Science & Religion:
Reframing the conversation

Drivers? Doctors? Friends?: Who will AI replace?

Hannah Waite and Nick Spencer

hannah.waite@theosthinktank.co.uk | nick.spenecer@theosthinktank.co.uk

This research is part of the project *Science and religion: reframing the conversation* undertaken by Theos and The Faraday Institute for Science and Religion. The project, funded by the Templeton Religion Trust, seeks to analyse the understanding of science and of religion today, as a means of better grasping and navigating the relationship between the two. Over three years, the research team interviewed more than one hundred leading experts and commissioned a YouGov survey of 5,000 UK adults. Theos has analysed data provided by YouGov. The results can be found at www.theosthinktank.co.uk This paper is in collaboration with the Religion Media Centre, with whom the findings were discussed in a webinar which can be found on the RMC's YouTube channel: Religion Media Centre - YouTube

Summary

- The majority of people (56%) say they would be reluctant to get in a self-driving car, although that drops to 45% for adults under 30.
- Very few people (7%) would prefer a robot to conduct surgery on them than a human surgeon.
- One in five people (20%) *would* consider getting an artificial companion in the future, although 53% of people would not.
- Willingness to have an artificial friend increases significantly with youth, with over 70s open to having one, compared to 29% of adults under 30.
- Women are more reluctant than men in most of these areas, with, for example, 13% of women open to an artificial companion compared to 28% of men.
- Broadly speaking, antipathy towards these technologies declines with higher levels of education, with higher levels of science knowledge, and with higher levels of science confidence.
- There is not much of a difference in these matters by religion. The religious are slightly less open to the idea of an AI companion than the non-religious.
- More consistently, the more literally or seriously people take holy books (like the Bible or the Qur'an) to be, the less likely they are to consider an AI companion. By contrast, those who consider such books to be an irrelevant collection of ancient myths, are more positive about AI companions.

Introduction

One of the literary sensations of 2021 was *Klara and the Sun*, a novel from the Nobel Prize winning author Kazuo Ishiguro. In the author's characteristically clear, deadpan prose, the book tells the story of Klara, an Artificial Friend to a sickly girl called Josie. Klara's attachment and kindness towards her friend is moving and provokes searching questions about

love and loyalty, about what is 'artificial' and what is 'human'.

The themes have been with us for centuries, often best explored through literature and the arts. But we now face the possibility of fiction sliding into fact, with machines exhibiting intelligence, and AI replacing human functions in society.

Machines replacing humans is not a new thing, of course. Indeed, this was the very basis of the Industrial Revolution in which millions of craft and the agricultural roles were made redundant. Cynics might say it is only now, when traditionally professional and middle-class jobs are coming under threat, that we are collectively worrying about the prospect. Either way, there are serious questions to ask here. How far could this go? How far do we want it to go? Are we prepared to have AI to drive us around? To operate on us? To be our friend?

As part of the Theos/ Faraday Institute project into Science and Religion, we put a number of these questions to the public. The results are presented in this paper, followed by a brief discussion of what this might mean for us and for the future.

Data Used

To explore this issue, we commissioned a YouGov survey which addressed a number of questions and statements to a nationally representative sample of UK adults. (Technical details in Appendix). Questions were scored on a standard five-point scale from strongly agree to strongly disagree. We will be using the results from three of these statements in this paper:

- q13_8. "*I would prefer a robot to conduct surgery on me than a human surgeon*"
- q13_9. "*I would be reluctant to get in a self-driving car*"
- q13_11. "*I would consider getting an Artificial Intelligence (AI) companion in the future*"

The results presented and discussed at length in this paper are statistically significant at p = ≤ 0.05 unless otherwise stated.

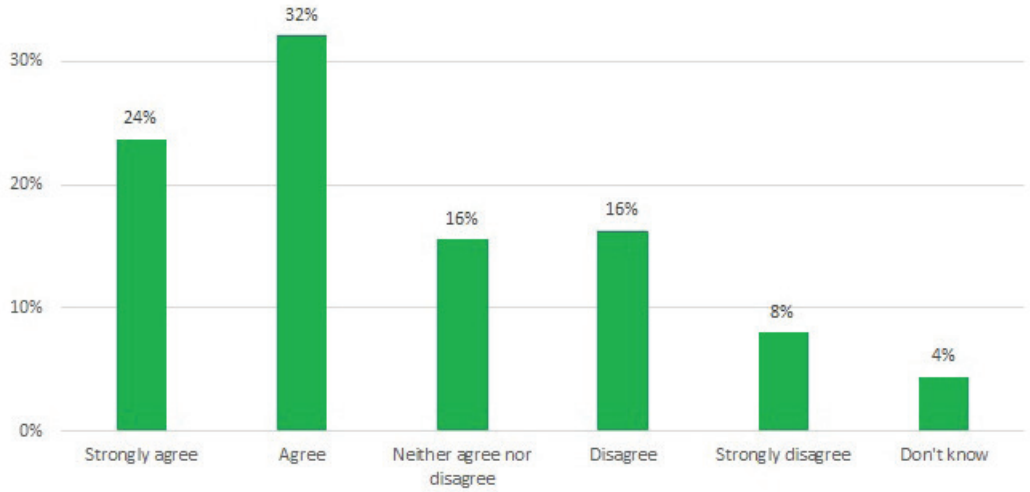
Results

AI drivers and self-driving cars

We asked people how far they trusted AI by examining how individuals would feel about getting into a self-driving car. The prospect of these has been much discussed over recent years – indeed, we have been led to expect 'Google-vehicles' on our roads imminently for quite some time – so the idea was far from unfamiliar to people.

