonstrate intelligence in one or another specialized area, such as chess-playing, medical diagnosis, automobile-driving, algebraic calculation or mathematical theorem-proving’.⁵⁴ Artificial general intelligence is likely what the layman thinks is the ultimate aim of AI development: ‘the construction of a software program that can solve a variety of complex problems in a variety of different domains, and that controls itself autonomously, with its own thoughts, worries, feelings, strengths, weaknesses and predispositions’.⁵⁵ The goal of AGI is often to reach human level intelligence or better and that can be applied in any given context presented to the AI. However, ANI is much more rampant today because it requires less universal development and AGI is so elusive. But, ANI can be just as useful and profitable if deployed well.

Uniqueness and Superintelligence

The possible development of AGI and superintelligence⁵⁶ raises the ultimate ethical issue of human uniqueness. As I have argued elsewhere, developments in information technology and AI, in particular, may challenge some interpretations of the image of God that claim a strong human distinctiveness. Certain structural/substantive accounts of the image of God claim that humans share with God some capacity that is unique to both God and humans. For adherents of the structural model, rationality or the rational soul are often the seat of the image of God and the basis for claimed human uniqueness. In this view, it is our superior mental activity, our very intelligence, that makes us distinctive in the order of creation.⁵⁷

It is certainly the case that in certain domains AI might perform better. For example, the information processing speed of computers and AI is significantly faster than humans.⁵⁸ Memory recall and pattern recognition might also be superior in some domains than others (for example in being able to cut through informational noise to

54. Cassio Pennachin and Ben Goertzel, ‘Contemporary Approaches to Artificial General Intelligence’, in Ben Goertzel and Cassio Pennachin (eds.), *Artificial General Intelligence* (New York: Springer, 2007), p. 1.

55. Pennachin and Goertzel, ‘Contemporary Approaches to Artificial General Intelligence’, p. 1.

56. Superintelligence is artificial general intelligence that is well beyond human capacities. See Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014).

57. For a more detailed analysis of how the various models of the image of God contend with AI and information technology see Michael Burdett, ‘The Image of God and Human Uniqueness: Challenges from the Biological and Information Sciences’, *The Expository Times* 127.1 (2015); Herzfeld, *In Our Image*.

58. Bostrom, *Superintelligence*, pp. 59–60.

recognise patterns that perplex humans).⁵⁹ But, at least for now, human intelligence is more portable from one situation to another (it is more general) even while we hear every day that AI is able to exhibit more and more human-level intellectual function (e.g., recent developments in AI natural language and aesthetic production). Indeed, some developments in AI are intentionally utilising processing techniques such as neural networks that are modelled on the human brain explicitly.⁶⁰ The ultimate ethical question posed here is: ought we pursue the development of AGI and superintelligence particularly if it means challenging a particular doctrine and our supposed place in the order of creation?

AI in God's Economy: Risk and Affordance

Indeed, there are other ultimate ethical issues with the development of superintelligent AI as well. If the development of intellectual capacities of the AI far exceeds human-level intelligence what other person-defining characteristics (e.g., emotion, creativity, person-ality) might then be expressed such that greater affordance be considered in philosophical and theological terms? Some philosophers, such as Nick Bostrom, have warned of the great risk involved with the development of superintelligence because of the lack of control and independence the superintelligence may have in the future which could pose a threat to human dominion or existence.⁶¹ Anyone who has seen or read just about any piece of science fiction with highly advanced AI and robots will immediately recognise this potential fear as it is the basis of so many plots. The concern is that as these intelligent AIs advance they will be programmed insufficiently such that they intentionally wreak havoc and terror on our world or mismanage something due to error and poor programming. Indeed, Isaac Asimov's 'Three Laws of Robotics' are meant to combat precisely this kind of risk, even if Asimov's stories coach us how insufficient they are:

First Law: A robot may not injure a human being, or, through inaction, allow a human being to come to harm.

Second Law: A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law.

Third Law: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.⁶²

59. John Pavlus, 'Computers Now Recognize Patterns Better than Humans Can', *Scientific American* (2016), <https://www.scientificamerican.com/article/computers-now-recognize-patterns-better-than-humans-can/>.

60. Larry Hardesty, 'Explained: Neural Networks', *MIT News* (2017), <https://news.mit.edu/2017/explained-neural-networks-deep-learning-0414>.

