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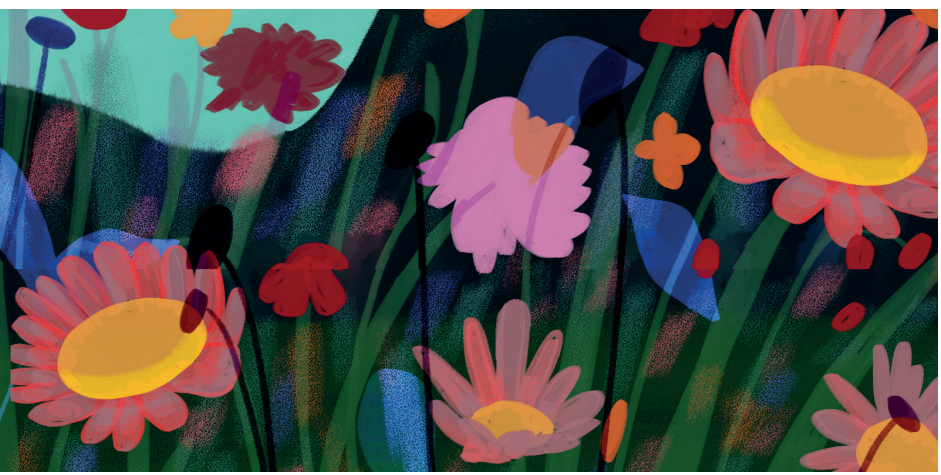
Report

‘Science and Religion’: Moving away from the shallow end

Nick Spencer and Hannah Waite



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

ISBN 978-1-8382559-1-6

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Report

‘Science and Religion’: Moving away from the shallow end

Nick Spencer and Hannah Waite

“‘Science and Religion’ is a lot like a swimming pool.
All the noise is up at the shallow end.”
Various (adapted)

“I think Taylor Swift has much more to say on the concept of love than Richard Dawkins. And you can quote me on that.”
(Interview #35)

This report in 30 seconds

We have got the science and religion debate all wrong, or at least out of proportion.

We have focused heavily (sometimes exclusively) on a limited number of (scientific) topics – in particular evolution and the Big Bang – and often on the loudest voices in those debates.

However, research shows that none of these topics is, in fact, a big issue for the (religious) public.

In reality, both science and religion are highly complex, contestable, 'polyvalent' terms, which means the science and religion debate is similarly complex.

This report draws out six different 'dimensions' within the science and religion debate and argues that for each we should abandon the shallow end and go deeper. Specifically, we need to go beyond:

- **faith vs fact**, when it comes to what we know
- **natural vs supernatural**, when it comes to what we think about reality
- **literal vs metaphorical**, when it comes to how we read holy books
- **material vs spiritual**, when it comes to how we understand what it means to be human
- **moral polarisation**, when it comes to how we think about our ideas and practices
- **'playing god'**, when it comes to who decides about the progress of science and technology

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Acknowledgements

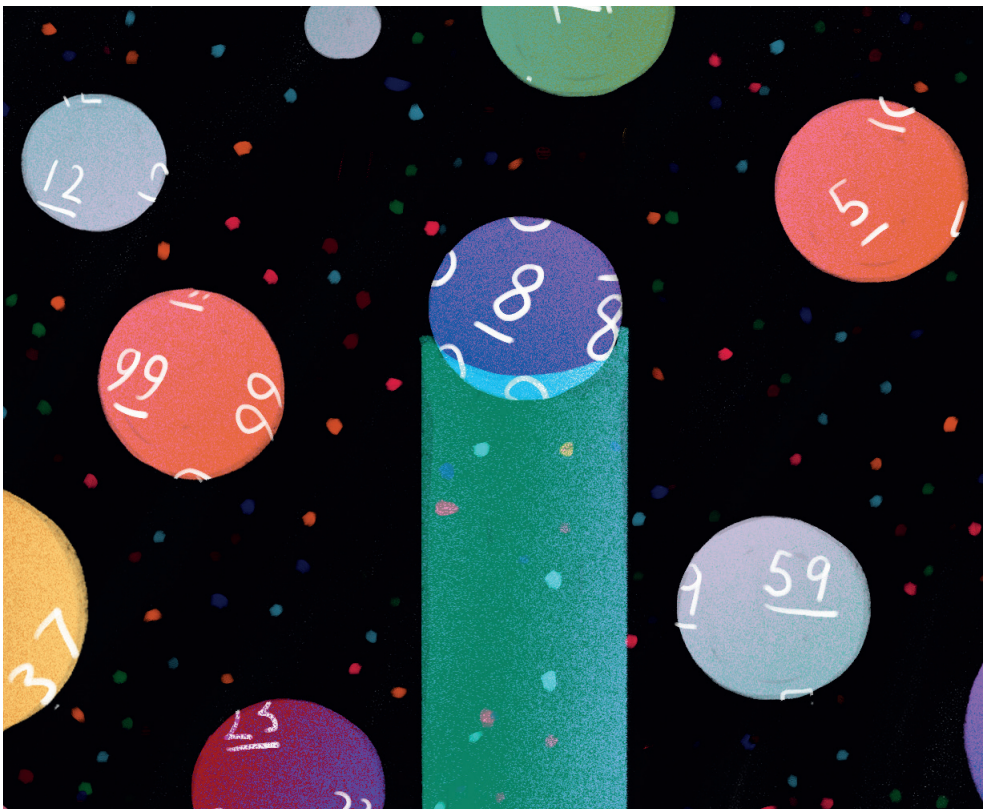
This report is the first fruits of a three-year project, conducted by Theos and The Faraday Institute for Science and Religion, and funded by the Templeton Religion Trust, into the landscape of science and religion in the UK today. The grant was for mapping the landscape of science and religion conflict in the UK – in effect, to explore what exactly people are disagreeing about when they disagree about science and religion. The answer(s) are not as straightforward as many assume.

We would like to thank the Templeton Religion Trust for their generous funding of the project, as well as the hundred-plus scientists, philosophers, theologians, and journalists, who gave up their time to be interviewed.

Nick Spencer & Hannah Waite, Theos

Keith Fox & Paul Ewart, The Faraday Institute for Science and Religion

Executive Summary



The angry hostility towards religion engineered by the New Atheist movement is over.

About 15 years ago (around the time that Theos and The Faraday Institute were launched), a ComRes poll found that 42% (!) of UK adults agreed that "faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate." Today, that figure is 20%.

By comparison, 46% of people today agree that "all religions have some element of truth in them", 49% that "humans are at heart spiritual beings", and 64% of people agree that "there are some things that science will never be able to explain."

This shift was typified by one of our expert interviewees, a strong atheist, who said (unprompted):

> *"I want it on record, don't just list me as an atheist in the Richard Dawkins type. Because I am not an atheist like him at all." (#63[1])*

The movement has, however, left (or arguably fortified) a legacy of antagonism, particularly around science and religion.

The British public are more likely, by a proportion of 2:1, to think that science and religion are incompatible (57%) than compatible (30%).

There is an even more pronounced difference (3:1) between those who think they are *strongly* incompatible (22%) than those who think they are *strongly* compatible (7%).

This issue has a noticeable gendered and ethnic dimension.

Men are more likely to voice an opinion on this matter and to be hostile than are women.

Conversely, respondents from non-white ethnic groups are more likely to be positive than white respondents.[2] Of those who expressed an opinion, 68% of white respondents were on balance 'incompatible', compared with 48% of those from non-white ethnic groups respondents.

In effect, white men are the group most likely to have a negative view of science and religion.

On closer inspection, tension with *specific* sciences is much less than with 'science' in general.

If you ask people about their view of religion and science (see above), they are likely to lean towards incompatible. If you ask them about religion and a *specific science*, e.g. neuroscience, medical science, chemistry, psychology, geology or even cosmology, they are more likely to say that, on balance, it doesn't make it hard to be religious.

> "
>
> **This seems to be a conflict of image rather than substance.**

A similar point can be made for *specific religions*. The perception of hostility between 'science and religion' is greater than it is between 'science and Christianity' or 'science and Islam'. In other words, this seems to be a conflict of image rather than substance.

Perhaps most tellingly, **although much of the science and religion debate has been focused around evolution, the data show that only a small minority of people (including religious people) reject evolution.**

When asked whether there is "strong, reliable evidence to support the theory of evolution", 74% of people agree (42% strongly) compared with 6% who disagree (3% strongly)

Religious people and even regular worshippers are only marginally more antagonistic to the theory of evolution than non-religious.

Even among strict biblical literalists, a small group (3%) who are traditionally the most hostile to Darwinism, only just over a third rejects evolution.

More generally, the religious are no more antagonistic towards science itself than are the non-religious.

When asked whether they agreed that "the dangers of science outweigh its benefits", 9% of the total population agreed or strongly agreed (hereafter: strongly/agreed), whereas 65% disagreed or strongly disagreed (hereafter: disagreed/strongly). In comparison, 12% of the religious strongly/agreed that "the dangers of science outweigh its benefits" whereas 61% disagreed/strongly.

Only the small number of textual literalists[3] differed (22% agreed/strongly that science's dangers outweigh its benefits vs 31% of people disagreed/strongly).

In short, **much of the science and religion 'battle' has been smoke** – and there has been a lot of smoke – **but without much real fire**.

For this research project, **we conducted over a hundred in-depth expert interviews** (with scientists, philosophers, sociologists) **and commissioned a YouGov survey of more than 5,000 UK adults**, to ascertain both the depth and the breadth of the science and religion debate. Details of these are

given in appendices. All data given in the report are from these surveys, unless otherwise stated.

The contention of this report is that the science and religion debate has been distorted by being viewed primarily through a few narrow lenses – in particular, evolution ("vs creation(ism)"), the Big Bang ("vs God"), and neuroscience ("vs religious experiences") – and because these are 'conflictual' lenses, the resulting picture is one of wholesale conflict, a conflict that the public *feels* but finds it hard to locate or explain.

This is *not* to deny that there are still tensions and conflicts in the debate (chapter 3 explores where these lie). It is, rather, to claim that the debate so far has too often been a 'shallow end' one. The familiar issues are essentially surface ones that float on much more substantial, or deeper, concerns. The report highlights six of these:

Epistemology: how do we know what (we think) we know?

Metaphysics: what is the fundamental nature of reality?

Hermeneutics: how do we read texts, particularly authoritative religious ones?

Anthropology: what does it mean to be human?

Ethics: what is good and how do we progress as a society?

Politics: who gets to decide?

These are key to the science and religion debate and for each one we argue, on the basis of our expert interviews, that we need to move away from the shallow end and towards a 'deep end', where the debate is messier but more honest

(and more interesting). To give examples from our expert interviewees:

Epistemology

"I think there are different ways of arriving at knowledge about the world... we arrive at knowledge about the world, about ourselves, about other people, in different ways." (#15)

Metaphysics

"Quite often, this debate that religion is supernatural, science is natural, which you tend to hear quite a lot in my job, I don't necessarily think it does exist." (#99)

Hermeneutics

"I think the world is a bit messier than simply an either-or about texts and textual history. It depends what the boundaries you set are for interpretation." (#65)

Anthropology

"Although there are tensions within modern thinking, I don't think they're specifically problems for religious belief, they're problems for our ways of thinking about ourselves as human beings." (#5)

Ethics

"I think there is a real tension [here] but I think it's an area, having said that, where having religious people and scientists together discussing it can be very interesting and possibly fruitful." (#47)

Politics

"Who has authority? Who are the priests in a society? Is it people with neuro in front of their name, or is it the Archbishop

of Canterbury? Is it the chief medical officer, speaking into a pandemic or is it some religious professional? Who's going to listen to whom?" (#84)

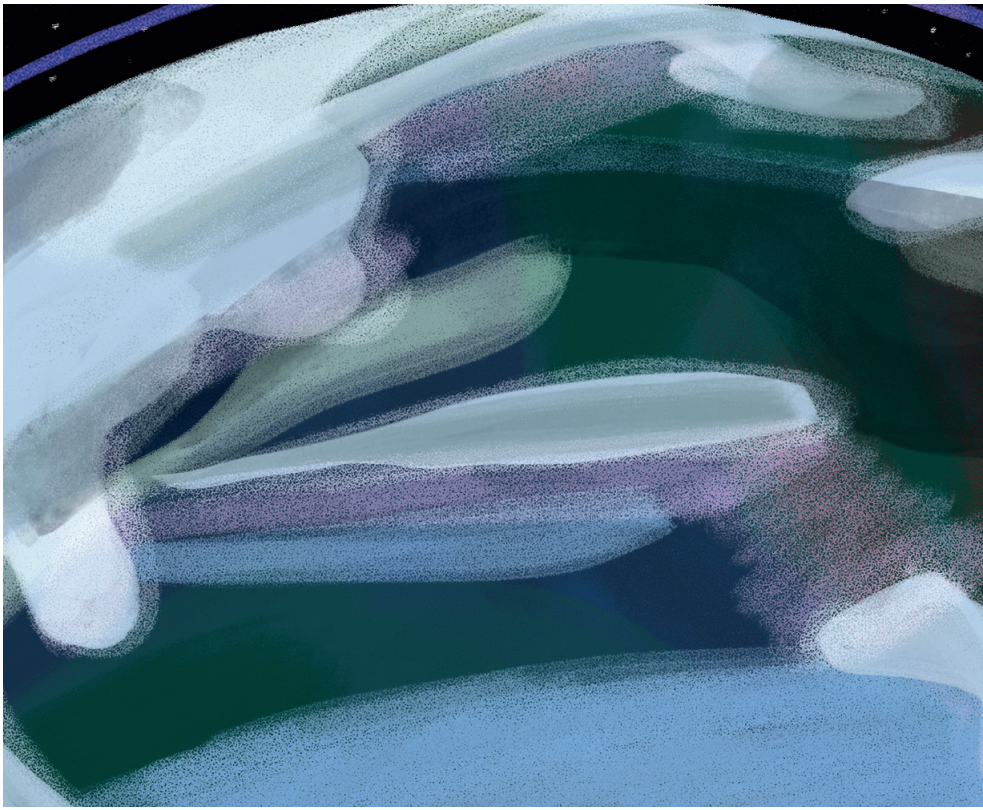
It may well be – indeed it will be – that after considering all these different dimensions, many people will still find themselves in a position of 'incompatibility' in the science and religion debate. Others may be more positively disposed. Either way, we hope that everyone will be where they are on the basis of a deeper and more nuanced discussion.