At a top level, we found a relatively high level of public hesitancy here, with 56% strongly agreeing or agreeing (hereafter strongly/agree) that they would be reluctant to get in a self-driving car. (See Figure 1.)

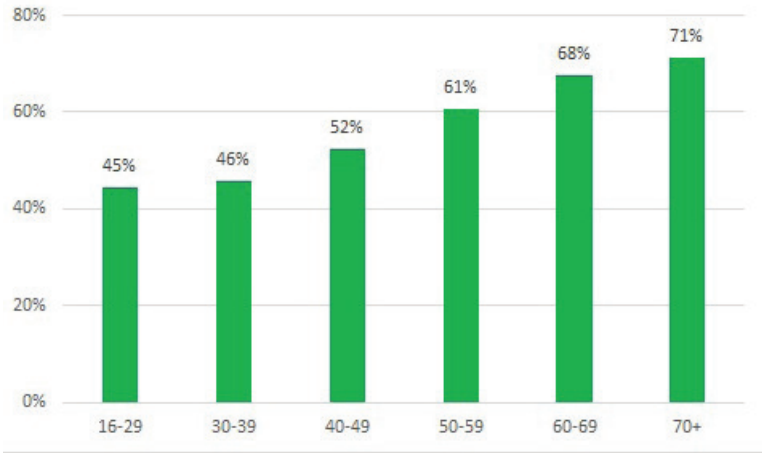
Figure 1: "I would be reluctant to get in a self-driving car": by total sample



Source: Theos/ Faraday/ YouGov 2022: Q 13_9 (total n= 5153)

There are two main demographic differences in how respondents answer this question. The first is a notable gender difference with women being considerably more reluctant (64%) to get in a self-driving car than men (47%).[1] Second, we found a significant age trend (Figure 2), where, not surprisingly, the older individuals are, the more hesitant they are to get in a self-driving car.[2]

Figure 2: "I would be reluctant to get in a self-driving car": by age

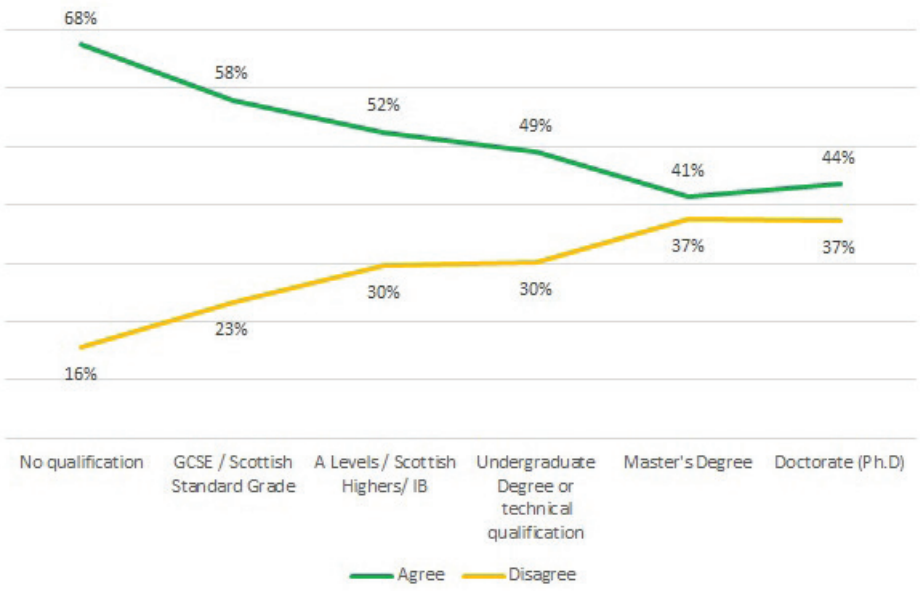


Source: Theos/ Faraday/ YouGov 2022: Q 13_9 (total n= 5153)

Was there a religious dimension to this? Self-declared Christians are more reluctant to get into a self-driving car than those with no religion, with 65% of Christians agreeing with the statement compared to 53% of the non-religious, although some of this difference will be on account of the relative age profile of each group.[3]

What about education? The results demonstrate that terminal levels of education may play a factor here, as those who are still in full-time education are the least reluctant to get into a self-driving car.[4] Terminal levels of religious education do not influence the likelihood of getting into a self-driving car. However, figure 3 shows that terminal levels of science education affect how people respond to this statement, the higher the level of terminal science education the more likely people are to be happy about getting into a self-driving car.[5]