61. For greater detail about the dangers of superintelligence see Bostrom, *Superintelligence*, pp. 115–44.

62. Roger Clarke, 'Asimov's Laws of Robotics: Implications for Information Technology-Part I', *Computer* 26.12 (1993), p. 55.

Of course, this terror and error could be the work of an AI without something we might consider intentionality or indeed consciousness—it need not be superintelligent or have AGI. But were such an AI to be developed we might ask many other questions than just the risk it might pose to us and the rest of the world. In a theological register we might have to start thinking about its role in the doctrine of creation and redemption: does it bear the image of God and what might its role be in the church? If it were to develop proto-personhood, however we decide that, it would invite a myriad of very important philosophical and indeed theological questions that are relevant to what I am here calling ultimate ethics.⁶³

Vast Changes to Human Society

But highly sophisticated future superintelligence will not be the only thing to transform our societies, for it is clear that rather simplistic ANI could have just as vast consequences. One of the most significant proposals is that the nature of work will change dramatically as AI, and particularly automation, are introduced into different areas of life. Decades ago, rudimentary automation overhauled the automotive and mining industries such that entire communities had to retrain, leading to severe economic disruption for many towns and families. Things have progressed considerably in the last several decades—particularly with AI-driven automation. The BBC has managed a website since 2015 that indicates whether a robot will take your job in the next several decades. Based on significant research at the University of Oxford, they estimate that approximately 35 per cent of all jobs are at high risk of computerisation in the next twenty years.⁶⁴ Teachers, nurses and psychologists are the most secure but receptionists, sales clerks and telemarketers are most at risk.

What might be the personal, social and, indeed, political ramifications of leaving more and more people behind who then get disillusioned because an industry simply does not exist the way it once did? Darrell M. West, Senior Fellow at Center for Technology Innovation at the Brookings Institute, recognises these political consequences of automation and AI. He states, ‘Yet even if the job ramifications lie more at the low end of disruption, the political consequences still will be severe. Relatively small increases in unemployment or underemployment have an outsized political impact. We saw that a decade ago when 10 percent unemployment during the Great Recession spawned the Tea party and eventually helped to make Donald

63. Space does not permit me to unpack some of these incredibly speculative but increasingly pressing questions. However, for introductory discussion of how AI might figure in God’s economy see Herzfeld, *In Our Image*; Michael S. Burdett, ‘Personhood and Creation in an Age of Robots and AI: Can We Say “You” to Artifacts?’, *Zygon* 55.2 (2020), pp. 347–60; Andrew Davison, ‘Machine Learning and Theological Traditions of Analogy’, *Modern Theology* 37.2 (2021), pp. 54–74; John Wyatt and Stephen N. Williams (eds.), *The Robot Will See You Now: Artificial Intelligence and the Christian Faith* (London: SPCK, 2021).

64. Michael Osborne and Carl Frey, ‘Will a Robot Take Your Job?’, BBC (2015), <https://www.bbc.com/news/technology/34066941>. The article associated with the BBC website is Carl Benedikt Frey and Michael A. Osborne, ‘The Future of Employment: How Susceptible are Jobs to Computerisation?’, *Technological Forecasting and Social Change* 114 (2017), pp. 254–80.

Trump president.⁶⁵ Indeed, automation and AI have clear social and political ramifications in the future even beyond its intentional use in targeted information campaigns in the present that we have already touched on with regard to Cambridge Analytica.

Perhaps AI's impact means we need to rethink the entire nature and purpose of work and the way people receive income if we are promised that many of us simply won't need to work because of the supposed efficiency and reach of AI? A universal basic income is just one such proposal being put forward so that people are guaranteed the means required to live.⁶⁶ But does this mean we will have more time for leisure?⁶⁷ What would a society based around leisure even look like?⁶⁸ Would it be some utopia where everyone is highly educated, skilled and appreciates the arts, which is good news for educators and academics? Or will it look more like Aldous Huxley's *Brave New World*⁶⁹ and what Neil Postman has called *Amusing Ourselves to Death*?⁷⁰ In other words, will AI technology transform our societies to allow us to pursue higher goods and lead to greater flourishing, or will we utilise the increased free time to distract ourselves with lesser goods as Huxley and Postman warn in their work?

