

Artificial intelligence and faith: An initial survey in a rural parish context

*PG Learning Community (incl CSRM), Liverpool Cathedral
6th - 7th February, 2024*

Mike Kirby



**Liverpool
Cathedral**

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Senior Lecturer (Radiotherapy Physics), University of Liverpool;
Honorary Lecturer (Cancer Sciences), University of Manchester

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UNIVERSITY OF
LIVERPOOL

MANCHESTER
1824

The University of Manchester

Background

- AI in all of our lives – Alexa, Siri, Chatbots (utilities and services), ChatGPT*, Google Bard; Scientific and Medical Use for quite some time
 - Emergence of Large Language Models have been a game-changer - actually giving an ‘answer’ (often personalised) rather than a Google picture of millions of ‘results’, from which we choose and compose our answers
 - *But, at its heart, it is only high powered computer programming with advanced probabilistic and learning-enabled mathematical, computational and image analytical techniques; largely driven from whatever information is available on the internet – for AI like ChatGPT and Google BARD*
- Since being back living in Ribchester, Lancashire, I have been invited to give some talks and reflections (some presented here previously) at a ‘Digging Deeper’ church discussion group....10-25 people each week
- Proposed a session on AI and Faith (before CT articles!); *this survey developed to find the starting point....and test the waters with this type of research!*

Stats

- **Four churches in United Benefice**
 - **St Wilfrid's Ribchester with St Saviour, Stydd**
 - Electoral Role – 126 (2019)
 - Population – 1,598 (2011)
 - Usual Sunday – 66 (2023)
 - **All Hallows Mitton**
 - Electoral Role – 60 (2019)
 - Population – 266 (2011)
 - Usual Sunday – 25-30 (2023)
 - **St John's Hurst Green**
 - Electoral Role – 141 (2016)
 - Population – approx. 500
 - Usual Sunday – 25-30 (2023)
 - **Weekly bulletin mailing list distribution - 396**

Ribchester, Hurst Green and Mitton





Artificial Intelligence and Faith: What do you think?

Thanks very much for getting this far and showing an interest in completing this short survey within our United Benefice of Ribchester with Stydd, Hurst Green and Mitton...and beyond!

It should only take a few minutes to complete.

All answers will be completely anonymised and no personal data will be obtained, retrieved or stored in any way. Your answers will help further our understanding together of Artificial Intelligence and its impact in our faith community. Results will be shared in due course and in our discussion groups.

For the (optional) longer answer questions (6 - 10), please feel free to write as much or as little as you would like.

Many thanks for your help!

The Revd Canon Dr Mike Kirby;

Ribchester Resident;
Canon Scientist, Liverpool Cathedral;
Senior Lecturer (Radiotherapy Physics), Liverpool University;
Honorary Lecturer (Cancer Sciences), Manchester University

* Required

1. Please state your gender *

- Woman
- Man
- Non-binary
- Prefer not to say
- Prefer to self-describe

2. If you prefer to self-describe your gender, please enter it below

Enter your answer

MS Forms electronic version

3. Please state your age *

- 16 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 +
- Prefer not to say

4. Please state your highest qualification *

- GCSE or equivalent
- A level or equivalent
- Bachelors Degree or equivalent
- Masters Degree or equivalent
- Doctorate
- None of the above

5. Please examine each of the short statements below and ask yourself if you Agree Strongly, Agree, Disagree, Disagree Strongly or are Not Certain about it. You can optionally reflect more upon each one in questions 6-10 *

	Agree Strongly	Agree	Not Certain	Disag
I feel I have a thorough knowledge of Artificial Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that Artificial Intelligence poses a big THREAT to Society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that Artificial Intelligence could bring great BENEFITS to Society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that Artificial Intelligence could greatly COMPLEMENT my Faith in some way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that Artificial Intelligence brings large CHALLENGES to my Faith in some way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In a few words or sentences, tell us what is your present understanding of Artificial Intelligence?

(This Question is Optional)

Enter your answer

7. From what you have read and heard, how do you feel Artificial Intelligence could be a THREAT to Society?

(This Question is Optional)

Enter your answer

8. From what you have read and heard, how do you feel Artificial Intelligence could be a BENEFIT to Society?

(This Question is Optional)

Enter your answer

9. How do you feel Artificial Intelligence could be a COMPLEMENT to our Faith?

(This Question is Optional)

Enter your answer

10. How do you feel Artificial Intelligence could be a CHALLENGE to our Faith?

(This Question is Optional)

Enter your answer

11. Would you like to have further discussions or information about Artificial Intelligence within our United Benefice? *

- Yes
- No
- Maybe
- I live outside the Benefice

12. Are there any other points you'd like to add? *

Enter your answer

13. Many thanks for taking part! Please feel free to rate this short survey! *



Submit

Artificial Intelligence and Faith: What do you think?

Thanks very much for showing an interest in completing this short survey within our United Benefice of Ribchester with Styd, Hurst Green and Mitton...and beyond!

It should only take a few minutes to complete. IF YOU'VE ALREADY COMPLETED THIS SURVEY ONLINE, THANK YOU! YOU DON'T NEED TO COMPLETE THIS FORM!

All responses must be completely anonymous – so please don't add your name anywhere on this form! Your answers will help further our understanding together of Artificial Intelligence and its impact in our faith community. Results will be shared in due course and in our discussion groups.

For the (optional) longer answer questions (6 - 10), please feel free to write as much or as little as you would like.

Many thanks for your help!