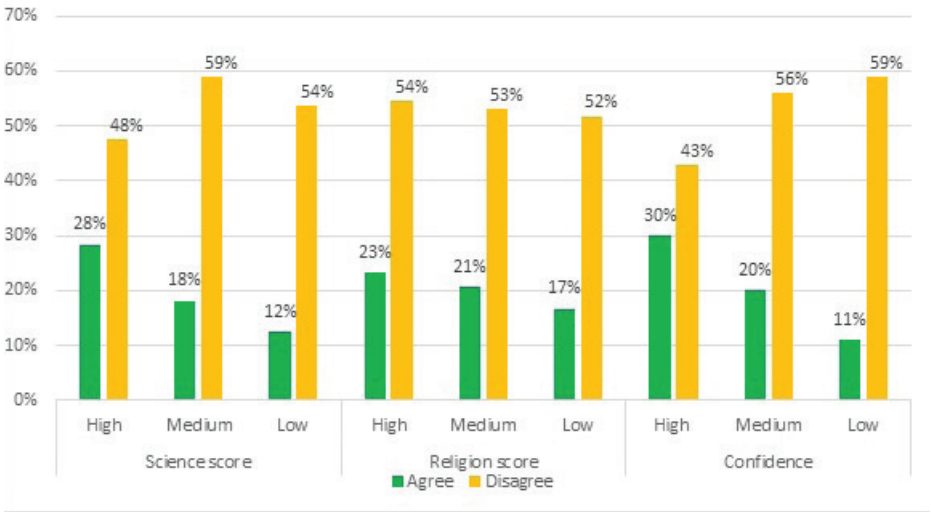
Figure 3: "I would be reluctant to get into a self-driving car": by terminal level of science education



Source: Theos/ Faraday/ YouGov 2022: Q 13_9 (total n= 5153)

Finally, figure 4 shows that individuals who have a high science knowledge score (see Appendix 2 at the end of this paper), and a high confidence in their knowledge of science are the most likely to consider getting into a self-driving car. There was a smaller difference in opinion on this question according to religion knowledge.

Figure 4: "I would be reluctant to get into a self-driving car": by science and religion knowledge scores, and confidence in ones knowledge of science



Source: Theos/ Faraday/ YouGov 2022: Q 13_9 (total n= 5153)

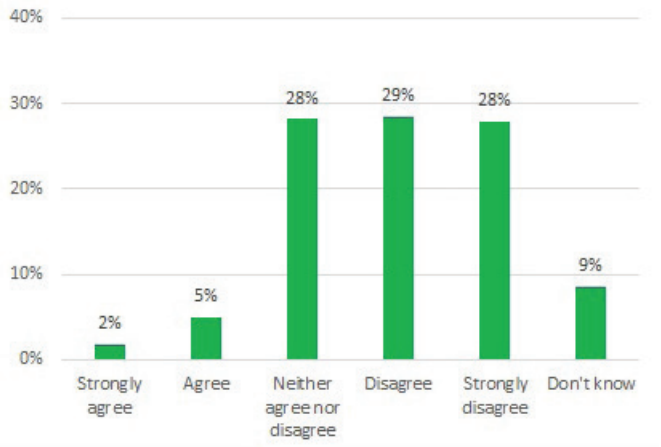
Robot Surgeons

Entrusting your life to an AI controlled car is one thing; entrusting it to an AI controlled doctor is another.

We asked about doctors – specifically surgeons – too, although we did so with a deliberately more demanding statement, not asking about people's reluctance but their preference. The results were, therefore, much more negative.

Not surprisingly, people strongly disagree with the statement: "I would prefer a robot to conduct surgery on me than a human surgeon," with 56% selecting strongly/disagreeing (compared with 7% strongly/ agreeing). Figure 5 shows this but it also shows that there is a high proportion (37%) of the sample selecting either: 'neither agree nor disagree' (28%) or 'don't know' (9%). In other words, people's opinions are less well-formed on this slightly less familiar prospect.

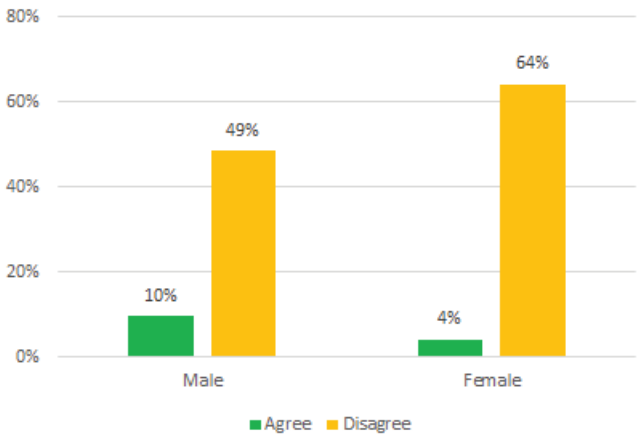
Figure 5: "I would prefer a robot to conduct surgery on me than a human surgeon": by total sample



Source: Theos/ Faraday/ YouGov 2022: Q 13_8 (total n= 5153)

The most noticeable demographic trend regarding this question is by gender (Figure 6) where we found men present higher levels of agreement than women.[6]