1 All interviews conducted for this project have been anonymised. A full list of interviewees can be found in Appendix 1.

2 The sample size for non-white respondents was 695, compared to a total of 4,458.

3 This phrase is used throughout (instead of fundamentalist) to denote those respondents who agreed that the Bible [or the Qur’an] is “the actual word of God and to be taken literally, word for word.”

Introduction



This report is written from the conviction that the science and religion conversation is one of the most interesting and complex we can engage in, but that it has frequently gravitated to a small number of narrow topics that have sometimes been dominated by a few loud voices. We hope to challenge and change that.

The deep complexity of the conversation comes from the fact that both science and religion are large, sprawling, and ill-defined categories. Work by historians has highlighted how that has long been the case – science and religion being vast, shifting, unbounded "territories" – and how, therefore, most *historic* accounts of the relationship between the two, particularly those that focus on their relentless "warfare", have been simplistic.[1]

We argue that this is also the case today and that the frequent reduction of science and religion to disputes about evolution, cosmology, and neuroscience – or worse, to staged and exaggerated clashes between evolution and creationism; God and the Big Bang; spiritual experiences and brain chemistry – does not do justice to the importance of the overall conversation.

We want to emphasise that we are not suggesting that once we have widened the camera lens sufficiently, we will necessarily realise that all is harmony between science and religion. The research, in particular that laid out in chapter 3, makes it clear that even (indeed, especially) once we have widened and deepened this debate, we will still find points of difficulty, tension and conflict.

But that is not a problem. Properly speaking (as a number of philosophers and sociologists of science and practising scientists themselves pointed out in our interviews), science

itself is an inherently conflictual process. Disagreement is not a problem.

There is no reason why the science and religion conversation should be any different. In the process of those disagreements, some will come to a place of broad compatibility between science and religion, some to one of broad incompatibility, and some will linger in ongoing contestability. That is fine. Premature or unwarranted harmony is almost as bad as staged and exaggerated conflict.

What we hope is that, wherever people do find themselves on this issue, they do so on the basis of the best and most nuanced thinking possible, and that, in the process, they get a taste for quite how stimulating and intellectually provocative the field of 'science and religion' really is.

Nick Spencer & Hannah Waite
London, 2022

Science itself is an inherently conflictual process. Disagreement is not a problem.

1 See Peter Harrison, *The Territories of Science and Religion* (University of Chicago Press, 2015)

A note on data

This report draws on two major new data sources. The first is qualitative, the second quantitative.

Between the autumn of 2019 and the autumn of 2020, we interviewed 101 experts for this project. They came from a wide variety of backgrounds, including scientists[1], philosophers, sociologists, theologians, ethicists, specialists in biblical studies and in religious studies, and communicators and journalists specialising in either science or religion. All interviews were recorded and transcribed for analysis. A full list of interviewees is given in Appendix 1, along with more information concerning the recruitment of interviewees and the analysis of the resulting data. Although many said they were happy to be quoted by name, some were not and we have preserved the anonymity of all our subjects (the numbers for interviewees above do not correspond with the list in the Appendix, which is alphabetical).

Between 5 May and 13 June 2021, YouGov conducted a quantitative survey of 5,153 UK adults. The research was conducted using an online interview, developed by Theos, The Faraday Institute for Science and Religion, and YouGov, and administered to members of the YouGov Plc UK panel of 800,000+ individuals who have agreed to take part in surveys. The respondents were then weighted accordingly to make up a demographically representative national sample. More details of this element of the research are included in Appendix 2.

1 The scientists came from a range of disciplines including archaeology, anthropology, astrophysics, evolutionary biology, chemistry, cosmology, engineering, gerontology, mathematics, medicine, natural sciences, parapsychology, physics, psychology, and psychiatry.

1. Science and religion: what it isn't

Life at the shallow end

We have got 'science and religion' all wrong. That is the contention of this report.

Well, perhaps not *all* wrong, but certainly out of perspective. Science and religion *is* an 'issue' – a widespread, animated, important and sometimes angry discussion – but it is not the conversation we have, as a rule, been having.

An opening claim of this nature is normally followed by another, which usually runs along the lines of: "We've got science and religion all wrong... because we assume there is conflict between them when actually the relationship is one of harmony. If we want to get science and religion right, we've got to stop assuming they are in conflict."

This is *not* the claim we are making here. To be clear, neither are we claiming the opposite, namely that science and religion are locked into some kind of irreducible conflict. Rather, we are making an altogether different and (we think) more interesting claim, a claim that doesn't require people to reach a definitive answer to the question of 'harmony or conflict'. Indeed, it's a claim that renders the whole 'harmony or conflict' question redundant or, at least, inadequate.

> **"The whole 'harmony or conflict' question is redundant or, at least, inadequate.**

The claim is that we have got the science and religion issue all wrong because we have focused on what is, in reality, a very small – and sometimes very noisy – part of the discussion, and ignored much else that the debate encompasses. Much of the *discussion* about science and religion, and almost all *argument* about it, has fixated on a handful of specific issues, pertaining

to scientific disciplines, that have dominated public debate in this area.

The debate over religion and science is like the proverbial swimming pool, where all the noise is up at the shallow end.

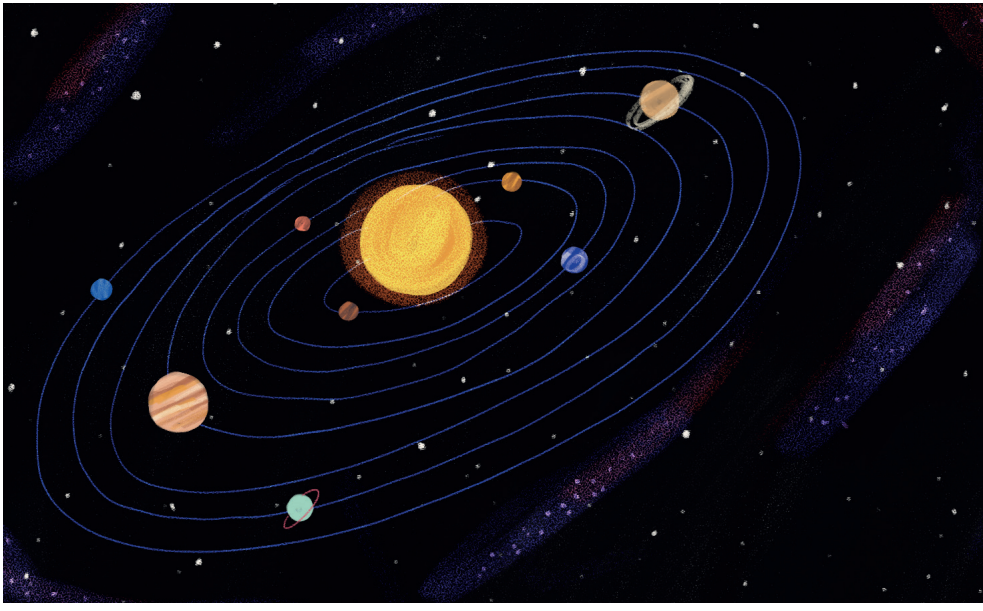
These are interesting and important issues but, between them, they have assumed huge proportions. Moreover, as we shall note in this chapter, public opinion on these issues is rather more mixed than the combative 'either/or' picture allows. This report is an attempt to emerge from the shadows cast by these issues (and the way we have treated them) and into the light of a field that is much bigger (and much more interesting) than we have heretofore assumed. Or, with reference to the subtitle of this report, the debate over religion and science is like the proverbial swimming pool, where all the noise is up at the shallow end. The objective of this report, and the research behind it, is to open up the rest of the pool and encourage people to go deeper.

The usual suspects: evolution, cosmology, neuroscience

The topic that has most often dominated the science and religion debate is, of course, evolution, the sometimes bizarre and often bad-tempered confrontation between Darwinists and those who reject the theory.

The best known and most influential figure in the science and religion debate over the last 40 years has been Richard Dawkins, the British evolutionary biologist and best-selling author, who has not only made a powerful case for a gene-centred understanding of evolution, but has repeatedly framed evolution and religion as competitors for the same

truth. Religion, by his reckoning, is "a scientific theory",[1] "a competing explanation for facts about the universe and life,"[2] and, more specifically, a straightforward alternative to evolution: "God and natural selection are... the only two workable theories we have of why we exist."[3] By no means all evolutionary biologists adopted his line on the issue. The late American paleobiologist Steven Jay Gould not only disagreed with Dawkins' interpretation of evolution but also with his views on science and religion.[4] Nevertheless, the very fact that this became a debate between two evolutionary biologists further helped root the whole issue in this field. As a result, media coverage of science and religion has been heavily weighted to discussions around evolution, aided by the Darwin celebrations in 2009,[5] and even research on science and religion has been heavily skewed in that direction.[6]



It hasn't all been evolution. Another famous scientific figure, Stephen Hawking, was associated with science and religion ever since he ended his best-selling 1988 book *A Brief History of Time* with a line about knowing the mind of God.[7] Hawking was an atheist, albeit a less combative one than Dawkins. He was clear that his famous concluding phrase was entirely figurative, and pitted his discipline against religion, in a way that drew a riposte from fellow cosmologist and longstanding friend, Lord Martin Rees.[8] As with the dispute between Dawkins and Gould, whichever side you took in this particular dispute, you still found yourself standing within a particular disciplinary field, science and religion positioned as an intramural cosmological debate.

The third usual suspect is neuroscience. This part of the debate usually lacks the fireworks of the others, and often adopts a somewhat humbler tone if only because most people recognise that we are a long way from understanding how the brain works. Nevertheless, since the link between epileptic seizures and religious experiences was first probed by neuroscientists, the idea of a 'God spot' or that the spiritual was 'all in the mind' has fascinated a wider audience, and gained much media attention.[9]

We need to be clear. Evolution, cosmology and neurotheology (as the interaction between neuroscience and religious studies has come to be known) *are* important parts of the science and religion debate. Moreover, it is easy to see why we have put such a focus on them.

Although it is not clear exactly how many Americans reject evolution, there is no doubt that the figure is large.[10] At least 18% and possibly as many as 40% of Americans reject the theory, and these figures rise to over 50% among evangelicals.[11]

Given the way in which Britain has repeatedly adopted and adapted American cultural trends over the last 70 years, it is hardly surprising that some have been worried about the emergence of a US-style creationism in the UK.[12]

The reason for the focus on cosmology is less fraught. While there is some evidence that many Americans are resistant to the idea of the Big Bang, the issue has not gained the level of noise that Darwinism has.[13] It doesn't really need to, however. Cosmology naturally gravitates to metaphysics, invariably drawing on ideas of creation, contingency, necessity, lawfulness, and eternity in its rhetoric. Even if it's only for marketing purposes, God is popularly invoked in the title of books on the Big Bang or high energy physics.[14] Moreover, the prominence of the creation story – technically two creation stories – at the start of the book of Genesis, lends the idea of creation a religious significance. If only because they come together around the moment of creation, it feels obvious to find evidence for the science and religion debate within this particular scientific discipline.

The prominence of neurotheology is less connected with any deep antagonism or putative culture war, and is not linked to any US trend that Europeans expect to find arriving on their shores any time soon. It is, however, wrapped up with our most intimate subjective experiences and with what it means to be human, as well as with one of the fastest moving scientific areas, the development of Artificial Intelligence. In the light of this, the relevance of neuroscience and its connection with neurotheology is obvious.

In short, it is easy to see why we have fixated on evolution, cosmology and neuroscience, and this report does not claim that they are not important. What it does claim is that by

focusing on them, and, in particular, doing so in the way we have done, we do the true science and religion debate a disservice. We risk reducing the complex wider debate to a single question – evolution or creation? Big Bang or God? Neurochemicals or spiritual experience? – and, thereafter, a single model: harmony or conflict?

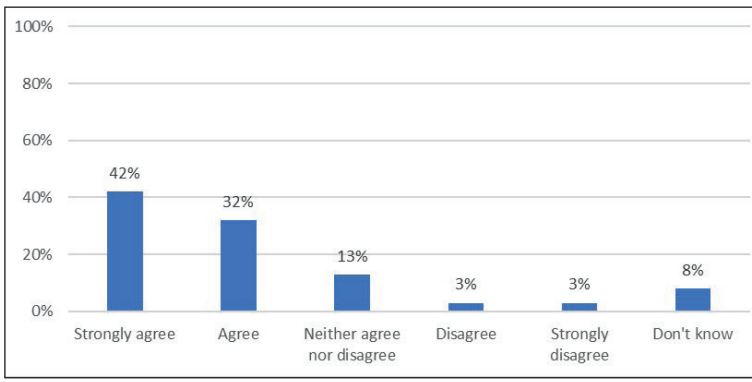
This matters not only because obscuring and simplifying complex discussions serves no one well, but also because it isn't even a true reflection of these 'usual suspect' topics. When you burrow into the data around public (let alone expert) opinion on evolution, cosmology, and neuroscience, you begin to realise that none of these topics is as significant or as contentious in the landscape of science and religion as you might think.

How big an issue is anti-evolutionism in the UK?

Research conducted by Fern Elsdon Baker, Amy Unsworth and others has shown that the anti-evolutionism issue in the UK is complex, subtle and not as bluntly oppositional as it is in the US.[15]

We put to UK adult respondents a number of questions about evolution in our quantitative survey. When asked whether they thought there is "strong, reliable evidence to support the theory of evolution", 74% of people agreed, 42% agreeing strongly. (See Figure 1) On the surface, this might look like a significant minority – 26% – disagree but, in actual fact, a further 21% don't have an opinion (13% neither agree nor disagree, and 8% say they don't know), leaving about 3% who disagree and a further 3% who disagree strongly.