Vast Changes to Creation

Changes on such a grand scale that are proper to ultimate ethics are not limited to just human societies. Indeed, the increasing control and dominion of humanity in the rest of creation certainly bears witness to the changes AI is making to non-human creation, whether considered independently of humans or in direct relation to them. AI requires great natural resources and energy to run: vast server farms are required to store and compute the information required of the AI. Independent of humans, the impact on creation is vast. There is often grave environmental impact from the mining process to obtain the metals and minerals needed to produce the hardware. There is also the carbon pollution required in the manufacturing of the hardware and in the generation of electricity to run it.⁷¹ With the increasing deployment of AI, there is a

65. Darrell M. West, 'Will Robots and AI Take Your Job? The Economic and Political Consequences of Automation', *TechTank* (2018), <https://www.brookings.edu/blog/techtank/2018/04/18/will-robots-and-ai-take-your-job-the-economic-and-political-consequences-of-automation/>. See also Darrell M. West, *The Future of Work: Robots, AI, and Automation* (Washington, DC: Brookings Institution Press, 2018).

66. Clau Dermont and David Weisstanner, 'Automation and the Future of the Welfare State: Basic Income as a Response to Technological Change?', *Political Research Exchange* 2.1 (2020).

67. See Josef Pieper, *Leisure: The Basis of Culture*, trans. Alexander Dru (New York: Pantheon Books, 1952).

68. For an excellent treatment of how leisure figures in our technological world see Waters, *Common Callings and Ordinary Virtues*, pp. 228–41.

69. Aldous Huxley, *Brave New World and Brave New World Revisited* (New York: HarperCollins, 2005).

70. Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (London: Penguin, 1985).

71. Karen Hao, 'Training a Single AI Model Can Emit as Much Carbon as Five Cars in Their Lifetimes', *MIT Technology Review* (2019), <https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/>.

greater demand for the physical infrastructure that underlies it. But once deployed AI can also have a positive impact on our current climate crisis with the creation of ‘smart grid design, developing low-emission infrastructure, and modelling climate change predictions’.⁷²

When the eco-ethical impact of mining, manufacturing and running AI is extended to include humanity as well, things look equally troubling. Those that mine the necessary metals and minerals and manufacture them in factories are often subjected to poor working conditions and because most of this occurs in poorer countries it has created a power imbalance between developed and developing countries that perpetuates unfair trade. What is more, the mining of minerals has often been used to fund and perpetuate armed conflict in places like the Democratic Republic of Congo.⁷³ The ecological cost is substantial and eco-ethical consideration is pressing.

On a more abstract level we need to consider how these networks of AI are increasingly mediating human personal and societal interaction with the rest of the world and creation in the way intimated by the term ‘augmented reality’. Augmented reality describes the way in which the real world (e.g., physical nature/creation and society) is overlaid with computer-generated content that mediates our experience with it. Jacques Ellul anticipated this augmented reality and its impact on our experience of the natural and social world. He argued that the proliferation of technology always mediates our relation to them and, as such, shapes us and our relation to them in profound ways.⁷⁴ In brief, we do not enjoy direct contact with either the natural world or the social world because our experience of these are increasingly mediated by technological networks. We simply do not have the same kind of relation to creation we once did and AI is both re-enchanting our world⁷⁵ and our relation to it. It is shaping us personally, morally and spiritually through this augmented reality that can introduce new agents and networks of power into our relation to nature and society.⁷⁶

Future Personal, Pastoral, Moral, and Spiritual Changes

Technology and AI are becoming ever more intimate in our lives. As such, it is worth considering the personal, pastoral, moral, and spiritual impact. One scenario suggested by

72. Payal Dhar, ‘The Carbon Impact of Artificial Intelligence’, *Nature Machine Intelligence* 2.8 (2020), p. 423.

73. Paul Marks, ‘Blood Minerals are Electronics Industry’s Dirty Secret’, *New Scientist* 2973 (2014), <https://www.newscientist.com/article/mg22229734-800-blood-minerals-are-electronics-industrys-dirty-secret/>.

74. For a greater appraisal of Ellul’s account of history and how humanity has been shaped by these three environments and the impact this has on us, see Jacques Ellul, *What I Believe*, trans. Geoffrey William Bromiley (Grand Rapids, MI: Eerdmans, 1989), pp. 99–140.

75. Mohammad Yaqub Chaudhary, ‘Augmented Reality, Artificial Intelligence, and the Re-Enchantment of the World’, *Zygon* 54.2 (2019), pp. 454–78. Indeed, even Ellul recognised the technological mediation of our world has led to a new kind of sacralisation of those technological mediations that is akin to the kind of enchantment Chaudhary argues for. See Jacques Ellul, *The New Demons* (London: Mowbrays, 1975), pp. 48–87.