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1. Please state your gender

- Woman
- Man
- Non-binary
- Prefer not to say
- Prefer to self-describe

2. If you prefer to self-describe your gender, please enter it below

3. Please state your age

<input type="checkbox"/> 16-20	<input type="checkbox"/> 21-30	<input type="checkbox"/> 31-40	<input type="checkbox"/> 41-50
<input type="checkbox"/> 51-60	<input type="checkbox"/> 61-70	<input type="checkbox"/> 71+	<input type="checkbox"/> Prefer not to say

4. Please state your highest qualification

- GCSE or equivalent
- A Level or equivalent
- Bachelors Degree or equivalent
- Masters Degree or equivalent
- Doctorate
- None of the above

5. Please examine each of the short statements below and ask yourself if you Agree Strongly, Agree, Disagree, Disagree Strongly or are Not Certain about it. You can optionally reflect more upon each one in questions 6-10

	Agree Strongly	Agree	Not Certain	Disagree	Disagree Strongly
I feel I have a thorough knowledge of Artificial Intelligence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that Artificial Intelligence poses a big THREAT to Society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that Artificial Intelligence could bring great BENEFITS to Society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that Artificial Intelligence could greatly COMPLEMENT my faith in some way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that Artificial Intelligence brings large CHALLENGES to my faith in some way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Paper based version

6. In a few words or sentences, tell us what is your present understanding of Artificial Intelligence? *(This Question is Optional)*

7. From what you have read and heard, how do you feel Artificial Intelligence could be a THREAT to Society? *(This Question is Optional)*

8. From what you have read and heard, how do you feel Artificial Intelligence could be a BENEFIT to Society? *(This Question is Optional)*

9. How do you feel Artificial Intelligence could be a COMPLEMENT to our Faith? *(This Question is Optional)*

10. How do you feel Artificial Intelligence could be a CHALLENGE to our Faith? *(This Question is Optional)*

11. Would you like to have further discussions or information about Artificial Intelligence within our United Benefice?

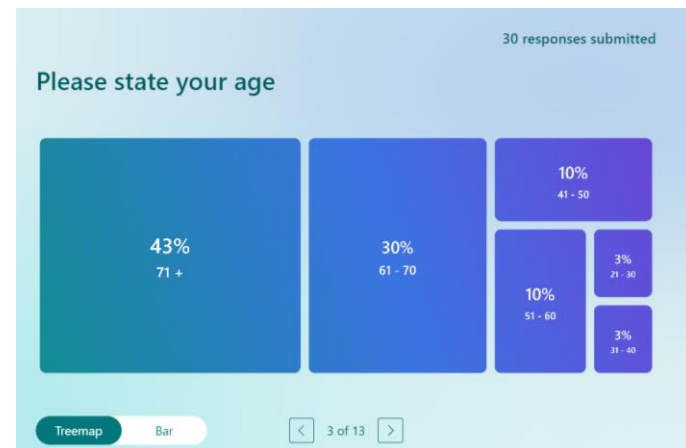
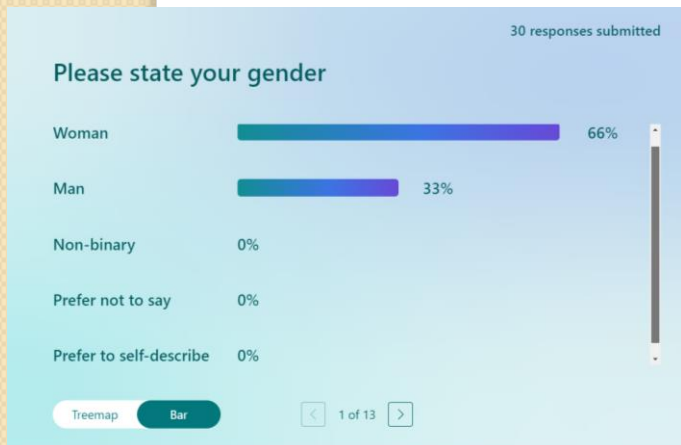
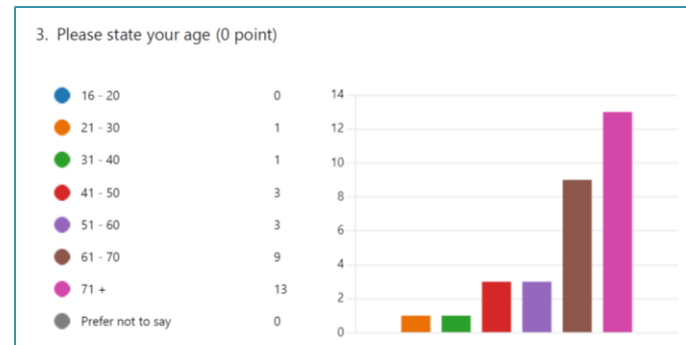
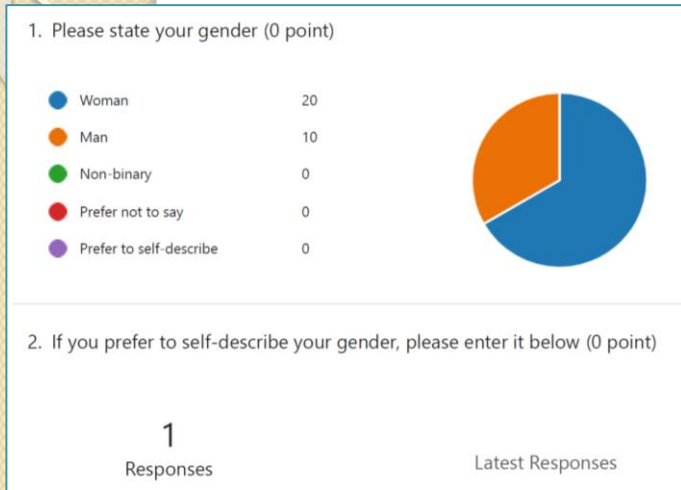
- Yes
- No
- Maybe
- I live outside the Benefice