Figure 1: "There is strong, reliable evidence to support the theory of evolution"

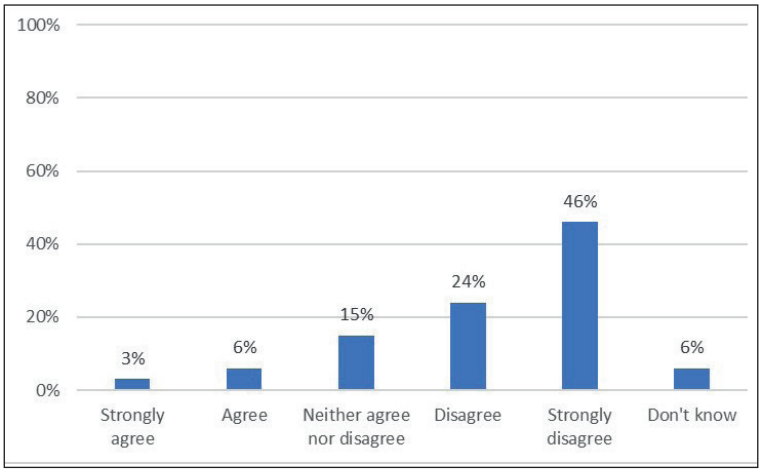


Source: Theos/ Faraday/ YouGov 2021: Q9_1 (n=4754)

As US research has underlined,[16] data on evolution can vary according to how the question is asked, so we also put

a slightly 'softer' version to respondents, asking them the extent to which they agree that they "have difficulty believing in the theory of evolution". In answer to this, 6% agreed and 3% strongly agreed. By comparison, 24% disagreed and 46% disagreed strongly. (See Figure 2.)

Figure 2: "I have difficulty believing in the theory of evolution"



Source: Theos/ Faraday/ YouGov 2021: Q9_4 (n=4742)

It is important not to exaggerate the level of consistency and coherence in the public's view on this question. Research has shown that in public opinion, confusion and indifference tend to win out over any consistent and coherent acceptance or rejection of evolution.[17] For example, when we asked whether people thought that "the earth is billions of years old", 1% disagreed and a further 1% disagreed strongly. However, when we asked whether people thought that "God created the universe, the Earth, and all of life within the past 10,000 years", 6% agreed and 4% agreed strongly. Nevertheless, such

inconsistencies notwithstanding, the data clearly show that the level of evolution rejection is below 10%, and a long way below where it is in the US.

There are differences by religion, but they tend to be small. Of the people who describe themselves as non-religious, 3% disagree/strongly that "there is strong, reliable evidence to support the theory of evolution", whereas 5% of people who say they are religious do so. 'Religion' alone is a relatively weak identifier, however. If we home in on *regular* attendees at a religious service, we find a higher proportion of evolution rejection. For example, of those who say they attend a religious service at least once a month or more, 21% disagree/strongly that "there is strong, reliable evidence to support the theory of evolution". This indicates that there *is* a religious dimension to evolution rejection in the UK. However, closer inspection shows that it is a specific rather than generic religious dimension.

Research has shown that in public opinion, confusion and indifference tend to win out over any consistent and coherent acceptance or rejection of evolution.

We asked respondents their attitude to holy texts, in such a way as allowed us to assess how they read and understood them.[18] Of those who took the Bible seriously but not *always* literally (i.e. who said they believed it is "the inspired word of God but not everything should be taken literally, word for word"), 7% disagreed that "there is strong, reliable evidence to support the theory of evolution" and 4% disagreed strongly. By contrast, of those whose interpretation was more rigidly literal (i.e. who said they believed the Bible is "the actual word of God and to be taken literally, word for word"), this rose to

13% disagreeing and 23% disagreeing strongly. There were similar figures, among those who had the same attitude to the Qur'an, where 39% agreed that "there is strong, reliable evidence to support the theory of evolution" compared with 29% who disagreed.[19] (Caution is in order here as the sub-sample sizes for these groups are quite low.[20]) In other words, for 'textual literalists' (a better phrase than the sprawling and vaguely hostile 'fundamentalists') rejection of evolution was significantly higher – although it is worth noting *that even among textual literalists it was still only a minority view*.

What is important to note here is that only 3% of the UK population said they thought the Bible is "the actual word of God and to be taken literally, word for word", and only 3% thought the same of the Qur'an. In short, evolution was a big problem but only for a small number of religious people – or, more precisely, only for a minority (c. 35%) of the minority (6%) of people who are textual literalists. To return to our controlling metaphor, this small number of people (and their equally vociferous opponents) do tend to make a lot of noise, but they only occupy a very small part of the pool.

Who's afraid of the Big Bang?

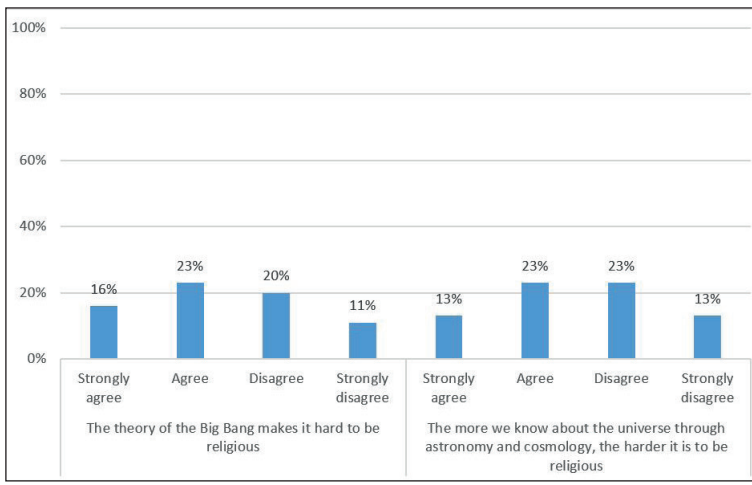
If evolution was a lot of noise at the shallow end, could the same be said of cosmology? We asked respondents a series of questions about whether and how far they thought various specific scientific disciplines make it hard to be religious. In effect, were these specific scientific disciplines (as opposed to generic 'science') considered a barrier to religious belief?

When asked the extent to which they agreed with the statement, "the more we know about the universe through astronomy and cosmology, the harder it is to be religious," 23% of people agreed and 13% agreed strongly. By comparison,

23% of people disagreed with the same statement and 13% disagreed strongly. Public opinion was perfectly divided. (See Figure 3)

Probing the issue still further, we asked people the extent to which they agreed with the statement, "the theory of the Big Bang makes it hard to be religious". In response to this 23% of people agreed that it did and 16% agreed strongly, whereas 20% of people disagreed and 11% disagreed strongly. (Figure 3)

Figure 3: "The more we know about the universe through astronomy and cosmology, the harder it is to be religious" and "The theory of the Big Bang makes it hard to be religious"



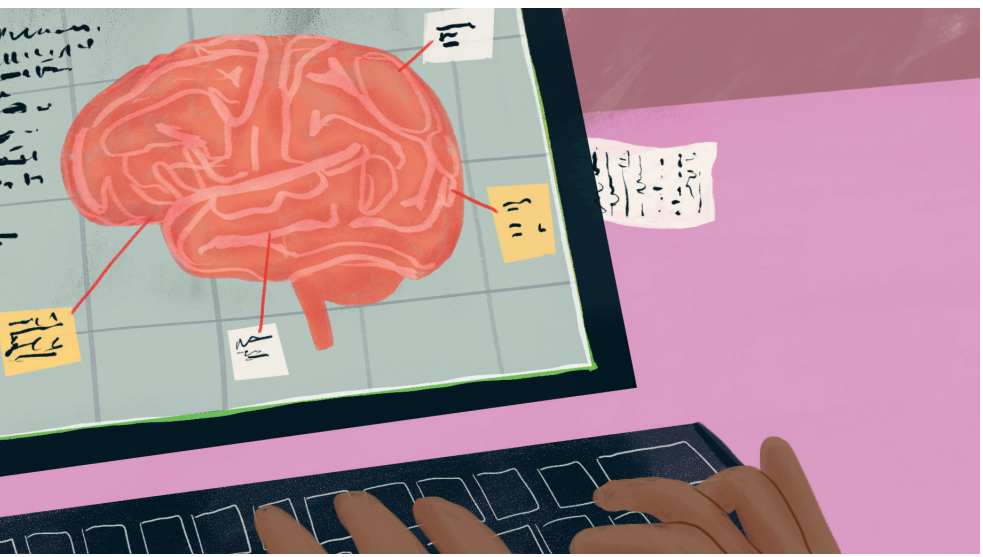
Source: Theos/ Faraday/ YouGov 2021: Q8a_1, Q8a_6 (n=4754)

In other words, there was a slight balance in favour of the belief that the Big Bang theory made it hard to be religious, but it was relatively small, whereas the view on the extent to which cosmology and astronomy made it hard to be religious was evenly balanced. Predictably, these figures changed depending

on the respondents' religious belief. Half (50%) of the non-religious respondents, for example, agreed/strongly that "the more we know about the universe through astronomy and cosmology, the harder it is to be religious", compared to 19% of Christians and 18% of Muslims. That correlation is only to be expected. Either way, what is clear is that antagonism around cosmology issues and religion is considerably lower than around generic 'science and religion'.

Do we think neuroscience is a problem?

How did public opinion here compare to that about neuroscience, or indeed other comparable disciplines like psychology or medical science? If neither cosmology nor the Big Bang were seen as major barriers to religion, was neuroscience?



We put the same question to respondents for three other related scientific disciplines:

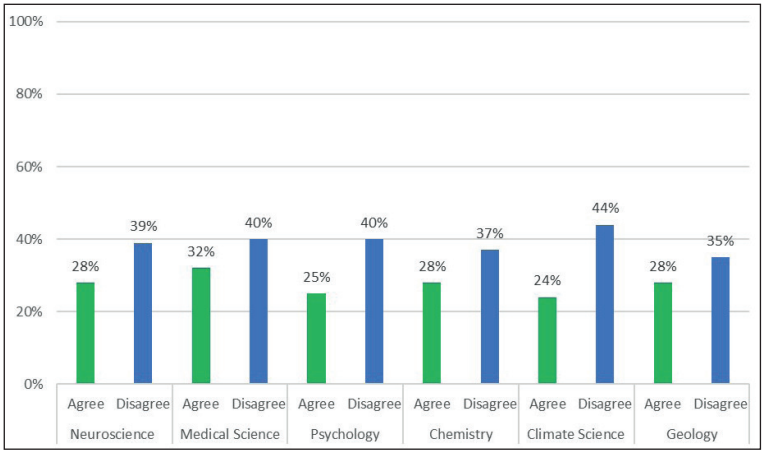
- The more we understand the human brain through **neuroscience,** the harder it is to be religious
- The more we understand the human body through **medical science,** the harder it is to be religious
- Our understanding of the human mind through **psychology** makes it hard to be religious

In addition to these, we also put the same question to respondents with regard to three other scientific disciplines:

- Our understanding of the world through **chemistry** makes it hard to be religious
- Our understanding of **climate science** makes it hard to be religious
- The science of **geology** makes it hard to be religious

As Figure 4 below shows, *no* scientific discipline was judged on balance to make it hard to be religious, in the way that the Big Bang was.[21] For example, for neuroscience, 28% of people agreed/ strongly that the discipline made it hard to be religious, whereas 39% of people disagreed/ strongly. For medical science it was 32% vs 40%; for psychology, 25% vs 40%; chemistry 28% vs 37%; climate science 24% vs 44%, and for geology, 28% vs 35%.

Figure 4: "The more we know about [scientific discipline] the harder it is to be religious"



Source: Theos/ Faraday/ YouGov 2021: Q8a_2-5, 7-8 (n=4754)

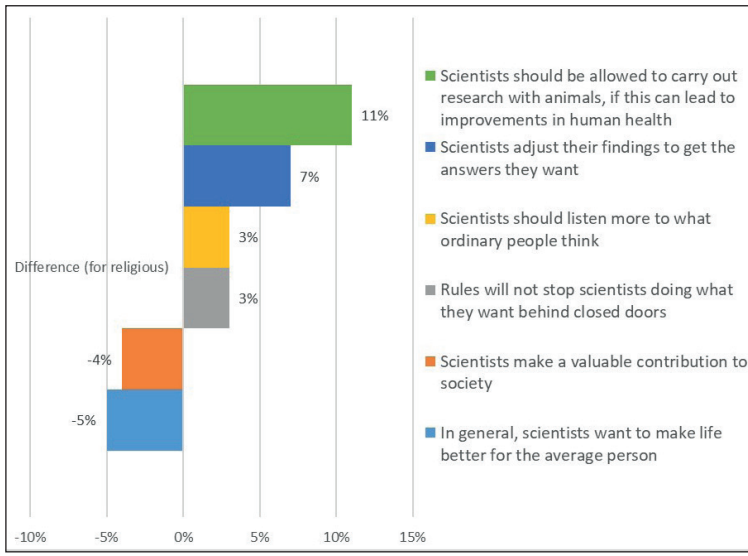
In other words, with the single exception of the Big Bang, no specific scientific discipline was considered on balance to be a barrier to religion. This should not be taken to indicate that people thought specific sciences were necessarily *conducive* to religion. In every instance, a sizeable minority did not. Rather, it shows that public opinion is more balanced and perhaps more nuanced (or perhaps just more confused) than the 'shallow end' debates suggest.

Do the religious have a problem with science?

Looking at the data around evolution, cosmology and neuroscience reveals a more complex, more confused, and less antagonistic picture of public opinion than the 'either/or' style of science-religion debate allows. One more set of data further underlines how the perception of science and religion is distorted.

