

**AI and Robotics: the science, opportunities and challenges**

**The Science and Religion Forum**

**with Equipping Christian Leadership in an Age of Science**

**The session 1a and 1b are being run in parallel. There will be a five minute change over period in order to allow you to move between the two rooms. Unfortunately, the Tristram room is on level 1; please accept our apologies if this means that you are not able to access session 1b.**

**Short Paper Program**

Session 1a (Leech Hall)

9am Paper 1

930am Paper 2

10am Paper 3

Session 1b (Tristram Room)

9am Paper 4

930am Paper 5

10am Paper 6

Session 2 (Leech Hall)

11am Paper 7

11.30am Paper 8

12noon Paper 9

**Papers**

**Paper 1: 'Christianity and the Limits of Technology', David Ashford**

This talk presents a thought experiment that shows how developments in AI may lead to a better understanding of the nature of God. The working assumption is that the Materialism philosophy is correct. This philosophy,

which is widely accepted by scientists and atheists but less so by Christians, holds that nothing exists except for matter and energy following natural laws. At first sight, this would seem to rule out a God having any supernatural powers such as omnipotence. However, if we apply this philosophy ruthlessly, extrapolating present trends in AI development and considering the resulting feasible limits, we find at least the possibility of deifying the cosmos and thereby finding God.

We may also find that the life and teachings of Jesus Christ are miraculously relevant to developments that were unimaginable in His day.

## **Paper 2: 'Yes, *now* there is a God', David Hipple**

(Independent scholar)

Popular narratives persistently reflect cultural unease over the supremacy of a consummately capable contrivance or apparatus. We fear unconstrained innovation, for Frankenstein's 'creature' to deliberately purposeful hardware or algorithms.

The first church proclaiming 'a Godhead based on Artificial Intelligence' has already been founded, based on the imagine (or anticipated) culmination of the IT revolution in the emergence (often termed 'The Singularity') of a conscious, relentlessly self-improving machine intelligence – perhaps a self-aware internet.

That concept arose from the dazzling public impact of the global IT network in the late 20<sup>th</sup> century, the iconic representation occurring in the profoundly dystopian film *The Matrix* (1999).

This paper examine the proposition that we might create a mechanical entity that for all temporal purposes may as well be a god – and the long standing anxiety that we could be unequipped to do any more than venerate and obey it: a historical challenge for existing religions, now in novel form.

Using example from print and screen, I discuss Descartes's conception of the divine, the consequences of the 'Turing Test', and the implication of Arthur C Clarke's 'Third Law' of the sublime ineffability of sophisticated technologies.

I will frame this discussion by presenting an entire short-story: 'Answer'  
(Fredric Brown, 1954)

### **Paper 3: Is God the Master Algorithm? Ziba Norman**

Our world is moderated by technologies animated by algorithms. As tools algorithms offer unparalleled means of facing existential threats posed at this moment in hominization. Although true artificial intelligence (AI) does not yet exist, algorithms, mathematical codes that speed calculation, are drivers of the quest to create AI. What faculties will we ascribe to these artificial intelligences; will they alter our concept of the divine and therefore our conception of self? Will they remain tools, used by us as authentic, autonomous beings, or will we begin to attribute god-like qualities to them?

Professor Pedro Domingos, an expert in the development of machine learning, discusses the quest to find the 'Master algorithm' in a book hailed by President Xi. He suggests a digital 'you' could be reliably expected to make decisions which 'you' in embodied form would have made. This digital 'you' informed by the Master Algorithm might even be used for self-improvement and introspection. As such ideas gain currency, could the truths of Christianity become inaccessible in a data-driven world? In opening these discussions, I will draw on biblical texts and the work of both JB Metz and Karl Rahner.

### **Paper 4: 'From Artificial Intelligence to Artificial Organism', Sijia Wang**

(University of Edinburgh, School of Divinity)

As far as I concern, firstly, I want to depict the gap between two related but different terms: artificial intelligence and artificial organism, or artificial life. "Artificial organism" is not fully equal to artificial intelligence or artificial cells

since the philosophical concept of “organism” and “life” should be examined and extended to the realm of artificial intelligence with their computer or robot bodies. There are a few characters of “organism” which I concern in AI and robots, including the uniqueness of organic body; the individuality of organism; and, if we compare robots with human beings this problem must be mentioned, the creativity of human beings.

Secondly, what can we learn from the gap between the artificial organism and the natural organism? The answer should not be restricted to physical matters but should start with the life concept which needs a load of interdisciplinary work. However, compared to other forms of life, artificial life with human-like characteristics are especially critical in theology context, especially in creativity, individuality and our history as the life of human beings, as an extension of Andy Clark’s life-mind discussion.

### **Paper 5: ‘Artificial Intelligence and programming — an image of human sin?’, Marina Hammus**

It is said that programs are only following their programming. Even computer viruses, causing destruction, are doing so because they have been programmed to damage the infected computer. The reason for this, of course, is that programs function according to the wishes of the programmer.

AI on the other hand — where learning, self-correction, and reasoning are possible — could be the exception. If the AI agent has the ability to surpass its programming and make decisions above and beyond the original programming, they could essentially make their own choices — guided by their experiences, former choices, and previous outcomes of such choices.