12. Are there any other points you'd like to add?

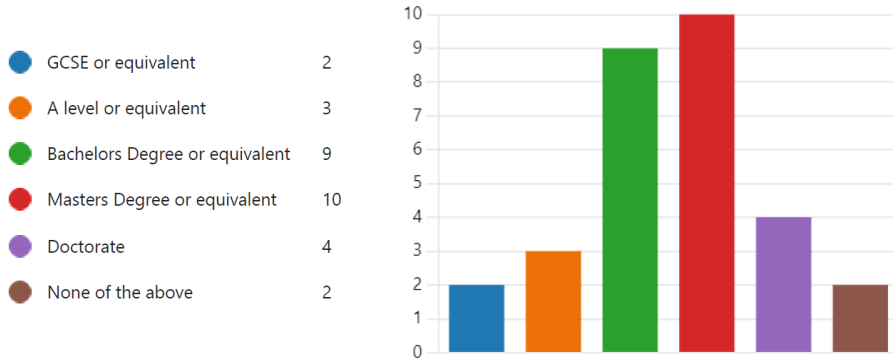
13. Many thanks for taking part! Please feel free to rate this short survey and place your survey in the box or hand it to one of your church wardens

<input type="checkbox"/> 1 Star	<input type="checkbox"/> 2 Stars	<input type="checkbox"/> 3 Stars	<input type="checkbox"/> 4 Stars	<input type="checkbox"/> 5 Stars
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Results – combined (12 electronic + 18 paper copies; 30 in total)

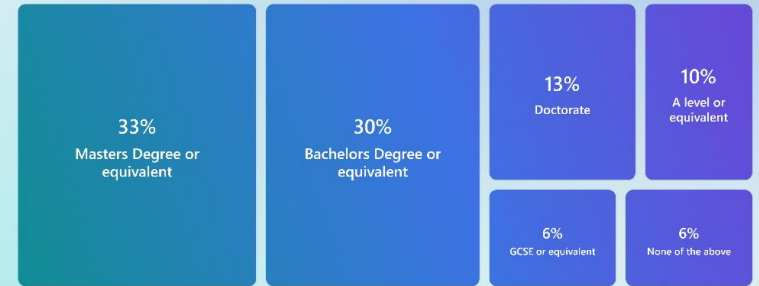


4. Please state your highest qualification (0 point)



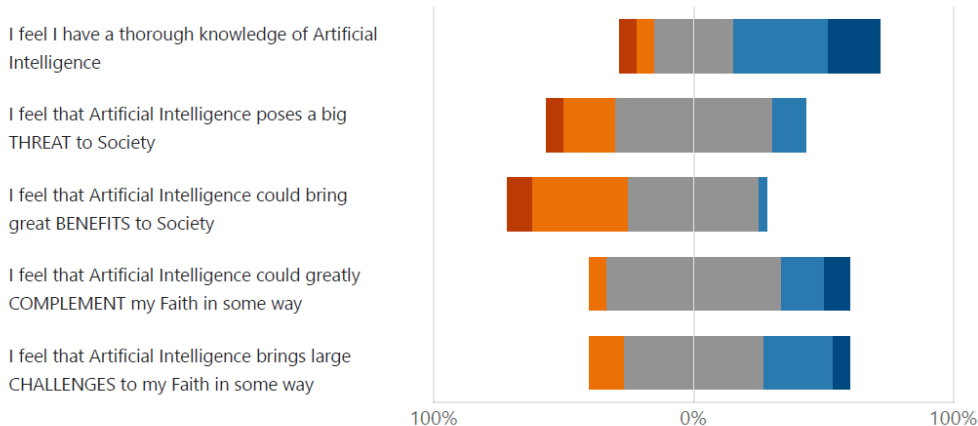
30 responses submitted

Please state your highest qualification



5. Please examine each of the short statements below and ask yourself if you Agree Strongly, Agree, Disagree, Disagree Strongly or are Not Certain about it. (0 point)
You can optionally reflect more upon each one in questions 6-10

■ Agree Strongly
 ■ Agree
 ■ Not Certain
 ■ Disagree
 ■ Disagree Strongly



	AS/A	NC	D/DS
I feel I have a thorough knowledge of Artificial Intelligence	13.4%	30%	56.6%
I feel that Artificial Intelligence poses a big THREAT to Society	26.6%	60%	13.4%
I feel that Artificial Intelligence could bring great BENEFITS to Society	46.7%	50%	3.3%
I feel that Artificial Intelligence could greatly COMPLEMENT my Faith in some way	6.6%	66.7%	26.7%
I feel that Artificial Intelligence brings large CHALLENGES to my Faith in some way	13.4%	53.3%	33.3%

6. In a few words or sentences, tell us what is your present understanding of Artificial Intelligence? (optional) (21/30 (70%) answered; 15/30 (50%) >vlittle/dk)