A previous Theos report, *The Perils of Misperception* (2019), drew on data from a range of surveys including the Ipsos Mori Public Attitudes to Science study, which allowed analysis of public opinion of science and scientists according to people's religiosity. This found that practising religious people were slightly *more critical* of scientific activity than the non-religious; they were, for example, slightly less likely to agree that "scientists make a valuable contribution to society" or that "in general, scientists want to make life better for the average person". (See Figure 5)

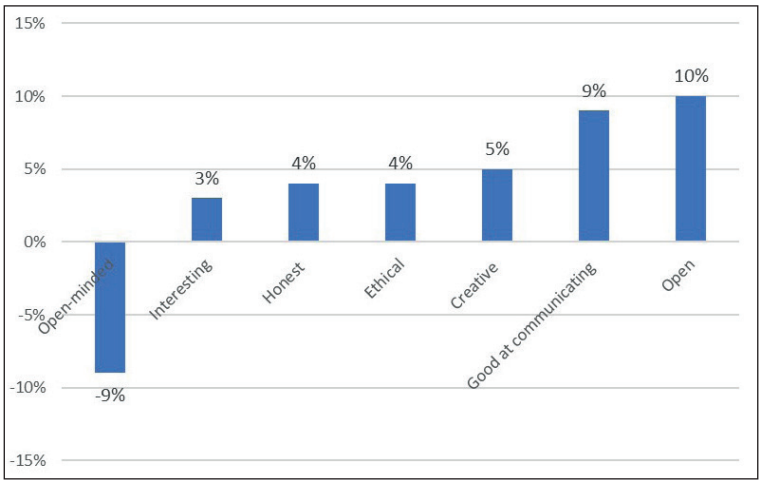
Figure 5: Opinion of scientists' activities -% between (a) religious and (b) non-religious views (a - b)



Source: Public Attitude to Science, 2014; quoted in The Perils of Misperception (2019)

However, it also found that they were slightly *more positive* in their associations of scientists themselves – more likely to judge scientists to be honest, ethical, and creative. (See Figure 6)

Figure 6: Opinion of scientists – % difference between (a) religious and (b) non-religious views (a - b)



Source: Public Attitude to Science, 2014; quoted in The Perils of Misperception (2019)

Whether or not this difference is indicative of anything more than a certain level of cognitive dissonance, it does show that there is little, if any, *generic* hostility to science among the practising religious. At an attitudinal level at least, there is no significant conflict there.

Our survey did not repeat these questions but, instead, included a series of other questions on people's attitude to science. When asked whether they agreed that "the dangers

of science outweigh its benefits", 9% of the total population agreed/strongly, whereas 65% of people disagreed/strongly. Among the religious this balance was 12% vs 61% (non–religious 6% vs 77%) whereas among regular (> once a month) worshippers it was 16% vs 59%.

As with evolution, hostility (or in this instance anxiety) was driven by textual literalists. Of those who thought that the Bible was "the inspired word of God but not everything should be taken literally, word for word", 12% agreed or strongly agreed that "the dangers of science outweigh its benefits", whilst 61% of people disagreed or strongly disagreed – i.e. broadly similar to the national levels. By comparison, of those who thought that the Bible was "the actual word of God and to be taken literally, word for word", 22% agreed or strongly agreed that "the dangers of science outweigh its benefits", whilst 31% of people disagreed or strongly disagreed.[22] There was a similar pattern of evidence according to people's attitude to the Qur'an.[23]

This issue was probed in greater detail when we asked respondents about their relative benefit-risk assessment of various technologies or scientific approaches:

- Stem cell research
- Nuclear power
- Genetically Modified crops
- Renewable energy
- Nanotechnology
- Vaccination
- Animal testing for medical research

For example, only 7% of the overall population said that they thought risks of stem cell research outweighed the benefits.[24] By comparison, 9% of people who call themselves religious thought that risks here outweigh the benefits, whereas 14% of churchgoers did, and 15% of textual literalists. The data for this and other technologies is given below (Table 1)

Table 1: Risk-benefit perception of various technology, by religion

% saying risks (slightly or far) outweigh benefits for...	Overall	Religious	Attend place of worship > once a month	Textual literalists
Stem cell research	7%	9%	14%	15%
Nuclear power	36%	36%	35%	41%
Genetically Modified crops	33%	38%	37%	38%
Renewable energy	4%	4 %	4%	7%
Nanotechnology	7%	8%	10%	12%
Vaccination	4%	4%	7%	10%
Animal testing for medical research	34%	32%	28%	21%

Source: Theos/ Faraday/ YouGov 2021: Q11 (n=4754)

It is worth noting that the extent to which a scientific area of research is judged to be a risk rather than a benefit varies enormously – from vaccination and renewable energy where only 4% think the risks outweigh the benefits, to nuclear power and animal testing, where the figure is closer to a third. This underlines the wider point about how opinions can differ significantly between different scientific and technological developments and how the generic category of 'science' is liable to miss this nuance.

That noted, we see that:

(a) there tends to be little real difference between overall public opinion on these matters and that of people who call themselves religious;[25]

(b) regular attenders of a service of worship tend not to vary much from the norm either, except for on stem cell research and vaccination, where they are noticeably more likely to see risks than benefits when compared with the population as a whole; and

(c) textual literalists show more pronounced scepticism towards most technologies, especially stem cell research and vaccination, but less scepticism towards animal testing for medical research.

In summary, whereas there clearly are some signs of increased anxiety about (or perhaps hostility towards) science among the religious, it is also true that the differences tend to be small, are primarily among textual literalists, and are especially focused on specific issues, such as stem cell research and animal testing (which suggests other factors are also at play here, as we shall see later). Moreover, it is also worth noting that only very rarely does any group, even the biblical literalists, on balance judge a scientific research area more risky than beneficial.[26] In short, public, religious and even "fundamentalist" opinion of 'science' is almost always, on balance, positive.

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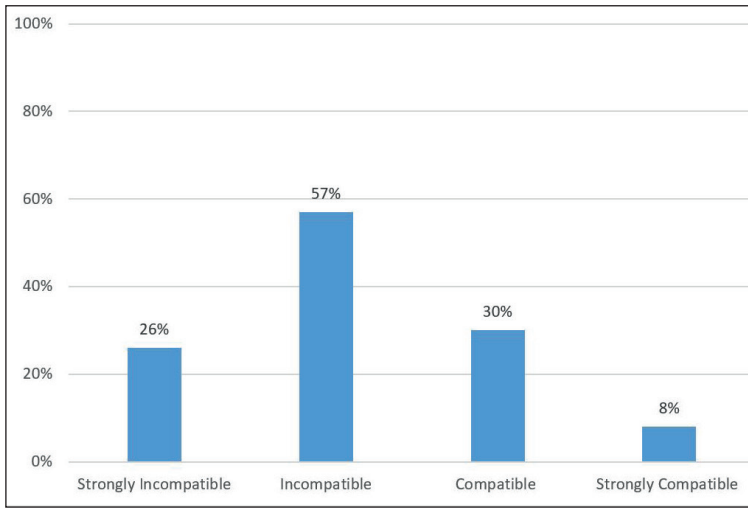
This *should* be no surprise. In her extensive work on science and religion in the US, sociologist Elaine Howard Ecklund has shown how the idea that religious people in America – including evangelicals – do not like or approve of science or scientists is really a myth, almost completely unsubstantiated by research.[27] As in America, even more so in the UK.

Conclusion

View the science and religion discussion through the narrow lens of evolution-Big Bang-neuroscience (or, more precisely, through the either/or choice that these disciplines are often reduced to) and you will come away with the impression not only of what the science and religion debate is about, but also how firmly and deeply dug the trenches are – even when the data for public opinion do not support such a conclusion.

This seems to be what has happened in the UK. In spite of the more granular data outlined above, when asked to indicate on a scale of 1 to 10 ("where 1 is 'completely incompatible' and 10 is 'completely compatible'), "where you think is the relationship between science and religion", the balance of public opinion was stark. Coding the figures to draw out levels of perceived in/compatibility[28] we found that 57% of the general population viewed the relationship as *incompatible* (i.e. 1-5) compared to 30% who viewed it as *compatible* (i.e. 6-10). In other words, nearly twice as many people see science and religion as incompatible as see them as compatible. Moreover, 22% of the population viewed the relationship as *strongly incompatible* (i.e. 1-2) compared to 7% who viewed it as *strongly* compatible (i.e. 9-10), i.e. a ratio of 3:1. (See Figure 7)

Figure 7: On a scale of 1 to 10, where 1 is "completely incompatible" and 10 is "completely compatible", please indicate where you think is the relationship between science and religion.



Source: Theos/ Faraday/ YouGov 2021: Q3_1 (n=5153). Note: 1-2 = completely incompatible; 3-5 = incompatible; 6-8 = compatible; 9-10 = completely compatible

And yet the data we have looked at in this chapter show that:

- Rejection of evolution is a non-issue for the vast majority of the UK population, including (self-declared) religious people *and* active worshippers. It *is* a big issue for some religious 'textual literalists' but (a) these make up a very small proportion of the population and (b) *even among them* rejection of evolution is still a minority affair.
- Cosmology, on balance, is not judged to be a barrier to religion, although the Big Bang is, to a marginal degree.

- No other scientific discipline – whether neuroscience, medical science, psychology, chemistry, climate science, or geology – is judged on balance to be a barrier to religion.
- Religious people, and especially textual literalists, are *slightly* more likely to believe that the dangers of science outweigh its benefits, but the differences here are small and even the most sceptical (i.e. textual literalists) believe on balance that the benefits outweighed the risks.
- When it came to evaluating the risks of *specific* areas of scientific research there was no major difference between the opinion of overall public opinion and that of religious people. Even though the most sceptical (again textual literalists) showed greater levels of anxiety, the differences tended to be relatively small, were focused on particular 'human life' issues (the significance of which we will turn to), and almost never tipped over into on-balance scepticism.

What is perhaps most telling here is that among the hundred or so 'elite' interviewees – who were recruited (a) because of their expertise in science, philosophy, sociology, or religious studies, or for communicating these to a wider audience, and (b) because of their general distance from or aversion to religion – the balance of opinion on science and religion in/compatibility was completely different. To be clear, this was a sample of 101 interviews so in no sense statistically reliable. Nonetheless, despite the fact that 63% were non-religious and 55% said that they "did not believe in God", attitudes to science and religion compatibility were notably more positive than the public as a whole. Specifically:

- 12% said they thought science and religion were strongly incompatible;
- 24% said they thought the two were incompatible;
- 41% said they thought they were compatible; and
- 23% said they thought they were strongly compatible.

Given the number of non-religious and atheist respondents in the elite sample, this is not the result one might have expected. Rather, it suggests that people, like the interviewees in this group, who had spent some time thinking deeply about these issues, were more likely to arrive at some position of compatibility than the general public – in spite of their personal beliefs. Thinking more deeply about science and religion edged you towards some kind of compatibility.

In summary, if we adopt the narrow-angle lens on the relationship between science and religion – the evolution-Big Bang-neuroscience lens – and then present it as a series of binary choices – evolution or creation? Big Bang or God? neurochemicals or spiritual experience? – and, thereafter, a single model – harmony or conflict? – we naturally steer the conversation to a restricted area where there is likely to be a lot of shouting and noise; in effect, the shallow end of the pool. Alternatively, if we opt for the wider-angle lens take on the relationship, we will begin to see a rather more complex picture, with pockets of antipathy, anxiety, and incompatibility, but also with areas of ambiguity, complexity and harmony.

This misconstrual of the debate will naturally concern those who believe that the

relationship between science and religion is compatible. But it should really concern everyone if only because it's neither true nor accurate, and narrows the very real interest of the full science and religion debate. In short, too much noise has been coming from the shallow end of this debate. Chapter 2 turns to look at what else might be in the pool.

1 Richard Dawkins, "A scientist's case against God", Speech at Edinburgh International Science Festival, 15 April 1992

2 Richard Dawkins, "A Reply to Poole", *Science & Christian Belief* (1995) 7, pp. 45-50.

3 Richard Dawkins, *The Extended Phenotype* (Oxford: Oxford University Press, 1982), p. 181.

4 Late in his life, Gould made a passionate intervention for the compatibility of science and religion, through his idea of 'Non-overlapping magisteria' or NOMA. The theory gained a mixed reception.

5 150 years since publication of The Origin of Species; 200 since Darwin's birth

6 See for example Theos/ Faraday/ ComRes's research on Darwinism for 2009; Fern Elsdon-Baker's excellent project on Exploring the Spectrum, and much of Elaine Howard Ecklund's ground-breaking work in the US.

7 Steven Hawking, *Brief History of Time* (Bantam, 1988)

8 Martin Rees: 'We shouldn't attach any weight to what Hawking says about god' | The Independent | The Independent

9 For example Neuroscience and free will: religion and science do not always disagree (telegraph.co.uk) and What God does to your brain (telegraph.co.uk)

10 How Many Creationists Are There in America? - Scientific American Blog Network

11 For the lower figure see Exploring Different Ways of Asking About Evolution | Pew Research Center (pewforum.org); for the higher see 40% of Americans Believe in Creationism (gallup.com)

12 For further discussion on this see Andy Walton et al, *Is there a Religious Right emerging in Britain?* (Theos, 2015)

13 A Majority of Americans Still Aren't Sure About the Big Bang - The Atlantic

14 E.g 'The God Particle', *The God Equation*, *The Mind of God,*

15 See Exploring the Spectrum and Amy Unsworth & David Voas, 'Attitudes to evolution among Christians, Muslims and the Non-Religious in Britain: Differential effects of religious and educational factors', *Public Understanding of Science.* 2018;27(1):76-93. Note, according to Elaine Howard Ecklund, even in the US it is subtler than it is often given credit for.

16 How Many Creationists Are There in America? - Scientific American Blog Network

17 We found this in particular in our 2009 research, *Rescuing Darwin*, where the number of people who held consistent and coherent views on evolution

was about equalled by those whose opinions were inconsistent and frankly contradictory.