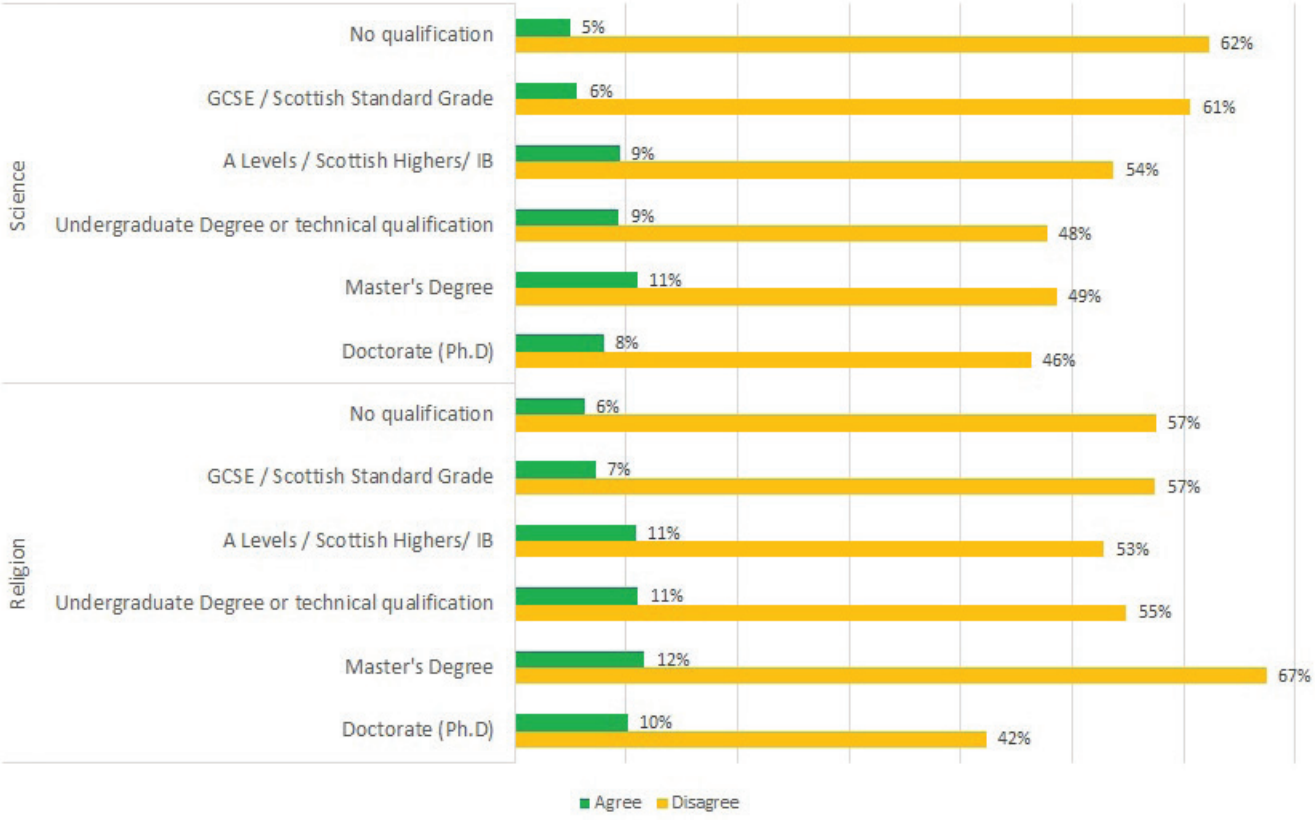
Figure 6: "I would prefer a robot to conduct surgery on me than a human surgeon": by gender



Source: Theos/ Faraday/ YouGov 2022: Q 13_8 (total n= 5153)

Age, religious affiliation, religious practices and views on holy texts did not influence an individual's response to this question However, looking at figure 7, we do see a small education dimension to how individuals respond to this statement, with those who have higher levels of education here being slightly less reluctant.

Figure 7: "I would prefer a robot to conduct surgery on me than a human surgeon": by terminal levels of science and religious education



Source: Theos/ Faraday/ YouGov 2022: Q 13_8 (total n= 5153)

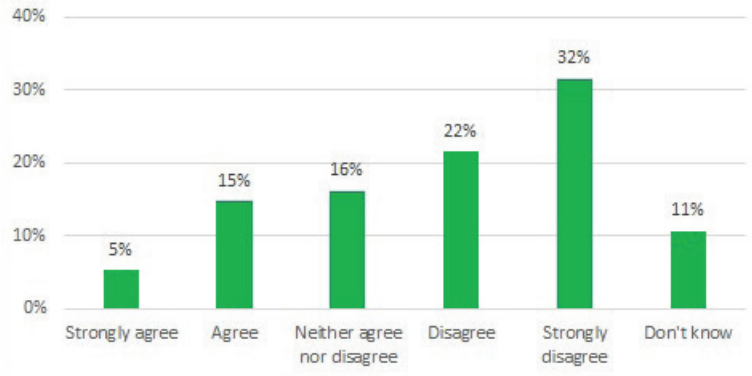
We discovered that on top of the educational trend, that there is a significant knowledge dimension to responses. We found that those with the high scores in their science knowledge, and separately those with the high scores in their religion knowledge displayed higher levels of agreement.[7] Finally, we found that confidence in science knowledge also plays a role in an individual's attitude to robot surgery, with 12% of those with a high confidence in their knowledge of science agreeing compared to 6% with medium confidence and only 3% with low confidence.

AI Companions

Finally, what about friends? How far are people prepared to countenance the idea of a "Klara"?

To explore this, we asked respondents if they "would consider getting an Artificial Intelligence (AI) companion in the future". We found that one in five people (20%) *would* consider getting an artificial companion in the future, although as shown in figure 8 we can see that the majority of people (53%) still disagree/strongly with this statement.