- The ability of computers/machines to perform tasks that would previously require human input; and to continuously learn from mistakes or information that is input or searched (W, 21-30)
- I think that AI is a system where machines are 'taught' by repeated input of data. Machine Learning? (W, 61-70)
- Statistical exploration of data to extract knowledge which can then be applied to other purposes (M, 71+)
- A more elaborate version Google that presents us with knowledge based on rationalising and logical analysis that is useful in a technological environment that ignores emotional, embodied knowledge and Faith (M, 71+)
- I understand it already exists and many of us use a variation of it in our everyday lives. I can see the benefits it may bring but worry about negative aspects and speed of development (W, 61-70)
- Very limited understanding so far but I do feel that it currently appears to determine outcomes; i.e. health (predictions). It can take control (W, 71+)

7. From what you have read and heard, how do you feel Artificial Intelligence could be a **THREAT to Society?** (optional) (20/30 (67%) answered)

- Potential to take away sense of values and humanity. Not all actions/interactions can or should be reduced to non sentient algorithms. Danger of manipulation by individuals, groups, governments intent on forcible control of others (W, 61-70)
- The potential for AI to learn and develop faster than what we anticipate, and potentially breach codes that are initially put in place. Data breaches etc. Potentially replacing certain (not all) jobs that currently require human input (W, 21-30)
- I think a lot of this is linked to films showing a dystopian future after general AI is born (which I think is along way off). Personally, I don't think its a threat in the way films show (computers taking over the world etc.) I think it will change our lives immeasurably and I hope and think that it will be for the better (M, 31-40)
- If AI knowledge was taken as the whole truth in any situation it would stifle enquiry, reduce knowledge to facts and stigmatise other forms of knowledge as useless. Add it to an enforcement agency and we would have "Big Brother" (M, 71+)
- I dont think it could be any more a threat than other media, for instance works of fiction and philosophy. Its up to individuals to take what they need from all these things (W, 71+)
- By making decisions that are wrong. By lulling humans into a false sense of complacency (M, 61-70)

8. From what you have read and heard, how do you feel **Artificial Intelligence could be a BENEFIT to Society?** (optional) (20/30 (67%) answered)

- Streamlining services, improving efficiency and ease for people to access support (W, 21-30)
- Rapid analysis and interpretation of big data to answer questions previously thought impossible ... may bring big advancements in areas such as personalised medicine (W, 51-60)
- In medicine. Interpretation of test results. Modeling of molecules in drug development. To better understand and mitigate risk in banking (M, 71+)
- AI has the potential to greatly enhance productivity, help solve questions, provide care and support and much, much more (M, 41-50)
- Helping those with special needs or the elderly. Those in under-developed economies (W, 61-70)

9. How do you feel Artificial Intelligence could be a **COMPLEMENT** to our Faith

(optional) (18/30 (60%) answered; 7/30 (23%) >v little/dk)

- Not sure how it could complement faith???? Where is the “soul” in AI? (W, 61-70)
- I have always believed that knowledge is God given. It's human nature and desire for power which corrupts..... (sorry, not sure where my thoughts are going with this!)

Another thought is that AI might give us a clearer interpretation of the Gospels?

AI might be a way of the Gospels reaching more people and communities (W, 61-70)

- Not possible since Faith is about relationships between humanity and God so how can AI complement it? (M, 71+)
- I do not see the two as mutually exclusive so a person can find benefits from both (M, 41-50)
- My faith is personal and I hope Ai could not invade that! (W, 71+)

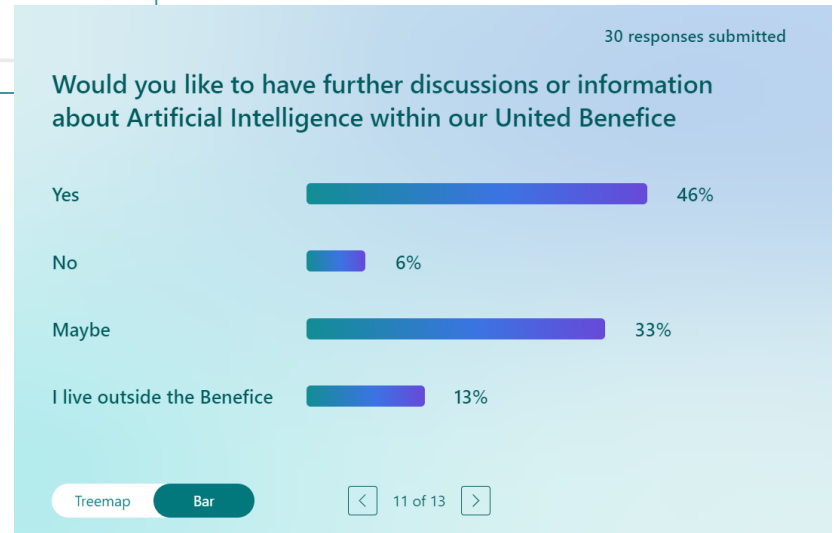
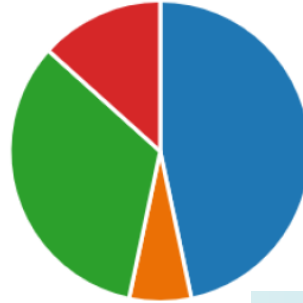
10. How do you feel Artificial Intelligence could be a **CHALLENGE** to our Faith

(optional)(15/30 (50%) answered; 11/30 (37%) >v little/dk)

- Again unsure about this as knowledge limited. Would be interested to know more about how study of AI is being pursued within faith community (W, 61-70)
- Will we rely too heavily on computer power and algorithm-generated results (based on humans- and therefore ultimately error-prone), and forget about God's omnipotence and omniscience, and therefore forget to seek His face? (W, 51-60)
- If it became accepted that AI is the totality of all knowledge (M, 71+)
- Loss of human interaction perhaps (W, 61-70)