18 The categories were, in effect: (1) literally: "The actual word of God and to be taken literally, word for word"; (2): theologically: "The inspired word of God but not everything should be taken literally, word for word"; (3) ethically: "A useful book of guidance and advice for our lives but not the Word of God"; (4) literarily: ""Beautiful literature but otherwise irrelevant to us today"; and (5) hostilely: "An irrelevant collection of ancient myths".

19 Specifically: of those who took the Qur'an seriously but not always literally (i.e. who said they believed it is "the inspired word of God but not everything should be taken literally, word for word"), 6% disagreed that "there is strong, reliable evidence to support the theory of evolution" and 3% disagreed strongly, whereas for those whose interpretation was more rigidly literal (i.e. who said they believed it is "The actual word of God and to be taken literally, word for word"), those figures shifted to 11% disagreeing and 18% disagreeing strongly.

20 Specifically Biblical textual literalists = 154; Qur'an textual literalists = 128.

21 On balance here means net result, i.e. disagree minus agree

22 It is interesting to note that textual literalists were less sure about this issue than others, 40% saying they neither agreed nor disagreed, compared to 22% of the population.

23 Specifically, of those who thought that the Qur'an was "the inspired word of God but not everything should be taken literally, word for word", 14% agreed or strongly agreed that "the dangers of science outweigh its benefits", whilst 59% of people disagreed or strongly disagreed. By comparison, of those who thought that the Qur'an was "the actual word of God and to be taken literally, word for word", 27% agreed or strongly agreed that "the dangers of science outweigh its benefits", whilst 41% of people disagreed or strongly disagreed.

24 70% thought the benefits outweigh the risks

25 Independent t-test results demonstrated there was no statistical significance for: stem cell research, t (4937) = -.987, p = 0.162, nuclear power, t (4937) = -.879, p = .190, genetically modified crops, t (4937) = -1.488, p = .068, renewable energy, t (4937) = -2.126, p =-.017, vaccination, t (4937) = -1.853, p = .032, and animal testing, t (4937) = -1.753, p =.040. With the only statistical significance being found with nanotechnology, t (4937) = -2.126, p = <.005.

26 Indeed, the only instance of this is for genetically modified crops where 29% of biblical literalists judge the benefits to outweigh the risks compared with 37% who judge the risks to outweigh the benefits.

27 See Ecklund, *Religion vs Science*, especially chapters 2-3

28 i.e. strongly incompatible = 1-2; fairly incompatible = 3-5; fairly compatible = 6-8; strongly compatible = 9-10

2. Science and religion: what it is

Defining science, defining religion

> *"If a historian were to contend that he or she had discovered evidence of a hitherto unknown war that had broken out in the year 1600 between Israel and Egypt, this claim would be treated with some scepticism."*

So begins Peter Harrison's seminal book *The Territories of Science and Religion*. The metaphor is both acute and helpful. The territories over which Israel and Egypt would one day exert sovereign political authority existed in 1600 just as they do today, and some cultural and religious parallels are also identifiable. But neither the states themselves, nor the boundaries around them, did. What we now know as Israel and Egypt simply did not exist then.

Harrison's point is that something similar is at play when we talk about the history of science and religion. People in 1600 (or indeed 1400 or 1800) engaged in the kind of activities that would one day become known as science and religion, but those categories as we understand them did not yet exist. Claims to understand the historic relationship (which usually means historic conflict) between science and religion all too often involve "the distorting projection of our present conceptual maps back onto the intellectual territories of the past."[1] Positing a conflict between science and religion in 1600 would have been nonsensical.[2]

Harrison's book explores how the maps and territories of science and religion have changed over the centuries and, in so doing, underlines that what we understand by science and by religion are contingent and malleable. His book ends in the late nineteenth century when the two terms had settled down to recognisably modern meanings but (as Harrison recognises) the story does not end there because attempts to

define 'science' and even more so 'religion' are still far from straightforward today. Indeed, there is a good reason to believe that *defining* either is essentially impossible and that the best we can hope for is to identify a series of characteristics that, between them, in some combination, comprise a kind of 'family resemblance' of science and of religion.[4]

Two examples might illustrate this point. First, science. The 2006 UK Charities Act included, for the first time, "the advancement of science" as a charitable activity. This prompted the Science Council to clarify what the word 'science' meant. Following a year-long consultation, the Council proposed a definition of science as "the pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence". Given the pivotal role of the word "methodology" in the definition, the Council went on to state that "scientific methodology" included:

1. Objective observation: measurement and data (possibly although not necessarily using mathematics as a tool)
2. Evidence
3. Experiment and/or observation as benchmarks for testing hypotheses
4. Induction: reasoning to establish general rules or conclusions drawn from facts or examples
5. Repetition
6 Critical analysis
7. Verification and testing: critical exposure to scrutiny, peer review and assessment.

This definition homes in on the evidential, methodological, and topical ("the natural and social world") dimensions of science.

However, when the same question has come before the courts in America, other characteristics have risen to the fore. Repeated attempts to introduce 'creation science' and, latterly, Intelligent Design (ID) onto public school curricula in the US have seen the question of what is science appear before the courts on numerous occasions. The resulting judgements, which have consistently decided against the scientific status of creationism and ID, have outlined many of the characteristics visible in the Science Council definition, but have also placed a great deal of emphasis on science's metaphysical characteristics, and in particular its commitment to (methodological) naturalism. So, when, in 1987, the

Supreme Court heard a case, *Edwards v Aguillard*, in which the constitutionality of a Louisiana state law requiring the teaching of 'creation science' alongside evolution was decided, it received a joint written submission from 72 Nobel laureates, 17 State Academies of Science, and seven other scientific organisations, which declared, among other things, that science was "devoted to formulating and testing naturalistic explanations for natural phenomena". Or again, when, in 2005, a District Court for the Middle District of Pennsylvania heard a case concerning the status of Intelligent Design (ID), it heard from expert witnesses how science demands a "rigorous attachment to 'natural' explanations" and is "ruled by methodological naturalism".

These dimensions of science, more clearly visible from a US perspective, are as important features within the family resemblance as the methodological ones mentioned above. The in-depth interviews we conducted with (among others) scientists, sociologists, and philosophers of science revealed all these dimensions, but added others, which are drawn on in this chapter. The precise number and range of these will always be contestable. What is important is to recognise that the territory of science even today still has complex, contestable borders and numerous different elements within it.

Our second example concerns the attempt to define 'religion' and presents an even greater challenge. Definitions of religion are numerous and there are plenty of scholars who will say that the task is simply an impossible one.[5] That may well be the case if one is searching for a conclusive definition but if you are looking for a set of characteristics that make up a 'family resemblance' of religion, the task is slightly easier. Thus, to take one famous example from Ninian Smart,

a pioneer in the discipline of religious studies, religions have seven dimensions:[6]

- the *practical or ritual dimension*, which incorporates the specific practices, ceremonies, and patterns of behaviour, commonly but not necessarily public;
- the *experiential or emotional dimension*, which incorporates the powerful emotional responses – awe, wonder, dread, devotion, ecstasy, peace, etc;
- the *narrative or mythic dimension*, which incorporates foundational stories, pertaining to the wider cosmos or to the religion itself, that explain reality, and preserve the corporate memories that cohere the group;
- the *doctrinal or philosophical dimension*, which systematises the commitments of the narrative dimension as they come into contact with wider reality;
- the e*thical or legal dimension*, which sets out the moral rules for both individual and collective behaviour;
- the *social or institutional dimension*, which incorporates the formalised structures, offices and procedures that characterise religious communities; and
- the *material dimension* which refers to the material culture – places, buildings, artefacts, clothing – that are accorded particular, often powerfully symbolic, significance.

Something need not exhibit all these dimensions to be a religion. Most early, shamanic religions had no interest in the ethical dimension, let alone the institutional one. Some forms of Protestantism eschew the ritual and most of the material dimension; others are very suspect about the emotional or experiential element. Conversely, something may exhibit some

of them without claiming to be a religion. Many ideological groups recognise codified systems of belief, and plenty of institutions – from universities to courts to sports tournaments – have various ritualised practices and a rich material culture.

Rather, the list sets out the kind of characteristics we would look for when identifying something as a religion. Other, equally noted definitions, have taken a very different approach. The anthropologist Clifford Geertz, for example, famously defined religion as a "(1) a system of symbols which acts to (2) establish powerful, pervasive and long-lasting moods and motivations in men [sic] by (3) formulating conceptions of a general order of existence and (4) clothing these conceptions with such an aura of factuality that (5) the moods and motivations seem uniquely realistic" – a definition that entirely omits reference to the transcendent.[7]

Again, the interviews we conducted supplemented, refined, and modified these elements – as well as underlining the complexity of this particular definition. (A number gravitated strongly towards Geertz's definition and away from ideas of the supernatural, while others insisted that this was nothing more than a cop-out). Again, though, as with science, the purpose here is not to adjudicate finally on how many and which elements comprise religion, so much as to draw attention to the complex, polyvalent nature of the category.

> **"**
>
> **'Science' and 'religion' are both sprawling and capacious categories that swallow up a number of different and interesting areas, and then often obscure them under the shadow of evolution, Big Bang, and neuroscience.**

In short, Harrison's historical analysis and our own sociological research underline the point drawn out in the first part of this report, that because 'science' and 'religion' are both complex, shifting, composite, and contestable categories, with many 'moving parts', so the debate between 'science and religion' is similarly complex, more so than has been widely realised. 'Science' and 'religion' are both sprawling and capacious categories that swallow up a number of different and interesting areas, and then often obscure them under the shadow of evolution, Big Bang, and neuroscience. Listening carefully to how people, both experts and the general public, understand each, helps to disambiguate each category and get closer to understanding what the science and religion debate in all its fullness is really about.

The dimensions of the science and religion debate

What, then, are the dimensions of science and of religion that are relevant to the science and religion debate? Our work drew on the existing literature, some of which we have cited above, but also on the views from over a hundred expert interviews (details of which are given in Appendix 1). The interviews covered a bewildering amount of ground and involved discussions on abortion, the actual practice of science, aesthetics, AI, aliens, America, the argument from design, assisted dying, astrobiology, authority, axioms, belief, the Big Bang, the Bronze Age, chance, community, complementarity, conservatism, consciousness, contraception, cosmology, COVID, creationism, creeds, CRISPR, cultural anthropology, demarcation, dementia, determinism, dignity, dogmatism, dualism, education, empiricism, epistemic humility, eschatology, ethics, ethical progress, eugenics, evolutionary biology, evolutionary psychology, the evolution

of religion, evidence, evil, experiments, fairies, faith, the Fall, falsification, fideism, fine tuning, free will, gender, GM crops, God, God of the gaps, the Goldilocks zone, the role of government, hermeneutics, humanism, hypothesis, the image of God, institutions, Intelligent Design, IVF, judgement, language, materialism, the media, memes, metaphysics, miracles, moral realism, the multiverse, myths, natural evil, naturalism, Neanderthals, necessity, neuroscience, non-overlapping magisteria, observation, panpsychism, peer review, physicalism, playing God, positivism, prayer, prediction, progress, proof, properly basic beliefs, public reasoning, purpose, quantum mechanics, quantification, rationality, reason, reductionism, relativity, religious experience, repeatability, revealed truth, ritual, robots, the role of ethics in science, the role of science in ethics, the sacred, the sanctity of life, science as a religion, the Scientific Method, scientism, secularism, the self, the *sensus divinatus*, sex, significance, the soul, string theory, suffering, supernaturalism, teleology, testability, theories, time, tradition, transcendence, transhumanism, utilitarianism, values, verification, wastefulness and worth.

This is quite a list – although perhaps not a surprise for over a hundred hours of discussion that produced nearly a million words worth of transcription. Slowly, in the process of analysis, however, themes overlapped, coalesced and repeated and from this we identified six 'dimensions' within the science and religion debate, upon (or within) which the familiar topics (e.g. evolution, cosmology, neuroscience, etc.) occur. These are epistemology, metaphysics, hermeneutics, anthropology, ethics, and politics, and are outlined below. If the six dimensions sound daunting, they need not because each can be translated into plainer English.

Epistemology: how do you know?

Long before we get to questions of what we (think we) know about the universe, the world and life – how old it is, how it assumed its current form, what (if anything) it means, etc. – we are faced with the question of how we know it in the first place.

> *"I rather like the motto of the Royal Society, which roughly translates to 'Don't take anybody's word for it.' I mean, that is what, in my view, real knowledge is about...The difference between that and the religious view is that there will be some people who think that science is just about reading textbooks, and you know, soaking up knowledge that way, without ever questioning what is in those textbooks. That is not science." (#26)*

Time and time again in our discussions, this was the perceived point of tension between science and religion, rather than the actual content of the knowledge itself. Indeed, it is only a slight exaggeration to say that a person's attitude to the science and religion debate is predetermined by their opinion on this issue.

This is, in fact, the one *popular* area of the science and religion debate that we omitted in chapter 1. For various reasons, 'faith' has increasingly taken the place of 'religion' in public vocabulary, and in the process has foregrounded the epistemological dimension of this debate. Unfortunately, this discussion of 'faith' has not always been constructive, with 'faith' being labelled (in Richard Dawkins' famous

formulation), "the great cop-out" and "the great excuse to evade the need to think and evaluate evidence." In so doing, the word 'faith' has been press-ganged into justifying a zero-sum relationship between science and religion that is every bit as blunt as evolution vs creationism. In the words of one article for *The Times*, we shouldn't "pretend that science and faith are compatible".[8] Or, according to research among GCSE and A-Level pupils, "science and faith do not mix".[9]

Some of our interviewees were of a similarly 'positivist' or 'scientistic' persuasion, in that they were firmly convinced that science was the only means of attaining legitimate knowledge and therefore sufficient in doing so. Most, however, recognised that there was at least something to discuss here:

> *"I think there are different ways of arriving at knowledge about the world... we arrive at knowledge about the world, about ourselves, about other people, in different ways. That is patently obvious to me." (#15)*

Technically, this issue is really two issues. The first concerns evidence. What constitutes legitimate and admissible evidence to the kind of questions that science and religion ask? There are many possible answers to that question – reason, observation, experiment, tradition, authority, experience, revelation, intuition – and the weight that someone attaches to them invariably informs their beliefs about, and approach, to the world. If certain sources are ruled inadmissible from the outset, some conclusions become almost inevitable.