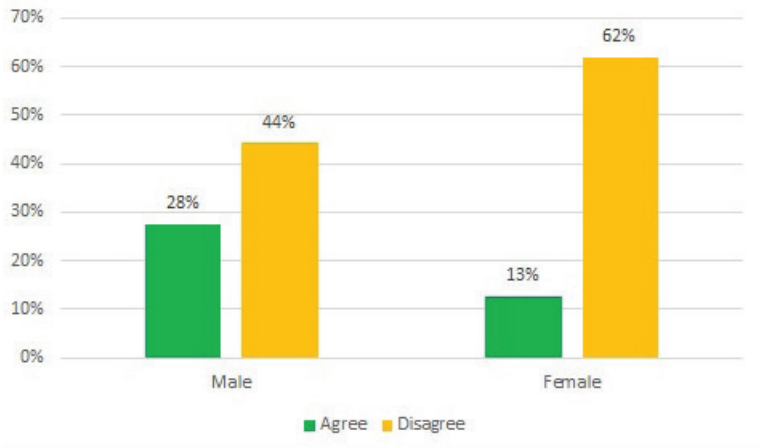
Figure 8: "I would consider getting an AI companion in the future": by total sample



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

Figure 9 illustrates a significant gender difference in responses, with men being twice as likely to agree that they would consider getting an AI companion in the future.[9]

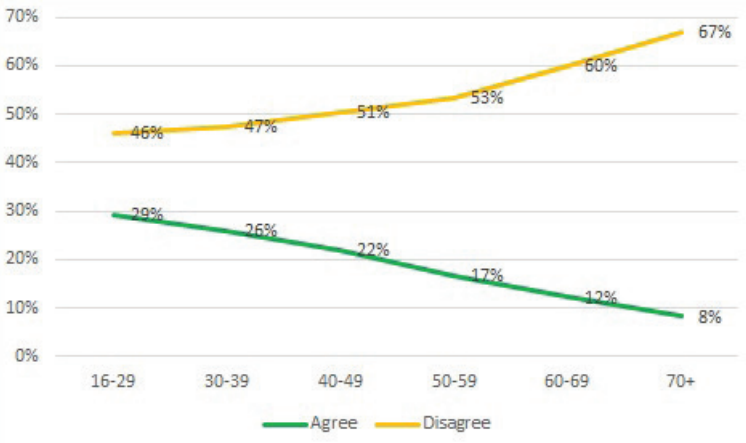
Figure 9: "I would consider getting an AI companion in the future": by gender



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

There is also a noticeable age dimension to an individual's willingness to get an AI companion in the future (see figure 10), with 29% of those under 30 years agreeing that they would get an AI companion, compared with 10% of those over 60.

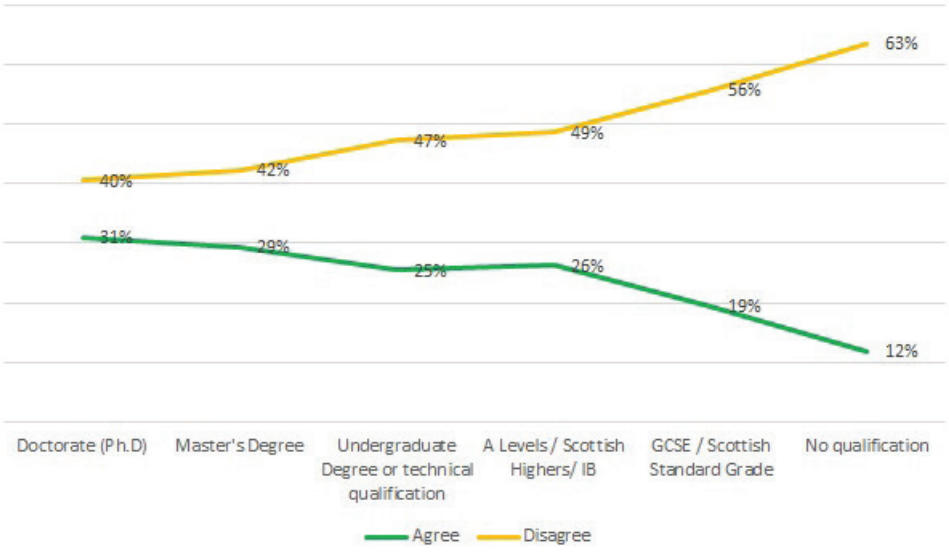
Figure 10: "I would consider getting an AI companion in the future": by age



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

Those who have higher levels of terminal science education display a more positive attitude to the idea of an Artificial Companion, with only 12% of those with no qualification strongly/agreeing compared to 31% of those with a science PhD.[10] (See figure 11)

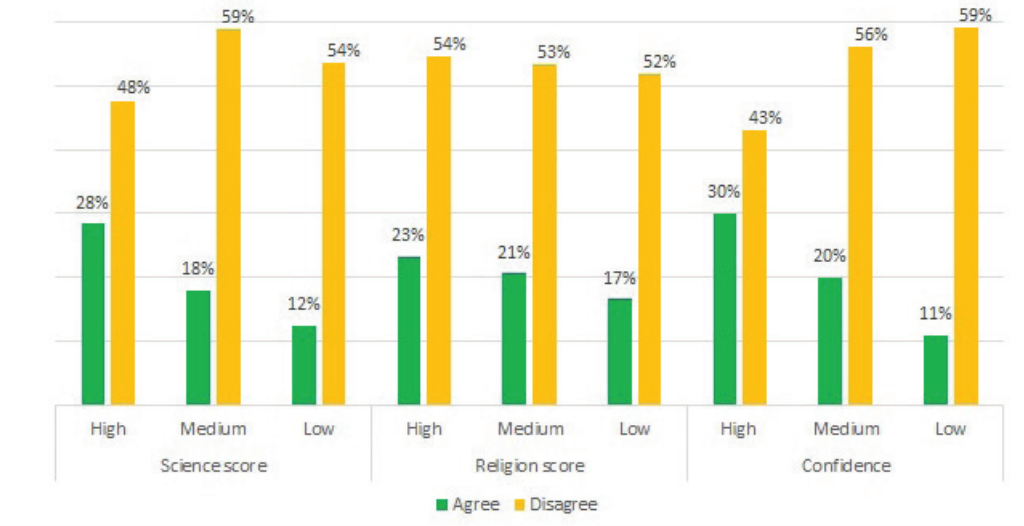
Figure 11: "I would consider getting an AI companion in the future": by terminal level of science education