11. Would you like to have further discussions or information about Artificial Intelligence within our United Benefice

Yes	14
No	2
Maybe	10
I live outside the Benefice	4

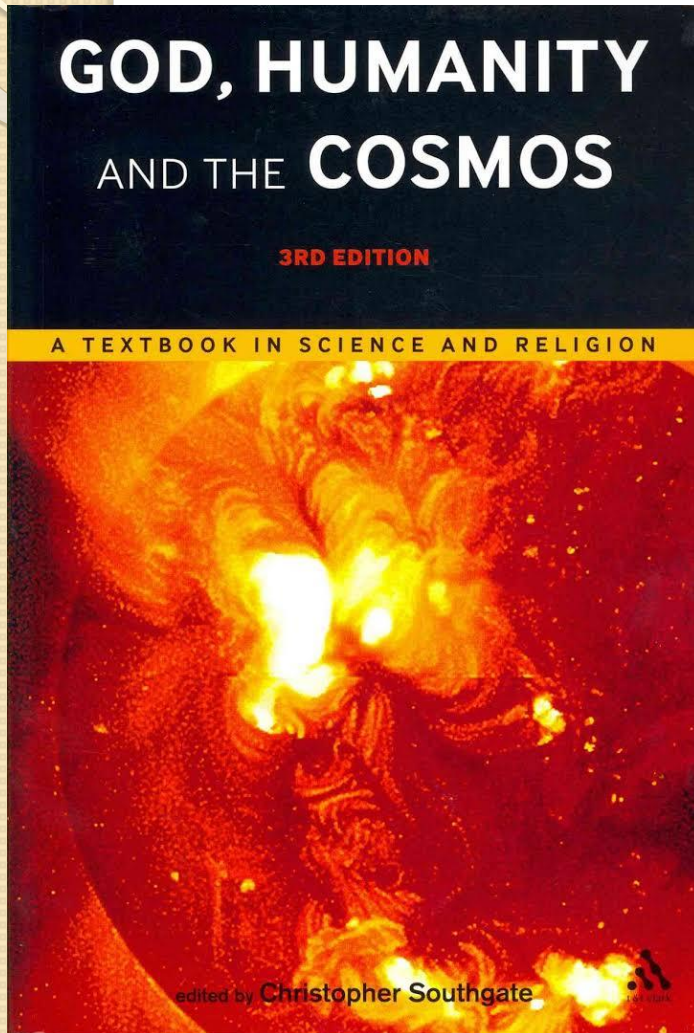


- Stars!
 - 26/30 (87%)- scored it
 - Average – 4.3 stars

12. Are there any other points you'd like to add? (8/30 (27%) answered beyond 'No/nothing to add/blank')

- If our faith is to be seen as relevant to everyday life and is to impact on the society in which we live (as it should be), then we must address a topic which will have increasing influence in how we (and those who follow on from us) live our lives. For many of us actively involved in the beneficent AI may seem remote - are we burying our heads in the sand? Do we/should we be more concerned? How much does popular media create debate and concern which is counterproductive? Is there something we are missing which could enhance our faith? (W, 61-70)
- Yesterday I had a completely frustrating 'computer says no' type of day. It was impossible to talk to anyone to ask for help. I was at screaming point and had achieved absolutely nothing despite my best efforts. This experience which is not infrequent makes me very wary of AI (W, 61-70)
- I was not aware, but accept I may be wrong, that AI was able to grasp the concepts of moral codes and spiritual beliefs (M, 61-70)
- Can a machine show honour to God? (W, 61-70)

2011, Expert Text, edited by Prof Chris Southgate (3rd ed, pp208-211, Watts & Dumbreck)



- ‘Strong’ AI – ALL intelligent human activity simulated in computer programs (MCK – but what is ‘intelligent?’)...computers of future able to do anything human can do
- Computers can re-learn from themselves – reprogramming (Machine Learning)
- ‘More to intelligence than following rules of a computer program....more to being emotional than showing an appropriate emotional display’
- God is creator of all things, visible and invisible...implying impossible to exist without dependence upon God; not affected by being product of human beings....so making such a computer (MCK - AI in this decade) an act of ‘pro-creation’, but not usurp the functions of the creator God any more than biological pro-creation
- Wilder speculations and predictions....‘playing God’

ARTIFICIAL INTELLIGENCE (AI)

In a world powered by AI, what does it mean to be human?

Youtuber finds path to Jesus via AI

THE Youtuber Siraj Raval's most popular videos teach his 750,000 subscribers how to use artificial intelligence (AI) for financial gain

01 Sep 2023

AI: Could it turn us all into paperclips?

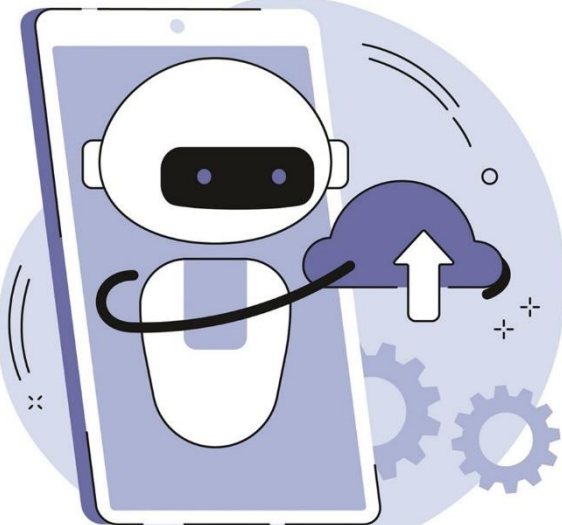
Andrew Brown puts the potential benefits and threats of AI into their political context

01 Sep 2023

AI: It must be more human

Eve Poole is worried about the coding that has been left out

01 Sep 2023



Leader comment: Risk and control: where AI can go badly wrong

01 Sep 2023

AI: The threat of artificial stupidity

01 Sep 2023

AI: Simulation or inspiration?