The second concerns the process or method of sifting and analysing that evidence. Given the centrality of *method* within definitions of science, it is no surprise that this particular 'methodological' dimension features significantly within the wider science and religion debate. However, it's not just

science that puts the issue of method front and centre. The question of how religions interpret experience or how doctrine is formed (and reformed) also foregrounds the question of method. Between them, the question of what is evidence and what do you do with it, runs like a spine down the science and religion debate.

Metaphysics: what is the fundamental nature of reality?

Metaphysics is a notably slippery term, one that we might parse here as the study of the fundamental nature of reality, including such things as being, time, space, causality, and necessity.[10] Some of our interviewees were altogether dismissive of the idea, with one even claiming that science had answered all metaphysical questions.

> *"I think an awful lot of the classic metaphysical questions, and that includes the ontological questions, have largely been answered by science." (#13)*

The majority, however, recognised that this was a relevant dimension and one that, like epistemology, *preceded* scientific and religious activity. Also, like epistemology, it was an issue that could profitably be divided up into constituent elements.

One element was the question of what were the presuppositions or axioms that you had to assume in order to think and to do science in the first place. These were things like the reliability of the senses, the existence of an external world, the effectiveness of mathematics, the comprehensibility of the cosmos, or the alignment of the human brain with truth (or reality) as opposed to just survival (or appearance).

A second element was the question of what ultimately made up the universe. In discussing this, interviewees talked

about "substance dualism", "materialism", "physicalism", "panpsychism", "naturalism" and "supernaturalism", and for the most part, recognised that this was a question on which science was built rather than vice versa.

A third was the specific question of the lawfulness of the universe, and what weight should be attached to it. For some, lawfulness indicated a law-giver; for others, it was simply a convenient assumption with no metaphysical implications at all.

As noted, not all interviewees considered these relevant or even meaningful questions, but most thought that they fed directly into and played an important role within the wider science and religion debate. In the words of one theologian:

> *"There are tensions around basic metaphysics. In other words, like I said, what is presupposed in the practising of science, which is different from the practice of theology." (#82)*

Hermeneutics: how do you read holy books?

If, as we have been arguing, the relationship between science and religion depends on the nature of science and the nature of religion, then the nature of religion significantly depends on the perceived content of authoritative, 'holy' texts – and *that* will depend on how they are read. In effect, the assumptions and methods of reading and interpretation – the hermeneutic – that you bring to a text will profoundly shape the result you get from it. Hermeneutics plays as important a role in science and religion as epistemology or metaphysics.

The spectrum here was, at first glance, self-evident. At one end was the perception that everything in an authoritative holy text should be read literally, most contentiously its

creation myths – a position that was judged as indisputably in tension with science.

> *"If you are anti-evolution, if you take a six-day creation for your Genesis 1, and if you don't understand or [you] have a kind of Mickey Mouse view of what Christianity is about, I can see why there are skirmishes." (#16)*

At the other end was the idea that nothing needed to be, or indeed that nothing should be, literal.

> *"It feels to me as though nothing that is said in the New Testament, that need affect the way we understand it and lead our lives today, requires a literal belief in those miracles. And I see no reason why all of them could not be seen as parables, as allegories." (#10)*

Precisely where one should stand within this spectrum was highly contestable. A literal reading was judged, at least by one sociologist, to be literally (!) untenable.

> *"When the Bible says Jesus is the lamb of God, they are not suggesting mint sauce and roasting it... no literalist denies metaphor." (#21).*

But a wholly metaphorical one was sometimes considered simply dishonest.

> *"[Religious people] very often they start moving along that scale towards the 'it's all a bit ineffable'...it's more about a kind of ethical commitment and a social belonging. But then when the intellectual threat diminishes, they start moving back in the other direction." (#42)*

To complicate things further, (some) holy texts themselves have ambiguous attitudes to their own interpretation. For example, in the words of an interviewee with expertise in both

science and religion, the New Testament has passages in which "a huge body of scripture... gets totally overturned [such as when Jesus] declared all foods clean" *and* passages in which it declares that "not a jot or a tittle shall depart from the law." This, as the interviewee went on to say, "tends to frustrate some people who are a bit... OCD about understanding these things." (#11)

The point here is not to attempt to resolve this unresolvable question – what is the right way to read a (holy) text? – so much as to underline how the (often assumed) answer to that question will transform perceptions and positions within the science and religion debate.

Anthropology: who are we?

The *history* of science and religion pivots significantly – in a way that is not yet fully recognised – on the question of anthropology, specifically the compatibility of *what* (science claims) and *who* (religion claims) we are as beings.[11] This is not simply a historical consideration, however. The question of the human, the soul, the self was fundamental to the debate.

> *"I think the most important thing that we find with respect to religions [being] wrong is that there's nobody in there...there is a self, but it's a construction... the self that religions feed upon... that is the self that is supposed to ultimately [be] your soul and be non-material, or immaterial and everlasting and have moral capacity and all of that kind of thing." (#24)*

Anthropology here clearly dovetailed with metaphysics, but it also lay under the surface of the debate about evolution, and indeed other debates. Artificial Intelligence (AI), transhumanism and human enhancement all pivot on a similar issue. What science enables technology to achieve and what we

think of the human are both highly salient to the science and religion debate.

The traffic here flows both ways. In one direction, there are questions like 'Can science fully understand the human?' 'If so, would that mean the human could be fully deconstructed?' and 'What would that entail for things like free will, the soul, and potential immortality that have been quintessentially associated with religions?' In the other direction, if humans can be deconstructed, can artificial 'human' life be fully constructed? What, then, would it mean for the AI that we are creating, in terms of the human rights or spiritual capacity we should accord them? In the words of one interviewee, which were later modified into a question in the quantitative survey, "can AI have a soul?" (#7)

Ethics: what is the moral content of our ideas and practices?

In his 2018 book *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict Between Religion and Science*, Professor of Sociology at UC San Diego, John Evans sought to bring real people back into the science and religion debate, by stressing how science and religion discourse is conducted by people who are always specifically located and shaped by particular concerns and objectives, rather than existing in the abstract.[12] That being so, Evans showed how much popular debate on science and religion focused not on the things we have been talking about above, such as epistemology and metaphysics, but on questions of right, wrong, goodness, suffering, progress, and risk.

This is as true in the UK as it is in the US. Evans put a particular emphasis on *medical* ethics, and while that also plays a role in the UK debate, the ethics dimension of the science and

religion debate goes beyond the morality of scientific research or technological development.

To take two specific examples: much of the debate on evolution (as we shall see in chapter 3) is, in fact, an ethical debate, pivoting on the question of whether natural selection is too "cruel" or "wasteful" or "horrific" a process – those being ethical/ value words rather than scientific/ factual ones – to be compatible with a (loving) God.

> *"I think the deeper clash is it's very hard to see why an all-powerful loving God would create intelligent life through the horrific process of natural selection." (#17)*

Similarly, some of the (metaphysical) debate on naturalism, supernaturalism, and the possibility of miracles pivots on the question not of whether divine intervention is possible, but whether it is fair or just and therefore (again) compatible with a (loving) God.

> *"Where every now and again God intervenes...what about all the people whose prayers aren't answered. You know, God didn't like them, but occasionally he did like people? I think that should be stopped. But I wouldn't go so far as to destroy it but I think it's a terribly bad idea..." (#47)*

In these ways (and others), the ethical dimension was fundamental to the science and religion debate.

Politics: who gets to decide?

Everything is political, or so they say. The word has an elasticity which means that almost any debate, including that around science and religion, can be judged political. In this instance, however, we use the word to mean something a bit more specific, namely the question of who has authority when it comes to making decisions about shared and contestable moral issues.

This is central to the history of science and religion.[13] In reality, the question of who has the authority to pronounce on 'scientific' matters was largely settled by the end of the nineteenth century. Creationism was, until recently at least, just a US outlier and even there, biblical creationism has migrated into 'scientific' creationism and Intelligent Design, thereby indicating where authority really resides.

However, as science's interest in and capacity to understand, explain and reshape human life has expanded, the question has remained a live one, closely linked to the

dimensions of anthropology and ethics. Who has the right to which medical intervention or, conversely, which treatments should be prohibited and for what reasons, could be a highly sensitive science and religion issue.

> *"I think the extent to which religion imposes on other people is more of a problem. If someone chooses that they don't want to have medical treatment, fine, annoying but fine. If some religions then tell someone that they shouldn't give it to their child or to someone else, it becomes a much bigger problem." (#9)*

This debate sometimes surfaced within interviews around the specific question of Anglican bishops in the House of Lords, but this was really only the visible part of the iceberg.

> *"I have problems with bishops in the House of Lords. It so happens that we often have very good bishops in the House of Lords. That doesn't alter the principle... of being appointed to committees and having a louder voice in decisions about these kinds of tricky issues, inevitably, I feel hostile to that." (#12)*

Who gets to decide on questions of medical ethics and, increasingly the possibility of human enhancement and the role of AI, is a persistent and ultimately intractable issue. It is also one that is highly relevant to the science and religion debate.

How do the dimensions relate to the science and religion debate?

These six dimensions – epistemology, metaphysics, hermeneutics, anthropology, ethics, and politics – open up the science and religion debate. They reveal a complexity that is hidden by the usual suspects of evolution, cosmology, and neuroscience. They help to defuse the need to decide

definitively *for* or *against* 'science' or 'religion'. And they can also be traced in wider public opinion.

This is always a slightly precarious approach. After all, you can't ask (many) open questions in quantitative surveys, and you can't ask the general public its views on epistemology or metaphysics. Nevertheless, there are ways of measuring the public's opinion on such issues and then exploring their connection with a general view of science and religion.

Three examples can illustrate this. First, epistemology. People who have a more positivistic attitude to science – e.g. who believe that "science is the only way of getting reliable knowledge about the world"[14] or that "science will be able to explain everything one day"[15] – tend also to be slightly more *negative* about science and religion. Conversely, those who are a bit more sceptical towards science – who believe that "science ultimately needs faith to work"[16] or that "there are some things science will never be able to explain"[17] – tend to be

more positive about the relationship. The way we think about knowledge affects the way we think about science and religion. (See Table 2)

Table 2: Attitude to science and religion according to epistemology

	% of overall population (expressing an opinion)	% of those **agreeing** that **science is the only way of getting reliable knowledge** about the world	% of those **agreeing** that **science will be able to explain everything** one day
Science and Religion are strongly/ incompatible	65%	69%	69%
Science and Religion are strongly/ compatible	35%	31%	32%

	% of those **disagreeing** that **science is only able to explain part of reality**	% of those **agreeing** that **there are some thing science will never be able to explain**	% **agreeing** that **science ultimately needs faith to work**
Science and Religion are strongly/ incompatible	74%	61%	40%
Science and Religion are strongly/ compatible	26%	39%	60%

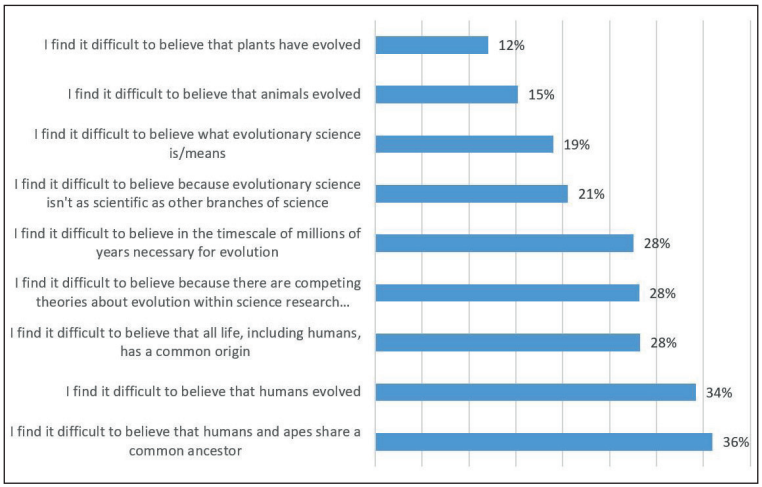
Source: Theos/ Faraday/ YouGov 2021: Q1_2, 1_3, 1_5, 1_8, 5_6

Second, anthropology. There is already good evidence that people's anthropology shapes their wider views.[18] There is also well-established evidence that what fuels rejection of evolution is not so much adherence to the literal interpretations of any creation stories, but to a notion of the human that, it is

believed, is eroded by the principles of evolution by natural selection. Elaine Howard Ecklund has observed that one of the key "schemas" underlying US Christians' attitudes to science is "respect for what they see as the sacredness of humans".[19]

This is borne out by our data. When we asked the relevant people "why do you have difficulty believing in the theory of evolution?", the leading answers of those on offer were all pertaining to humans. (See Figure 8)

Figure 8: Why do you have difficulty believing in the theory of evolution?



Source: Theos/ Faraday/ YouGov 2021: Q10 (n=428)

Very few people had difficulty in believing that animals (15%) or plants (12%) evolved, but rather more had problems believing that humans evolved (34%) or that "humans and apes share a common ancestor" (36%), or that "all life, including humans, has a common origin" (28%).

In a similar vein, as we have seen, 74% of the total sample agreed that "there is strong, reliable evidence to support the theory of evolution". That rose to 80% when people were asked whether they thought that "plants and animals have developed over time from simpler life forms" but crashed to 28% when it came to human consciousness[20] and the same level for morality.[21] Moreover, people's attitude to evolution was further informed by whether they thought "humans were at heart spiritual beings"[22] (NB. This was not simply a cipher for whether someone was religious, as 36% of the *non-religious* in the sample agreed that humans were at heart spiritual beings.)[23] In other words, people's underlying anthropology had a serious impact on their particular understanding of and commitment to evolution.