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

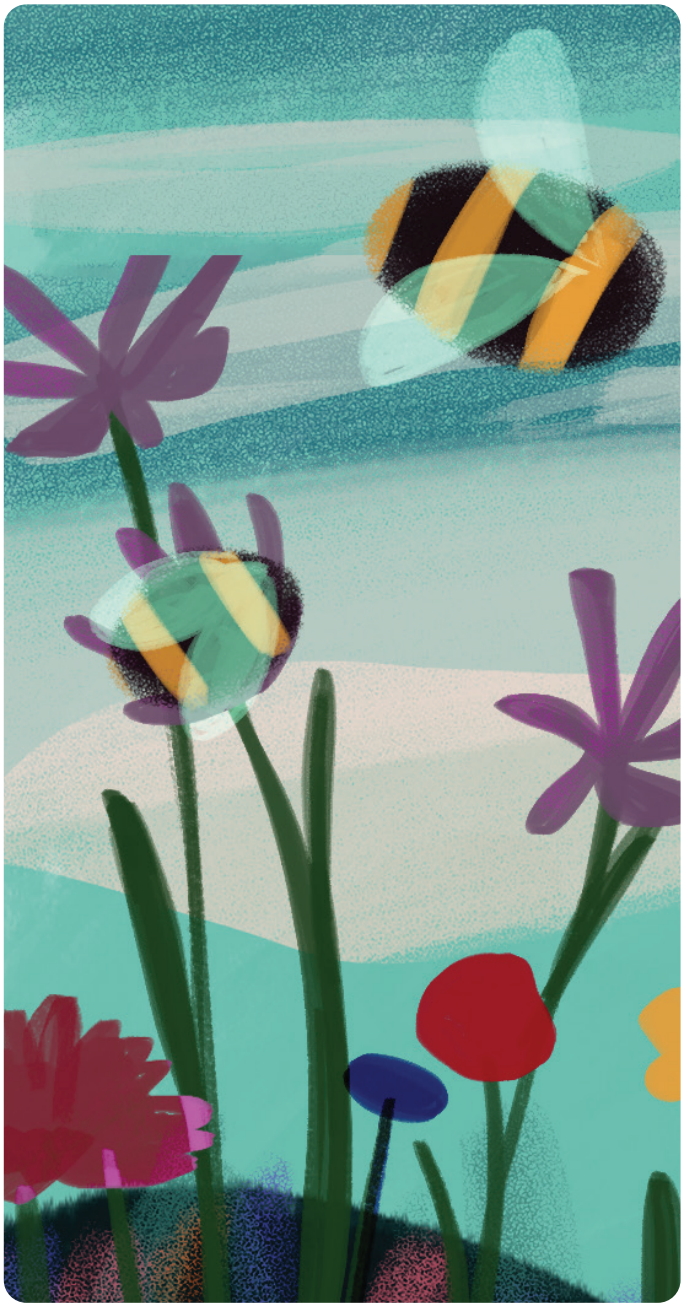
We were also able to assess people's views on this according to their knowledge of and confidence in science, and religion. Those who have high confidence in their knowledge of science and those with a higher level of science knowledge (not necessarily the same group!) displayed higher levels of agreement than those with a low science knowledge and science confidence score (see figure 12). There was less difference according to level of religion knowledge.[11]

Figure 12: "I would consider getting an AI companion in the future": by science / religion knowledge, and by confidence in science knowledge