01 Sep 2023

AI: 'Waffle, waffle, and more waffle'

01 Sep 2023

Book review: Robot Souls: Programming in humanity by Eve Poole

01 Sep 2023

World news in brief

18 Aug 2023

Press: Jesus will text you back, but Satan is offline

18 Aug 2023

Letters to the Editor

11 Aug 2023

<https://www.churchtimes.co.uk/topics/artificial-intelligence-ai>



CT -Various pertinent articles.....

- AI must be more human (Eve Poole)
- So does a sentient robot have a soul?
- Waffle, waffle and more waffle (Cally Hammond)
 - We have seen the evidence at the university!
 - Shallow!
 - Invention!
- Technology managing human bias
 - We have seen this in some medical applications – e.g. in ‘training’ and ‘verification’ data
- The threat of artificial stupidity (Andrew Brown)
- Simulation or inspiration (Prof Beth Singler talking to Mark Vernon)

WEEKLY SERMON

communicate@blackburn.anglican.org



Is AI a threat to mankind's inherent creativity?

If you follow the news in any way at all you can't fail to have noticed all the stories in recent weeks about the rise of AI (artificial intelligence).

It's nothing new of course, at least in science fiction ... remember HAL 9000, the creepy sentient computer in '2001: A Space Odyssey'?

That's the fiction ... but down the years since then computer experts have been experimenting and refining until now, with the likes of 'ChatGPT' (an artificial intelligence chatbot) we have the dawn of a new age. An age where computers really can substitute human creativity with some considerable success.

Launched in November 2022, it's already clear ChatGPT presents many opportunities, but it is also being perceived as a threat by many, including educational establishments.

No wonder, when it can produce a passable (pardon the pun) essay that reads as 'new' not plagiarised.

That's because it uses its immense power to drag facts and figures from across the internet and re-expresses them in a fresh way; not just regurgitating passages of someone else's essay.

Then there are a number of AI art generators that can produce artwork based on a particular style that looks like the real thing. Don't believe me? Then check out [this recent article in The Guardian](#) where they asked art experts to tell the real painting from the AI fake. Several times they got it wrong!

It's a concern. What does it mean for our human creativity if a computer can produce better essays and more engaging artwork than you or I? Personally I would take a poorly drawn real artwork over some AI perfection any day.

So it concerns me that in the Guardian experiment, when presented with the fact he had chosen incorrectly, expert Bendor Grosvenor responded 'if you offered me the choice, I would actually go for the AI one'.

Really? The AI one?

Are we now actively preferring AI creativity to that of humanity in all its rich diversity? I hope not. It may not feel like it to many, but we are at a pivotal moment in the history of mankind.

God made us all in His image. We are the pinnacle of His creation. In the Bible, in Ephesians 2, v10 it says: 'For we are God's handiwork, created in Christ Jesus to do good works, which God prepared in advance for us to do.'

All of us have gifts from God to express ourselves. Some people sing - it may be for karaoke in the local pub or it could be for the King at the Coronation Concert in a few weeks. Both entertain in their own ways.

HEALTHY CHURCHES TRANSFORMING COMMUNITIES

Some people are craftsmen and women; others write; still more paint beautiful artworks or excel at sport or music. The list is endless. As humans we are filled 'with understanding, with knowledge and with all kinds of skills'. (Exodus 35 v31)

I'm not a Luddite and I will use these AI tools but that's all they are - tools to help us; and that's all they should ever be. Even tech giants like Elon Musk are [calling for caution](#) in how we move forward.

My prayer for our world right now is that with everything else going on right now, from the cost of living crisis to Ukraine, we don't take our eye off the AI ball.

In the famous verse in Jeremiah (29 v11) we hear God saying: "For I know the plans I have for you," declares the LORD, "plans to prosper you and not to harm you, plans to give you hope and a future."

But we have also been given free will by God, so we must all guard our collective futures carefully. Let's pray those who continue to develop these technologies do so wisely, while the people who use them don't abuse the undoubted opportunities AI presents, to the detriment of the creativity inherent in all of humanity.

Ronnie Semley, Communications Manager

ChatGPT – dawn of new age; large language models; pivotal moment

Substituting human creativity with some success

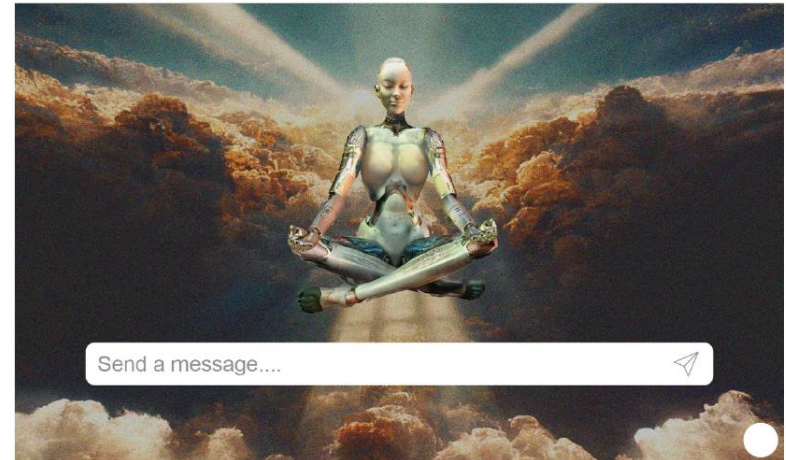
Use of AI tools – but that's all that they are – tools to help us; notes of caution, even from the original developers