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People's underlying anthropology had a serious impact on their particular understanding of and commitment to evolution.

The third example is ethics. There is a broad, but by no means complete, correspondence between those who hold more morally permissive views when it comes to medical and reproductive technology and 'science and religion' incompatibility. For example, those who think that euthanasia, IVF, using reproductive technologies to identify diseases in the womb, using and then destroying human embryos, or having an abortion are morally acceptable are all more likely to be science and religion incompatible, than are those who think these activities more morally unacceptable.

In this instance, people's ethical views may simply be a cipher for their religious ones or just the sum of their epistemology and their anthropology. It is important to emphasise that none of these six dimensions is isolated from

the others. But these data, combined with those already mentioned in the US by John Evans, suggest that there is indeed an ethical dimension that runs through the science and religion debate.

Conclusion

A number of our interviewees pointed out that the word 'science' comes ultimately from the Latin word 'scire' meaning to know, and that the word 'religion' comes ultimately from the Latin word 'religare' meaning to bind together. Without getting caught up in the so-called etymological fallacy, the belief that a word's meaning is given by its origins, what these derivations do is remind us that both science and religion are, at least in origin, capacious terms covering wide territories concerning human nature and existence.

That being so, we should not be surprised that the interaction between them is, if properly understood, much wider than a debate about the origin of life or the cosmos. Historically, as Peter Harrison has shown, that was well understood, as the categories of 'science' and 'religion' emerged from various different practices, disciplines, virtues, and bodies of knowledge. Today, some of that breadth has been lost.

Yet careful examination of what those terms mean and how they are interpreted in their fullest sense can re-establish the breadth of the encounter. The science and religion debate encompasses not just theories about the universe, life, and the brain – although it certainly includes those – but a whole host of other conversations about how we know, what we assume, how we read, who are we, what we consider good, and how we make collective decisions about contentious issues.

1 Harrison, *Territories*, p. 3

2 To be clear, that does not mean that there were no comparable tensions at play at that time. There were. In 1600, for example, there were intense disagreements concerning the authority of theologians and natural philosophers, or between the underlying metaphysics of Aristotelianism and that of the 'New Philosophy'. But these cannot be scaled up to 'science vs religion'.

3 The idea of 'family resemblances' here derives from Wittgenstein's *Philosophical Investigations*, and is relevance is explored in a monograph accompanying this project.

4 Our definition of science - The Science Council ~ : The Science Council ~

5 See for example Jonathan Jong, 'On (not) defining (non)religion', in *Science, Religion and Culture*, 2(3): 15-24

6 Ninian Smart, *The World's Religions* (Cambridge University Press, 1989), pp. 10-21

7 Clifford Geertz, 'Religion as a Cultural System', in *The Interpretation of Cultures* (Basic Books, 1973)

8 Oliver Kamm, 'Don't pretend that science and faith are compatible', *The Times*, 7 June 2016; Don't pretend that science and faith are compatible | Comment | The Times

9 Pupils: 'science and faith do not mix' (churchtimes.co.uk)

10 As ever, the on-line Stanford Encyclopedia of Philosophy provides a helpful discussion of this.

11 See Nick Spencer's forthcoming book on this topic, published by OneWorld in 2023

12 John Evans, *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict Between Religion and Science* (University of California Press, 2018)

13 It is not too much of an exaggeration to say that all the famous 'battles' between science and religion – the University of Paris' ban on Aristotle in 1277, the Galileo trial, the Wilberforce-Huxley debate, the Scopes trial – have all, at some level, been around the question of who is authoritative (and trustworthy) in these matters.

14 54% of people overall agreed with this statement (16% agreeing strongly, 38% agreeing) compared with 20% who disagreed (3% strongly, disagreeing)

15 Only 29% agreed (or agreed strongly), whereas 40% disagreed (or disagreed strongly).

16 Only 17% of people agreed (or agreed strongly) compared with 50% who disagreed/ strongly. Of the remaining 33%, 22% said they neither agreed nor disagreed, and 11% said they didn't know.

17 64% agreed (or agreed strongly), whereas 15% disagreed (or disagreed strongly)

18 In his book *What is a human?*, US sociologist John Evans found that "the more a respondent agreed with the academic biological anthropology the more likely they are also to believe that it is acceptable to buy kidneys from the poor, have people commit suicide to save money, take blood against the will of prisoners, and not risk the military to stop genocide." (p. 21)

19 Ecklund, *Religion vs Science*, p.3

20 Specifically, 27% of people strongly/agreed that "the theory of evolution is unable to explain human consciousness" whereas 28% of people strongly/ disagreed.

21 Specifically, 28% of people strongly/agreed that "the theory of evolution is unable to explain the existence of morality" whereas 27% of people strongly/ disagreed.

22 50% of people agreed (13% strongly) compared with 15% who disagreed (4% strongly)

23 Having excluded 'Don't knows', 78% of people who agreed that "humans are at heart spiritual beings" agreed that "there is strong, reliable evidence to support the theory of evolution", whereas 88% of people who disagreed that "Humans are at heart spiritual beings" did so. That difference narrowed when it came to the question of whether "plants and animals [had] developed over time from simpler life forms" but widened when it came to evolution explaining human morality or consciousness.

3. Science and religion: what it could be

Showing how big the pool is, is no guarantee we'll move away from the shallow end. Put another way, simply showing that the science and religion debate involves more than just evolution, cosmology, and neuroscience, but in fact integrates conversations around epistemology, metaphysics, hermeneutics, anthropology, ethics, and politics, does not necessarily mean we will have those conversations well. It is perfectly possible to have a shallow discussion about the epistemological or metaphysical or anthropological dimensions of science and religion. The objective of this report is not just to open up the pool but to encourage people to go deeper. As a consequence, this final chapter will focus on what that might look like. How can we have a better – deeper – science and religion conversation?

How can we have a better – deeper – science and religion conversation?

In order to achieve that, we will look at each of the dimensions we have identified in turn and explore (briefly) what they look like at the shallow end and (more substantially) what they look like when people go deeper. This involves posing some awkward, possibly intractable questions. Those used to the shallow end will either dismiss these as non-questions or needless and annoying distractions. Those who want to sell science and religion harmony too hastily, without proper and honest reflection, may also find some of the questions challenging. But it is our conviction that they are neither needless nor annoying, and that it is by engaging with them honestly that we will do justice to the science and religion conversation as one of the most stimulating – and sometimes demanding – it is possible to have.

Epistemology: going beyond faith vs fact

How do we know what we (think we) know about the world? A number of interviewees expressed the view that there was a kind of absolute epistemological division when it came to science and religion, a fundamental and unbridgeable divide between the two.

According to this view, science was based on knowledge, whereas religion was based on faith. Science was based on evidence, religion on the lack of it. "Religion ignores what doesn't fit and uses what does" (#87). Science is based on disbelief, religion on belief. "Everything that I can falsify is science. Everything that I can't falsify is religion" (#27). This was the Dawkins' 'faith as a cop-out' view, or the "Faith v Fact: you choose" bumper sticker.

There was, predictably, a polemical edge to this point.[1] But there was also simply the non-polemical assumption that religion was based on revelation and authority (neither of which could be questioned) whereas science was based on observation, experiment, measurement, and reason (which was the epitome of free enquiry).

> *"Scientists value knowledge of evidence and I would say that religion... values thought despite or because of a lack of evidence." (#9)*

By this reckoning, there was no epistemological deep end to science and religion discussions.

Many disagreed with this, however, and even those who felt a profound antagonism between science and religion, recognised subtleties in this conversation.

In the first instance, there was the question of admissible evidence. People pointed out that the evidential division was not as straightforward as all that. Religion *was* (often) dependent on revelation but that was not necessarily as differentiating as all that. Revelation was commonly subject to scrutiny and enquiry, and it often involved a (more or less) reasonable consideration of the evidence.

> *"I think that what we think of as reason is broader than a lot of more positivist scientific people might say, and I think that people... do have reasons to their [religious] belief. I just think that ultimately they're just not very good ones." (#3)*

Religion was not (necessarily) as authoritarian or as indifferent to evidence as some made out. Authority could take different forms between and within different religions. In the words of one of the more hostile interviewees:

"The authority is 'You have to believe what I say', and that of course is not, well I was going to say it's not that bad in the Church of England, but it can be. It is a lot worse in many of the evangelical faiths in the States and in Islam it is terrible." (#24)

Authority could be, had been and was challenged.

"I'm sure there are plenty of religious people who have challenged the beliefs and they must have done, or religion could never have evolved or been changed." (#72)

Reason was prized by the religious.

"You express your own sense of the divinity by putting your rational mind to service and understanding the world that he has created and that is the most fundamental way in which you acknowledge the greatness of God, the mind that he created in the service of understanding the world that he also created." (#89)

Reliance on faith did not *preclude* evidence.

"The 'religion based on belief' bit is problematic as well because at least from what little I know of the history of Christianity, it has been about evidence and many of our modern institutions of law and of science, arose out of religious enquiry and exegesis and interpretation of scripture, that was evidence-based. Investigation of miracles as well, I suppose, is evidence-based, so yes, it's not that clear cut, is it?" (#81)

Equally important, science came to reliable knowledge through a much richer understanding of evidence than the simple 'observe-experiment-repeat' view. Science doesn't always work through experimentation or empiricism.

> *"Within evolutionary theory there're all sorts of speculative propositions which make coherent sense but are not based upon empirical experimentation." (#6)*

It involves significant speculation.[2] There are limits to what we can observe.[3] Theories are often woefully underdetermined by the evidence available.

> *"I think it depends on theories about the origin of humans from early hominids, people keep on changing their minds because we don't have very much evidence... There the evidence isn't strong enough to decide between the theories." (#55)*

There was a similar division when it came to the *methodological* element within this dimension. Just as there are some who believe there is an evidential division between science and religion, so there are those who think there is a methodological one. On this view, science is characterised by the scientific method, a clear, well-defined, endlessly tested, and supremely reliable path to the truth. Science comprises hypothesis, theorisation, observation, experimentation, measurement, replication, attempted falsification, modification, and progress. It is "primarily methodological... a paradigm of investigating the world" (#31), "a technique, a methodology, an approach to trying to make sense of things, of all phenomena." (#61)

Religion, by contrast, according to this view, is characterised by methods that are inadequate to the task of reaching the truth. Some are questionable, some outright false. According to one sociologist:

> *"In religions, you can have trump cards. You can whip out "God says", or "God told me". If you are a Sufi Muslim, I smoked*

hashish last night, and God spoke to me. You can always have a trump card. Science does not permit trump cards." (#21)

That recognised, while nobody we interviewed was a relativist, in the sense of believing that there was no such thing as objective truth, and nobody denied science's capacity for establishing reliable knowledge, there were plenty of interviewees who pointed out that the respective methodological paths were not as simple or even different as all that.

Some pointed out that the way in which religious believers commonly invoked experience as a justification for their belief undermined the idea that religion was based simply on authority or mere blind faith. In the words of one sociologist:

"People are, I think, very empirical in the way they approach spirituality and religion, they test it out, they try it out and they see if it's true...Now it might be that you have just one or two experiences in your life that are so significant to you that you found that that's enough to base your religion on. That's not blind faith, it's just that they're very powerful experiences." (#67)

Others noted that at some point or other, religious experience usually turned into theology and doctrine, which involved a process of rational reflection on the evidence in question. Critics were quick to claim, as we have already observed, that the evidential basis for such reflection could be inadequate or misleading, and no-one maintained that religious experiences were *necessarily* reliable or significant, or that people were immune to spiritual self-delusion. Nevertheless, the idea that there was *no* method at all within the formation of religious beliefs, or that such processes were always short-cut by appeals to authority, was not widely held (even among those interviewees who were largely dismissive of religion).

When it came to science, many people (and not only philosophers of science) remarked that the path to knowledge was considerably more complicated than the model of the scientific method described. First, as innumerable people pointed out, there was no such thing as *the* scientific method, but rather various scientific methods, or a generally scientific approach to the acquisition of knowledge that was not radically different from that which was used in any number of other disciplines, academic and beyond. In the words of one cosmologist:

> *"The scientific method is something which is hyped and which I think is irrelevant. There is nothing very different from what scientists do from what a detective or lawyer does in following up clues, looking for evidence, and testing the reliability." (#33)*

Second, the methods employed in science drew on a whole range of principles and virtues that were not justifiable in terms of science itself. Science requires a range of 'non-scientific' attributes such as creativity, intuition, and perseverance. One ethicist said:

> *"[Scientists have] moral commitments to truthfulness, to honesty, they usually... value hard work... they hate negligence and deceitfulness. So quite a number of moral things there which clearly are not justifiable in terms of science, but scientists have to proceed with them." (#6)*

Third, science also requires certain structures of authority to maintain its existence and trustworthiness.[4] As a science journalist told us:

> *"I said that science isn't faith-based, but it is. Because I haven't read a paper on global warming. I haven't looked at the studies. But I believe in global warming because everyone tells me to*

believe in global warming. That is the authority in my current world, in the same way that 200 years ago, the authority would be the Church." (#38)

Fourth, the exercise of *reason* within 'the' scientific method is a good deal more complex than is sometimes imagined. According to a philosopher:

"I think it is very much a picture that crops up in the Enlightenment. This idea of an individual in isolation being able to check off all the assumptions and rationally rationalise them to such an extent that they can be assured that nothing falls outside the ambit of reason. I think Wittgenstein thinks that that is just simply an incoherent picture." (#14)

The practice of science demands a degree of faith in certain things[5] although that word itself was hotly contested on account of its associations.