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

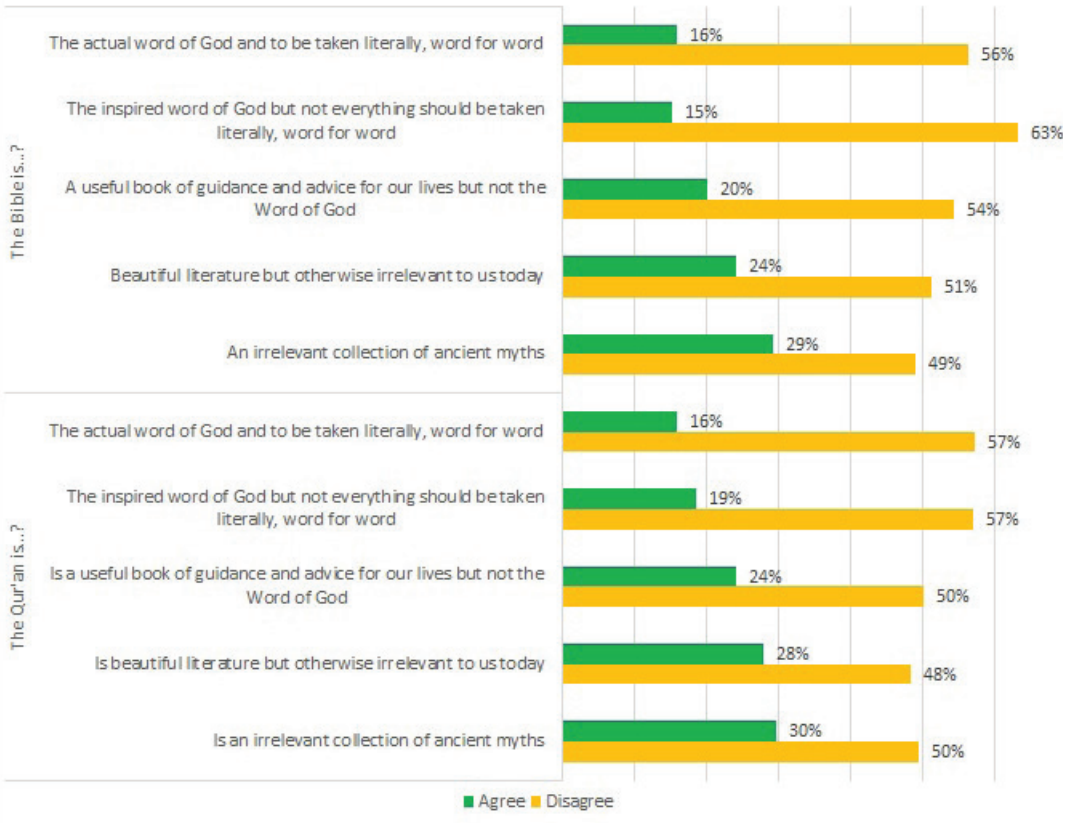
When it came to religion, the results showed that those who are not-religious are slightly more likely to think about getting an AI companion (24%) compared to those who call themselves Christians (14%) or Muslims (16%).[12] This trend could also be seen in religious practice and attendance. Only 14% of those who attend religious services regularly (one a week / fortnight) strongly/agreed they would get an AI companion, compared to 21% of those who never attend a religious service.[13]



Similarly, we found that those who never pray or never read holy texts show slightly higher levels of interest in getting an AI companion in the future. 23% of those who state that they never pray agree with this statement (vs 51% who disagree), 18% of those who occasionally pray agree, and 14% of those who pray frequently (i.e. every week/ several times a week/ once a day/ several times a day). Similarly, 14% of those frequently/ daily read the holy texts agree compared with 21% of those never read holy texts disagree (vs. 53% who agree).[14]

We found that this religious dimension is also present in how individuals *view* the Bible and the Qur'an, in so far as those who hold more literalist views of holy texts are less likely to consider getting an AI companion. Figure 13 shows a clear trend that those who view holy texts are irrelevant are more likely to consider getting an AI companion in the future.[15]

Figure 13: "I would consider getting an AI companion in the future": by attitude to Bible or Qur'an



Source: Theos/ Faraday/ YouGov 2022: Q 13_11 (total n= 5153)

Reflection

New technology always provokes suspicion. There are always 'early adopters' and always 'irreconcilable Luddites', but the balance of public opinion naturally tilts towards wariness in the initial stages of something new.

This is clearly the case in the three instances explored in this paper. Self-driving cars, least unfamiliar, are on their way to becoming unexceptional; robot surgeons are not (although the question asked here was far more demanding). Perhaps most surprisingly, one in five people (20%) *would* consider getting an artificial companion in the future – although whether this is because respondents instinctively thought of digital assistants (e.g. Alexa, Siri etc.) or even robot pets, rather than self-conscious humanoid robots (like Klara), is impossible to tell.

All the signs for technology "adoption" are present. Younger people are more open to these things than older ones. People with higher education are similarly more positive. Effectively, where the younger and the opinion formers are today, the rest of us follow tomorrow.

However, there is still an open question about how *far* we will follow?

There are certain *practical* reasons why our levels of trust here might stall. Driving a car is one thing, albeit still a very complex one in certain circumstances. Conducting surgery is another. The public's resistance here may have something to do with lack of trust in a machine ever being able to deal with complications that can arise during surgery.

However much a barrier this might be, though, it is still a practical one, driven by a concern with the lack of competency inherent in AI. A far bigger question is whether there is a *principled* objection.

Surgery is an intimate act in which an individual is vulnerable and for which they may simply feel more comfortable and cared for with by a (similarly vulnerable) human being. There is a similar element to discussions around artificial friends. Driving is a task. Surgery is, in large measure, a task. Companionship is not. Perhaps there is something about the intimacy, sympathy and mutual vulnerability inherent in companionship – or at

least in friendship – that will always rule it out for AI.

Even if this were the case, however, that does not mean we won't see AI companions at some point. After all, most people prefer to speak to human beings when dealing with customer service issues but that has not prevented many large organisations from fully automating their customer service lines, on the grounds of cost and efficiency. In a similar vein, we may not *plan* to have AI companions. The public may actively resist them. But those steering the course of AI may still head us all in that direction, perhaps by intermediary stages of, for example, robot pets.

Given what appears at the moment to be a noticeably gendered dimension to public opinion on this issue – and Silicon Valley's "stunning gender equity gap" – it is very important that we don't simply assume public acceptance of these issues or imagine that all barriers to AI advancement are based only on technical competency or public unfamiliarity. There may be some functions and some roles that on principle remain closed to AI.

Discussion Points

- Where in our lives do we most use AI now (in as far as we know!) and where do we instinctively feel there to be a limit to this usage?
- If there is a limit, is it a practical one, or are there principled reasons behind it?
- It seems obvious why there is an age differential in public responsiveness, but why is there consistently a gender one?
- It is sometimes said that technology is a wonderful tool but a terrible master. But is it possible to keep it simply as a tool?
- Is there an irreconcilable tension between public opinion and Silicon Valley techno-optimism here?