Let us pose that the AI agent makes an immoral decision. Is, then, the AI agent or the programmer responsible for such a choice? Or both?

Theologically, this problematic can be transferred to a human creation and a divine ‘programmer’. Are human beings ‘opposing’ their programming when they sin? If so, are they, themselves, responsible for this behaviour, or is the blame on the divine creator?

In my paper I explore what we can learn about human sin and free will, by comparison with AI and programming. I also investigate human accountability and divine responsibility in relation to this.

**Paper 6: “MES-AI Church” – Engaging with AI in the local church, David Gregory**

(Senior Minister, Croxley Green Baptist Church

President of the Baptist Union 2018-19

National Co-Ordinator Messy Church Does Science)

“Messy Church Does Science” is re-shaping engagement with science in the Messy Church community and beyond. Building upon the Messy Church ethos of hospitality, creativity and celebration, using simple, interactive science experiments demonstrates those with a fascination for science are welcome in church, and that the creativity of science to explore the wonder of creation is something the church seeks to embrace and celebrate. Through an experience of wonder, an encounter with the God of creation is evoked through reflection, prayer and Bible stories.

The technology of Artificial Intelligence is rapidly growing. Yet, there remains a potential knowledge gap in many local churches. Building upon “Messy Church Does Science”, MES-AI Church seeks to bridge this gap, engaging families with children aged 10-13 in both the science and faith challenges of AI. Based around LEGO Mindstorms, used in the STEM syllabus of schools, participants will build robots that can respond to a series of challenges. Alongside developing skills in programming and experience of the principles and potential of AI, the project will engage with theological and ethical questions that AI raises and provide a vehicle for people of all ages to explore their own faith, spirituality and engagement with God.

**Paper 7: ‘Mutual Enrichment Between AI and Religion’, Dr. Fraser Watts**  
(Cambridge Institute for Applied Psychology and Religion)

The central claim of this paper is that the dialogue between AI and religion could potentially be of much more benefit to both parties than has so far been the case. A central task of AI is to understand how and why humans are the most effective intelligent system. However, AI has tended to simplify human intelligence, and to bracket out the more challenging aspects. A stronger dialogue with theological anthropology would bring to the fore some of the aspects of human intelligence which AI finds most difficult to model. There are also potential benefits to theological anthropology from importing the greater precision of computational theorising.

AI can also bring considerable benefits to the study of religion. Computational theorising is one of the most rigorous and precise modes of theorising available to psychology, and could advance the psychology of religion. It could provide a precise way of formulating how the cognitive architecture is deployed in spiritual practices. AI would also bring precision to understanding religious semantics and logic, and to how religious beliefs arise and change. Finally, there are potentially practical applications, building on work on 'artificial companions' to build companions to help with the spiritual life.

**Paper 8: Inspiring Minds: Widening Participation Opportunities with Big Questions on Identity and STEM, Finley Lawson & Berry Billingsley**  
(Canterbury Christ Church University)

The current study designed and evaluated stimulus questions and workshops about AI and human personhood designed for students aged 14-16. This paper examines the impact of an NCOP (National Collaborative Outreach Programme) sustained engagement collaboration between LASAR (Learning about Science and Religion) and Outreach at Canterbury Christ Church University. Our aims were to discover the workshops' efficacy in developing students' expressed curiosity about Big Questions and their epistemic insight into the nature of science and other ways of knowing.

The pilot project engaged over 60 students from NCOP target wards with STEM through philosophical big questions about the nature of personhood and

reality. The project was underpinned by an epistemic insight pedagogy designed to build students' awareness of, and engagement with, STEM through links with other subjects. At the heart of this project was the exploration of personhood and identity through technology and AI.

This work is exploratory but evaluation questionnaires and interviews with participating students showed a positive impact on their informal engagement with STEM and speaks to the value of Big Questions in the curriculum and of workshops designed to deepen students' understanding of the nature of science in real world and multidisciplinary arenas.

### **Paper 9: 'Human uniqueness in the face of strong AI: a theological solution', Marius Dorobantu**

The possibility of strong Artificial Intelligence – machines that would match or exceed humans in any task or capacity – forces us to revisit the age-old debate on what makes humans unique and in the image of God.

Philosophy usually leads to a dead-end. Theology can provide a way out, with an account of human uniqueness based on our unique evolutionary story, including (and precisely because of) our cognitive and physical vulnerabilities. The paper explores an interpretation of imago Dei that takes more seriously the Incarnation and the patristic concept of theosis. This could supply some key insights to the dialogue of theological anthropology and science, hinting that humans are in a unique sweet spot on the evolutionary scale, which allows us to mirror God in a meaningful way. It is our evolutionary challenges that forged in us the capacities necessary for imago Dei, the same capacities that strong Artificial Intelligence would most probably lack.

From an ecological perspective, Artificial Super-Intelligence would probably do a better job than humans in governing the planet. However, being in the image of God, humans are also called to theosis, a process that implies a spiritual transformation and elevation of the entire creation in a way AI wouldn't be capable of.