76. Peter Scott’s work is excellent for identifying how we understand ourselves in relation to society and nature mediated by technology. See Peter Scott, *Anti-Human Theology: Nature, Technology and the Postnatural* (London: SCM Press, 2010).

Christian AI ethicist Brian Green and philosopher Shannon Vallor is that we will experience judgement atrophy—what both call ‘moral de-skilling’.⁷⁷ If we increasingly rely on AI to make important judgements in our place because the AI can better weigh up the different variables needed to make a judgement in perhaps a more cost-effective way (or perhaps more egregiously because it is a way to obfuscate who is to be held accountable), what will become of our moral characters that won’t be exercised as often, if at all? As Green states: ‘With all our decisions made for us, will we lose our moral character? Or will we instead use AI and VR to help us train ourselves into being more virtuous than we have ever been before? Or, contrariwise, to become more callous and evil than ever before?’⁷⁸ What becomes of our will and the way that is a central aspect of who we are when the habits (the *habitus* to use the Thomistic⁷⁹ and Bourdieuan⁸⁰ terminology) are determined more and more by technological platforms that are governed by AI? As AI virtue ethicist Shannon Vallor intimates in her book *Technology and the Virtues*: ‘I was driven to write this book by a deep moral concern for the future of human character, one that arose over many years of watching my own moral and intellectual habits, and those of my students, be gradually yet profoundly transformed by ever new waves of emerging digital technology’.⁸¹ Who are we becoming at the hands of the social engineers that nudge us every day and how does that align with Christian accounts of sanctification and moral development?⁸² Our technological practices and habits have deep and abiding pastoral significance for the kind of moral persons we are becoming that requires attention to the virtues in an age of AI.⁸³

Indeed, AI and technology have, I argue, vast personal spiritual consequences. As Simone Weil has opined, ‘Absolutely unmixed attention is prayer’.⁸⁴ What happens when the faculties required for a robust and meaningful spiritual life, such as attention, have become the traded good in our surveillance attention economy?⁸⁵ AI might be used to nudge us to perhaps pray a bit more or tithe a bit more but it could just as

77. Brian Patrick Green, ‘Ethical Reflections on Artificial Intelligence’, *Scientia et Fides* 6.2 (2018), pp. 21–22; Shannon Vallor, ‘Moral Deskillling and Upskilling in a New Machine Age: Reflections on the Ambiguous Future of Character’, *Philosophy & Technology* 28.1 (2015), pp. 107–124.

78. Green, ‘Ethical Reflections on Artificial Intelligence’, p. 21.

79. Mark K. Spencer, ‘The Category of Habitus: Accidents, Artifacts, and Human Nature’, *The Thomist: A Speculative Quarterly Review* 79.1 (2015), pp. 113–54.

80. Karl Maton, ‘Habitus’, in Michael Grenfell (ed.), *Pierre Bourdieu: Key Concepts* (Durham: Acumen, 2008).

81. Vallor, *Technology and the Virtues*, p. 12.

82. See Michael S. Burdett, ‘Incarnation, Posthumanism and Performative Anthropology: The Body of Technology and the Body of Christ’, *Christian Bioethics: Non-Ecumenical Studies in Medical Morality* 28.3 (2022), pp. 207–16.

83. Vallor, *Technology and the Virtues*, is an excellent resource that seeks to develop technological wisdom in these contexts. Brent Waters does so in a more explicitly Christian way in Waters, *Common Callings and Ordinary Virtues*.

84. Simone Weil, *Gravity and Grace* (London: Routledge, 2002), p. 117.

85. See Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: PublicAffairs, 2019); Marcello Ienca and Roberto Andorno, ‘Towards New Human Rights in the Age of Neuroscience and Neurotechnology’, *Life Sciences, Society and Policy* 13.1 (2017).