Our free will – pray to continue the developments wisely; use does not abuse undoubted opportunities AI presents, to detriment of creativity inherent in all of humanity

HEALTHY CHURCHES TRANSFORMING COMMUNITIES

The Guardian

- Rabbi Joshua Franklin
- Input into ChatGPT - “Write a sermon in the voice of a rabbi of about 1000 words that relates the Torah portion Vayigash to intimacy and vulnerability. Cite Brown’s scholarship on vulnerability”
- Was delivered to Jewish congregants
- Passable with suitable content – congregation thought it was written by some other famous rabbis
- But...lacked exactly what was preached – human vulnerability and emotion.
- Rabbi Franklin “If I’m going to preach about vulnerability and intimacy...I would share something of myself for vulnerability. And that’s something that artificial intelligence and ChatGPT cannot do”
- MCK – fabrication....



Artificial intelligence (AI)

Are chatbots changing the face of religion? Three faith leaders on grappling with AI

Mainstream adoption of generative AI and conversational bots has left few spaces untouched, even religious communities



Johana Bhuiyan

Fri 7 Apr 2023 11.00 BST



Ethical Aspects of Artificial Intelligence in Radiation Oncology

Lucien Lahmi,* Marie-France Mamzer,[†] Anita Burgun,[‡] Catherine Durdux,[§] and Jean-Emmanuel Bibault^{†,§}

Radiation oncology is a field that heavily relies on new technology. Data science and artificial intelligence will have an important role in the entire radiotherapy workflow. A new paradigm of routine healthcare data reuse to automate treatments and provide decision support is emerging. This review will discuss the ethical aspects of the use of artificial intelligence (AI) in radiation oncology. More specifically, the review will discuss the evolution of work through the ages, as well as the impact AI will have on it. We will then explain why AI opens a new technical era for the field and we will conclude on the challenges in the years to come.

Semin Radiat Oncol 32:442–448 © 2022 Elsevier Inc. All rights reserved.

Work

Work Through the Ages

Man's fear that his work will be substituted by another entity and that this will upset society is ancient and recurrent. In fact, in ancient times, animals were already seen as “living mechanical devices” replacing slaves, which, according to the sages of that time, could unbalance the established social order. At the time, the slave was therefore a physical resource of work that could be substituted, as Plato says in *The Republic* “Besides, the usefulness of private animals and that of slaves are more or less the same: both help us, by the help of their bodily forces, to satisfy the needs of existence.”¹ This replacement of arms and muscles was as much debated as substituting the intellectual force of the human by an artificial intelligence (AI).

Technical progress, often perceived as a source of replacement and social upheaval, has always found opponents, and for various reasons. The first trace of technical refusal in the literal sense dates back to Tiberius. This story is reported in

Petronius' *Satyricon*: a worker presented to Tiberius an unbreakable glass of which he is the only one to know the secret, and Tiberius fearing to see gold losing value executed him and destroyed his technology.² These oppositions to technological innovation have continued to occur throughout history. For example, William Lee, inventor of the knitting machine, was rejected in 1589 by Queen Elizabeth I, who was afraid of the loss of artisanal knowledge and the impoverishment of her artisans.³ Opposition to technical progress motivated by fears of loss of work has sometimes been a source of violence, even leading to armed conflicts resembling civil wars, such as the Luddite revolt in England at the beginning of the 19th century and the Canuts revolt in Lyon a little later.

Luddism found an echo in the 20th century with neoluddism, an anti-technological movement that was sometimes accompanied by violence and vandalism.

Civil associations are now opposing artificial intelligence, such as the AFCIA group in France, in the continuity of Ray Kurzweil's technological singularity, which postulates that the invention of artificial intelligence will have exponential effects on technological growth, which will cause unpredictable effects on human societies.⁴ Such as the robot Hal, in the movie “2001: A Space Odyssey.” Perhaps the most famous example of artificial intelligence turning against its creators.⁵

In other hand, some scientists like Cynthia Rudin warn of the unknown behind AI decisions as the black box for important decision making areas like healthcare or justice.⁶

And yet in spite of these oppositions, one can notice by visiting any archaeological museum, that the human, of any time, sought this progress by the tool. We are Homo Faber

REVIEW ARTICLE

Artificial intelligence applications in prostate cancer

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Artificial intelligence (AI) applications have enabled remarkable advancements in health care delivery. These AI tools are often aimed to improve accuracy and efficiency of histopathology assessment and diagnostic imaging interpretation, risk stratification (i.e., prognostication), and prediction of therapeutic benefit for personalized treatment recommendations. To date, multiple AI algorithms have been explored for prostate cancer to address automation of clinical workflow, integration of data from multiple domains in the decision-making process, and the generation of diagnostic, prognostic, and predictive biomarkers. While many studies remain within the pre-clinical space or lack validation, the last few years have witnessed the emergence of robust AI-based biomarkers validated on thousands of patients, and the prospective deployment of clinically-integrated workflows for automated radiation therapy design. To advance the field forward, multi-institutional and multi-disciplinary collaborations are needed in order to prospectively implement interoperable and accountable AI technology routinely in clinic.