Appendix 1: Survey Details

The quantitative element of this research surveyed 5,153 UK adults, in fieldwork conducted by YouGov between 5 May and 13 June 2021. The survey was conducted using an online interview administered to members of the YouGov Plc UK panel of 800,000+ individuals who have agreed to take part in surveys. Emails were sent to panellists selected at random from the base sample. The e-mail invited them to take part in a survey and provides a generic survey link. Once a panel member clicked on the link, they were sent to the survey that they are most required for, according to the sample definition and quotas. Invitations to surveys don't expire and respondents can be sent to any available survey. The responding sample was weighted to the profile of the sample definition to provide a representative reporting sample. (The profile is normally derived from census data or, if not available from the census, from industry accepted data.) Theos has analysed data provided by YouGov.

Appendix 2: Science knowledge and religion knowledge

The Ipsos/ MORI Public Attitudes to Science survey, conducted on behalf of the Department for Business, Innovation and Skills, in 2010 and 2014 examined UK public attitudes to science, scientists and science policy. As part of the survey, the questionnaire put a series of nine factual, 'textbook' style questions, to respondents and invited people say whether they think each is definitely true, probably true, probably not true, definitely not true (or don't know). Responses were coded in such a way as to categorise respondents, according to how right and how confident were their answers, into three groups – of high, medium and low science knowledge. We adopted the same approach in this survey, with the same statements for science knowledge, and developed our own for religion knowledge. In each case we were able to categorise respondents according to whether they were in the top, middle or bottom third of the scores.

1 An independent samples t-test found a significant effect for gender, t(4925) = -12.6, p <.001, in which women present higher levels of reluctance to getting into a self-driving car.

2 A chi-square analysis demonstrates a significant association between age and the likelihood of getting into a self-driving car, χ^2 (25, N= 5153) = 358.7, p=<.001.

3 An independent t-test found a significant association between Christians and the non-religious, t(3816) = 9.4, p<.001.

4 39% of those in full-time education disagreeing that they would be reluctant to get into a self-driving car compared to only 15% of those who finished education aged 15 or under, 19% who finished at 16, 22% who finished education at 17- 19 and 28% who finished education over the age of 19.

5 A chi square analysis revealed that an individual's terminal level of science education has a significant relationship with the levels of reluctance of getting into a self-driving car: χ^2 (24, N=5153) = 198.7, p=<.001

6 An independent samples t-test found a significant effect for gender, t(4711) = -13, p<.001, in this sense it is clear that men have statistically significant higher levels of agreement for allowing a robot to perform surgery on them rather than a human surgeon in comparison to their female counterparts.

7 High science knowledge score (9%) medium science knowledge score (5%) low science knowledge score (6%). The same trend was found when it came to religious knowledge with 8% of those with a high knowledge score agreeing compared to 7% with a medium score and 6% of those with a low score.

8 An independent t-test found a significant effect of gender in how individuals responded to this statement, t(4383) = -16, p.001, with men consistently being more likely to consider getting an AI companion in the future.

9 A Chi-square analysis demonstrates that there is an age dimension to the way in which individuals respond to this question with those who are younger being more likely to get an AI companion in the future: χ^2 (20, N=5153) = 204.9, p=<.001

10 A further chi-square analysis depicted that higher levels of terminal science education has a significant relationship with the likelihood of getting an AI companion in the future: χ^2 (24, N=5153) = 168.9, p=<.001

11 All results were statistically significant: science knowledge score: χ^2 (8, N=5153) = 140.6, p=<.001, religion knowledge score: χ^2 (8, N=5153) = 29.4, p=<.001 and confidence in one's own science knowledge: χ^2 (8, N=5153) = 216.8, p=<.001

12 It is important to note that the overall sample of Muslims was small (n=226) and as such these results are descriptive and offer food for thought but are not indicative of the entire Muslim community in the UK. However, this is not the case for the Christian (n = 1634) or the non-religious sample (n = 2674), whose numbers create higher levels of reliability and validity of representation of their community.

13 21% of those who state that they never attend religious services agree with this statement (vs 52% who disagree), 18% of those who occasionally attend religious services agree (vs 57% who disagree), 19% of those who attend religious services once a month agree (vs 58% who disagree), and 14% of those who attend a religious service once a week / fortnight agree (vs. 63% who disagree)

14 All results were statistically significant: prayer: χ^2 (20, N=5153) = 95.3, p=<.001, religious attendance: χ^2 (16, N=5153) = 50.8, p=<.001, religious affiliation: χ^2 (68, N=5153) = 165.6, p=<.001, read holy texts: χ^2 (16, N=5153) = 42.15, p=<.001

15 Bible: χ^2 (20, N=5153) = 133.3, p=<.001, Qur'an χ^2 (20, N=5153) = 135.7, p=<.001

Theos is the UK's leading religion and society think tank. It has a broad Christian basis and exists to enrich the conversation about the role of faith in society through research, events, and media commentary.

Published by Theos in 2022 © Theos

Theos Licence Department
77 Great Peter Street
London SW1P 2EZ

+44 (0) 20 7828 7777
hello@theosthinktank.co.uk
theosthinktank.co.uk

'THEOS'

The Faraday Institute for Science and Religion