likely be used to capture our attention so much that it makes idols of the desires it controls, never satiating as it plunders not only our information but our spiritual lives in the process as well. Indeed, both Gabriel Marcel and Paul Tillich foresaw the plundering of our inner spiritual and religious lives because of technology well before others. Marcel refers to our modern technological world as a 'broken world'⁸⁶ where 'the spirit of technology' has 'become detrimental to the flowering of humanity' and works 'adversely against the aspiration of the person toward its fulfillment in being'.⁸⁷ Tillich similarly argues that the very avenue to meaning-making and a healthy religious life is stunted in our technological age because we have exchanged 'ultimate concerns' for busy distraction:

our daily life in office and home, in cars and airplanes, at parties and conferences, reading magazines and watching television, while looking at advertisements and hearing radio, are in themselves continuous examples of a life that has lost the dimension of depth ... Only if he has moments in which he does not care about what comes next can he experience the meaning of this moment here and now and ask himself about the meaning of his life.⁸⁸

What is at stake with the future of AI is our very souls and the church needs to understand it has a pastoral role to play in developing AI to promote our mutual flourishing rather than hindering it.

Conclusion

The ethical issues facing the church today because of advances in AI are significant and many. I have offered an overview to many of these ethical issues with the hope that the church, including other Christian ethicists, will expand on and intervene in these areas. I argued here that Christian ethical responses to AI ought to take on, largely, two different approaches. The first considers proximate ethical concerns related to AI. That is, this ethical approach most often considers more immediate personal and socio-political repercussions and the kind of impact that is occurring now or in the very near future. Proximate ethics of this type includes discussion about fairness, accountability, sustainability and transparency. The second concerns ultimate ethics which focuses on the longer-term impact and implications of AI. Examples of this type includes issues of uniqueness, deep societal transformation and inequality, changes to personal character and even the role AI might have in God's ultimate economy of creation and grace.

The church is at a watershed moment in considering how it might act and provide a resource in our technological world, and the impact of AI has considerable proximate and ultimate concern. My contention is that the Christian church needs to attend to

86. Gabriel Marcel, *The Mystery of Being*, trans. G. S. Fraser, vol. 1, 2 vols. (Chicago: Henry Regnery Company, 1950), pp. 18–56.

87. Bernard Gendreau, 'Gabriel Marcel's Personalist Ontological Approach to Technology', *The Personalist Forum* 15.2 (1999), p. 233. Also see chapters 3 and 4 of Gabriel Marcel, *Man against Mass Society*, trans. G.S. Fraser (South Bend, IN: St Augustine, 2008).

88. Paul Tillich, *The Spiritual Situation in Our Technical Society*, ed. J. Mark Thomas (Macon, GA: Mercer, 1988), pp. 43–44.

both approaches to AI. When considering proximate issues the church needs to be a bastion, advocate and friend for the disenfranchised, vulnerable and the marginalised in a world governed by AI because it has a pastoral duty to those within and outside the church. It needs to champion the principles of fairness, accountability, sustainability and transparency. It needs to call tech leaders to task to do more than merely prevent harms and mitigate risk to keep their public relations image clean, but to inspire a larger vision of mutual flourishing that promotes the common good. It needs to speak truth to power and hold companies accountable today and the near future as they harvest more and more information from us and use it for their gain. The church needs to put their own members on the boards of these companies and talk to members within the congregation working on tech and AI that what they are doing has kingdom of God relevance.⁸⁹ Being an AI engineer is a vocation and being a Christian in that area means thinking about how one is a Christian in it. What difference ought it make to being an AI engineer that develops and deploys AI? Part of the issue is the relative disconnect between being an engineer and being a Christian today. The church has been relatively silent on this issue and the church, its members and society suffer because of it.

But the church is also a witness of hope that deals not only in the present but also in where we are going ultimately. If the church focuses too myopically just on present proximate AI ethical concerns, it does not do justice to the full witness of the church in our technological society. The church cares about and has much to say about how the practices and habits we form today shape us into the individuals we will ultimately become. Do our AI-saturated ecosystem and networks cultivate creation in the way God has called us to? Do they support not only the flourishing of human persons but all of God's creatures (AI included)? How might our technologically-shaped practices, increasingly influenced by AI, contribute positively or negatively to our ultimate conformity to Christ? Do our spiritual disciplines suffer or thrive because of it? Does AI prevent our union with Him or does it support it? Are we a more just people who desire to commune with one another in joyous celebration that is the very image of the heavenly church, or are we more caught up in the development of capital, preying on the weak and bedazzled by lesser goods? These are all difficult questions, but the church desperately needs to be asking them now.

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89. Of course, I am not saying the church should shoehorn Christians onto tech boards in an antagonistic way. Rather, those that have the respect of colleagues will earn the privilege of being on those boards by being a good engineer and leader in the field.