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INTRODUCTION

Prostate Cancer (PCa) shares commonalities to the diagnostic, staging, risk stratification, and therapeutic disease making of many cancer types. However, there is a substantial time burden and human capital required given the very high incidence of 1.4 million new diagnoses globally per year [1–3], frequent negative prostate cancer biopsy rate between 20–34%, 12 or more routine biopsy samples [4], high utilization of magnetic resonance imaging (MRI), computed tomography (CT) [5], positron emission tomography (PET)/CT [5, 6], and dependency on subspecialty expertise for accurate interpretation of histopathology and imaging data [7]. Furthermore, the majority of centers do not have PCa subspecialists in radiology and pathology, which has been shown to lead to lower diagnostic accuracy and potentially quality of care [8].

PCa also exhibits a remarkably heterogeneous natural history [9] and the current risk stratification schemas are suboptimal [10]. They derive inaccurate prognostication, and can routinely lead to overtreatment of an indolent disease or undertreatment of an aggressive disease [11, 12]. Furthermore, the risk of the management of localized PCa is based on risk stratification methods (i.e., National Comprehensive Cancer Network or NCCN risk groups) and prognostic biomarkers evaluating the overall outcome, without the routine use of predictive biomarkers that relate the benefit of a particular treatment approach within the PCa clinical course [13].

Under this perspective, artificial intelligence (AI) applications present an unprecedented platform for improvement in efficiency, diagnostic accuracy, prognostication, and development of the first true predictive biomarkers in localized PCa [14]. Nevertheless, the applications of the AI algorithms have been studied mainly in

simulated pre-clinical settings, lack independent validation, and their incorporation into daily clinical workflow is variable.

In this article, we present a contemporary review of the AI applications in PCa pathology, imaging, and radiotherapy workflow. To highlight the topic, we first discuss the pitfalls of the currently employed PCa risk stratification strategies, then perform an overview of the AI potential in precision medicine for PCa, and some relevant AI algorithms. Thereafter, we examine the published AI algorithms while focusing on the most relevant and well validated studies. Finally, we reflect on the future perspective for clinical deployment of AI applications.

PCA DIAGNOSIS, RISK STRATIFICATION, AND TREATMENT

APPROACH: CURRENT STRATEGIES AND PITFALLS

The initial diagnostic work-up for PCa starts with a physical examination and prostate-specific antigen (PSA) test. PSA testing will be eventually followed by the acquisition of around 12 tissue samples from the prostate gland most commonly via trans-rectal ultrasound (TRUS)-guided biopsy [15] or via use of MRI-targeted fusion biopsy. The diagnosis of PCa is then established by microscopic examination of the tissue samples, and includes the assignment of Grade Group/Gleason score [15]. Finally, after the diagnosis of PCa, pelvic or total body imaging may be acquired using MRI, CT, or PET/CT [5].

After confirming the diagnosis, patients are stratified into risk categories. The most commonly used risk stratification strategy in PCa is the D'Amico risk classification [4] initially established in 1998 based on pretreatment PSA, biopsy Gleason score, and American Joint Commission on Cancer Staging (AJCC) T stage [5].

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How would AI answer the question?! *Artificial Intelligence and Faith: what do you think?*

As a large language model, I am not capable of forming personal opinions or beliefs, including those related to faith. However, I can share some different perspectives on how AI might impact faith and provide information to help you form your own opinion.

Potential benefits:

Enhancing understanding: AI could analyze vast amounts of religious texts and data, potentially offering new insights into religious history, practices, and interpretations.

Personalized experiences: AI-powered tools could personalize religious practices, tailoring prayers, meditations, or educational materials to individual needs and preferences.

Accessibility and outreach: AI-powered translation tools and virtual reality simulations could make religious experiences more accessible to people with disabilities or those geographically isolated.

Community building: AI-powered platforms could connect people with similar religious beliefs, fostering community and support networks.

Potential challenges:

Replacing human connection: Overreliance on AI for spiritual guidance or community could diminish the importance of human interaction and relationships.

Bias and discrimination: AI algorithms can reflect the biases of their creators, potentially perpetuating discrimination within religious communities.

Commodification of faith: AI-powered religious experiences could become commercialized, losing their deeper spiritual significance.

Misinterpretation of religious texts: AI analysis of religious texts might not capture the nuances and context important for deeper understanding.

Ultimately, the impact of AI on faith will depend on how it is developed and used. It is crucial for individuals and religious communities to engage critically with AI, ensuring it aligns with their values and enhances rather than diminishes their faith practices.

It's important to remember that these are just a few potential impacts, and the true relationship between AI and faith is likely to be much more complex and nuanced. I encourage you to explore this topic further and form your own informed opinion.

Google BARD

Conclusions and futures...

- Dip of toe into the waters of rural ministry research
- Encouraged by response – but most came from paper survey; though MS Forms easy to use and distribute
- Wide range of experiences and reflections given; most at a ‘very little’ starting level of AI understanding
- Many resources available to help direct people; but I would likely start by explaining what AI is and isn’t, technically

Ribchester, Hurst
Green and Mitton



- Hold discussion session(s) after Easter, beginning by sharing this presentation
- Hope it is the basis for more research in the Benefice
- Perhaps publish this, if appropriate

Many thanks for your attention; and I welcome your thoughts/questions....

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