"I see it operating in science too and obviously I would try and avoid the word faith in that connection...because it does imply a degree of irrationality for me which doesn't fit with science." (#72)

Finally, a great many interviewees pointed out that the *actual practice* of science does not live up to the theoretical image of it. Scientific skills are acquired through "apprenticeship".[6] Scientists are not neutral,[7] not objective,[8] not disinterested and rarely as open and receptive as the method says they should be. The process of fitting data and theory, or data and model, together is complex and commonly draws on a scientist's commitments,[9] imagination,[10] intuitions,[11] hunches, or sheer stubbornness.[12] As one science journalist summarised:

> *"I think this idea that we just trust science to some neutral, empirical god, is just really naïve. Because there is so much humanity at play, and so much bias at play." (#38)*

Science itself is not value-free. In the words of another journalist:

> *"I think all science to me is the product of the culture that it comes from and it's absolutely riddled with cultural biases and prejudices." (#36)*

Science is culturally-embedded and, arguably, culturally-shaped.[13] It is often tangled up with financial considerations.[14] It is political, in several senses of that word. As one ethicist remarked:

> *"I actually do think there is a lot of politics even in science, where people aren't really going on the basis of what they're actually finding, but what they hope to find. Because we're human beings and sometimes we don't like what we find." (#71)*

To repeat, this did *not* mean that science was ultimately flawed or that scientific conclusions were therefore unreliable, let alone that there is no such thing as truth. As one philosopher said, "the practice of science...is pretty well

designed to root out frauds, bogus theories and so on." (#55) The point is that the *actual practice of science* is a great deal more convoluted and messy than the textbook or popular image of "the scientific method" would have it.

This is highly significant for the debate between science and religion, because that debate often slips into the comparison of a normative (or theoretical) version of science versus a descriptive (or actual) version of religion. Thus, the comparison is often made between, on the one hand, the methodological rigour of science and the neutral, objective, disinterested activity of scientists, and on the other, the grubby reality of religion and the sometimes ill-informed, sometimes corrupt, always fallible behaviour of religious people.

This, it hardly needs pointing out, is an unfair comparison, the equivalent of comparing the *actual practice* of science (or worse, example of scientific fraud), with the principles of the Sermon on the Mount, and concluding by finding science methodologically wanting.[15] One philosopher put it this way:

> *"Religion sees itself as being the quest for the truth, whereas science, in its strictest sense and in its Sunday Best as it were, is the quest for provisional understanding which may be revised later." (#14)*

The analogy is a perceptive one: comparisons are fine and necessary, and will highlight important methodological differences. But if you are going to compare one party in their Sunday Best, it's only fair that the other is wearing the same outfit, and not their dirty work overalls.

"If you are going to compare one party in their Sunday Best, it's only fair that the other is wearing the same outfit, and not their dirty work overalls.

Metaphysics: going beyond natural vs supernatural

As with epistemology, there are clear-cut ways of engaging with the metaphysical dimension of the science and religion debate.

> *"If you really want to believe in the supernatural, do. Personally, I think it's rubbish and I think that's one of the big reasons that makes science and religion incompatible." (#24)*

Perhaps the commonest (and arguably the most simplistic) was pointed out at length by a(n atheist) philosopher:

> *"One thing that some philosophers do, and other philosophers complain a lot about it, is come to their conception of the nature of reality with this sort of eighteenth-century science hat on... the view about the world that it's a bunch of little particles bashing around each other. It's basically Newton. And then the supernatural is all the weird stuff that isn't little bits and pieces bashing around each other. That's a terrible view to have about the nature of reality." (#66)*

Although there were some interviewees who held to this view as a means of distinguishing nature (the realm of science) from supernatural (the realm of religion), just as many were critical of it – including, interestingly, some of the most anti-religious interviewees.

The problem with this metaphysical view was that this concept of naturalism failed to explain many things. In the words of one philosopher:

> *"There are famously faults and problems with naturalism... There's morals, modal necessity, maths, and minds. Philosophers have always puzzled about how you can accommodate these things within a purely naturalistic framework and I don't know*

whether you can and plenty of people don't think you can who are not theists." (#42)

This philosopher was absolutely clear that such problems did *not* for him necessitate any form of theism, which he considered equally unable to answer them. The point was that the kind of naturalistic approach to reality that was wedded to science (at least in American legal definitions of science we saw in chapter 2) was not as straightforward or even self-evident as first appeared. In the words of another non-religious philosopher-scientist:

"Many secular humanists think, 'Great! We have parked up supernaturalism, and the obvious place to go is naturalism'... [but] to me, scientism – which is what that is – is at least as great a threat as some of the more fundamental religious beliefs." (#12)

There were further complications with the clear-cut divide between naturalism and supernaturalism. Some (religious) interviewees placed their flag firmly on the naturalistic side of the debate. One theologian admitted:

"I am in this area a so-called physicalist. Minds are made of brain and body. They're not something different. Soul talk is not very helpful at all." (#100)

By contrast, some (non-religious) interviewees were heavily inclined towards a kind of panpsychism in which consciousness was inherent in nature even down to the smallest scale. One philosopher said:

"The basic position is that consciousness is just an extra property of matter. Fundamental particles have some incredibly simple forms of experience, and the experience of the human and animal brain is somehow derived from that...this doesn't necessarily take us in a spiritual direction. It could be just, 'Oh, right! Matter

has this extra property of consciousness'... a lot of my fellow panpsychists are complete atheist secularists." (#17)

More than one scientist pointed out that the natural-supernatural distinction simply didn't work for them professionally:

"As a theoretical physicist, I think that [naturalism] is a little bit problematic and certainly, the things I studied way back in my PhD, are things [such as models of alternate universes] that don't exist and that can't exist." (#81)

Several philosophers and theologians stated that the lawfulness that was usually integral to naturalistic metaphysics was not, in itself, explicable in naturalistic terms. According to one cosmologist:

"I have no idea where the laws of nature came from and that is actually the surprising thing. It's worth noting and it's a great mystery that anything exists." (#77)

A number of interviewees also pointed out that any hard natural-supernatural division was historically contingent. Things that had been considered natural (in the sense of capable of scientific study) in the past were judged supernatural (or simply nonsensical) today.

"What was observable scientifically a hundred years ago looks very different to what is observable scientifically today." (#79)

By contrast, some things that we recognise as perfectly natural today would have seemed utterly supernatural in the past.

"It has happened again and again and again in the past that as we've incorporated more and more phenomena into our

understanding of how things work, so they've ceased to seem magical or supernatural." (#61)

And if this had been a fluid and shifting boundary in the past, there was no reason to suspect it would not be so in the future.

"There is a sliding scale between naturalist and supernaturalist. As we learn more, we go down that scale and we take what was supernatural here, and we push it that way... I wouldn't say we're trying to eliminate the supernatural, I am saying the supernatural is maybe pulling the natural into the future." (#27)

The idea that there was a hard and fast line between the two was hard to sustain.

In this vein, a few interviewees mentioned the American philosopher Thomas Nagel, whose book *Mind and Cosmos* questioned the fusing of Darwinism and naturalism *without* proceeding to embrace any form of supernaturalism. They also mentioned the reception he received.

> *"Thomas Nagel wrote a very interesting book in 2012,* Mind and Cosmos*, where he argues that there are lots of things that it is hard to see how natural selection could account for. Like moral knowledge, reason, the emergence of consciousness. He got really horrific reviews. Partly, he talked very briefly about intelligent design arguments. But that was a tiny part of it. Most of it was philosophical arguments." (#17)*

The blurring and complexifying of the hard and fast division between the natural and the supernatural had implications for one of the better-known side discussions in the science and religion debate, miracles. These were easy to understand (and usually to dismiss) by some interviewees.

> *"I don't understand how people can actually believe that stuff, given what we know about the world." (#33)*

For others, however – and again not solely religious interviewees – the issue was necessarily more complex. It wasn't that they believed in miracles – most did not. Rather, it was that they understood them as a function of the background conditions of the science and religion debate.

> *"There may be a background assumption that I am so strongly committed to a naturalistic understanding of the universe, that the amount of evidence you would have to provide me is so sky high that you will never meet that burden." (#44)*

Alternatively, this was simply not part of the debate that could be decided by science. In the words of one non-religious sociologist:

> *"I don't think science has disproved the existence of miracles because miracles are singular events and I don't know if there's anything falsifiable about the claim." (#28)*

There was arguably less consensus among interviewees about the metaphysical dimension of the science and religion debate than any other. The questions it kicks up, insoluble in themselves, are hardly likely to be resolved in a short summary like this. But that, of course, is not our intention. Rather, we want to underline firstly, that the metaphysical dimension is critical to the science and religion debate and, secondly, that it too can be conducted in a shallow or in a deep way.

Hermeneutics: going beyond literal vs metaphorical

Just as the epistemological dimension has its simplistic division between faith and fact, and metaphysical dimension has its division between natural and supernatural, so the hermeneutic dimension has its own division. This is between literal and metaphorical readings, or, more accurately, between literalistic and literary interpretations.[16] Once again, the shallow end position here is obvious.

> *"If you interpret text very literally then of course the Bible would preclude any possibility that life evolved in the way that Darwin said it did." (#48)*

Literal readings of (some) texts generate a conflict which, in a sense, is no conflict at all. Even among Muslims, most often seen as adhering to a literal meaning of the text (a perception that was supported by our quantitative research[17]) there was

a sense that literal readings were not necessarily as rigid or sufficient as sometimes imagined.

> *"I don't believe that because it is the literal word of God that when I read it, I understand the literal eye of God, or the mind of God. I am still only a limited human being understanding that text... When I read the Qur'an and I read texts around the Qur'an about these issues, I see... this is allegorical... I guess what I am trying to get at is, I don't think you have to be as literal... that there might be loads of other ways, some of which we haven't even got our head around yet, of thinking about these issues." (#59)*

If the shallow end was this obvious and unprepossessing (and sparsely populated), it was equally clear what was at the 'deep end', namely the recognition of the necessity of a more sophisticated reading that is attuned to the precise literary form of the text in question. This could be simply metaphorical or analogical. According to one (atheist) philosopher:

> *"Religious tradition is much composed of a commitment to a certain kind of story or metaphor through which we attempt to catch a glimpse of the divine... all religious language is analogical, it can't be anything else." (#5)*

In reality, this approach was a virtue rather than just a necessity. One (agnostic) scientist claimed that this kind of reading was not only truer to the texts in question but more rewarding, more relevant and more challenging.

> *"I suppose it feels to me as though nothing that is said in the New Testament that need affect the way we understand it and lead our lives today, requires a literal belief in those miracles. And I see no reason why all of them could not be seen as parables, as allegories. In a way it feels to me as though that's a much richer*

> *way to understand all of this as allegory because that forces you to think about well, 'What is the message in this particular story that I should take away?', rather than, 'Oh that's something that happened 2000 years ago and wasn't that amazing.'" (#10)*

Such a view was supported by others, one of whom gave a specific example of what this meant.

> *"I can read the story of Adam and Eve in the Garden of Eden. I can read that and find meaning in it for today. Not historical meaning. I don't think there was a historical Adam and a historical Eve, but I know that the streets around where I live, that story is being enacted. It is a story of discontent. A story of the dangers of knowledge. And it is a very, very old story of men blaming women for all their problems." (#73)*

This understanding of language was not unique to religion. A number of interviewees pointed out the inevitability of metaphorical language in science too. It was hardly as if science could do without narrative, images, metaphors, and the like. As one atheist writer said:

> *"Everything we do in science is a story, right? Science, all of science, is just a model of nature, right? Atoms are not tiny little balls that are whizzing around, they're not and we know that now. But the whole of science is using metaphor and analogy to help understand and explain the physical world." (#15)*

In this regard, going beyond the division between literal and metaphorical when it came to science and religion was relatively straightforward. All disciplines and activities use language both literally *and* metaphorically, and going in at the deep end in the science and religion debate may mean not simply avoiding the 'religious language is always literal' cliché but also the cliché that science uses hard, factual, literal

language whereas religion uses soft, pliable, metaphorical language. Both use both.

That said, the nature of metaphor within this particular part of the debate was complicated and not uncontroversial. First, there was the complaint that religion's recourse to metaphor had little order or integrity to it. There was no consistency or pattern or principle discerned in what was to be read metaphorically and what was to be read literally. As one philosopher said:

> *"All religions cherry-pick their own traditions and their scriptures, their documents in order to choose the bits that they want to continue to believe in." (#61)*

Second, parallel with this, there was the sense among some interviewees that the turn to metaphor made religious beliefs effectively too slippery ever to be honestly assessed or criticised.

> *"People say it's just a ... it's an allegorical sort of a myth, ... okay so it's all things then, it's all things and nothing." (#13)*

Third, whereas strict and complete textual literalism was very rare (and arguably even impossible) – as one sociologist said, "I know very few fundamentalists who would insist... that the Jonah whale story be taken literally" (#21) – it was still the case that a great many religious people *did* say and take *some* things from their texts literally. In the words of a sociologist:

> *"People are standing up and saying this is what I believe and then they enumerate some things about the virgin birth and the resurrection and so on, and taken in any even vaguely literal way, those things are very clearly miraculous, supernatural, non-scientific and indeed completely ruled out by a scientific world view." (#28)*

In other words, however flexibly or metaphorically you took texts there was still at least the possibility for genuine tension there (although the extent of that tension would necessarily depend on the metaphysical assumptions already discussed).

Finally, most subtly, there was the danger of seeing metaphor as *mere* metaphor, of believing that

"This part of the discussion demands that we go beyond literal vs metaphorical altogether, and explore the similarities and differences of how language operates in both fields.

a metaphorical interpretation of a holy text was better – in the sense of more legitimate or more existentially rewarding – than a literal one but then divorcing metaphor from truth altogether, and implicitly believing that ultimately only literal meanings could be true. One of the interviewees was pressed on his implicit connection between literal and serious.

> *"Q: "Is it possible to believe in something or take something seriously without also taking it literally?*
>
> *A: Well, that's a nice distinction ... yes indeed I suppose that that is so. You could take seriously the... informative import of myths or children's stories. You could take seriously Hansel and Gretel, let's say. Hansel and Gretel are abandoned in the woods by their parents and they can't find their way back... They meet the wicked witch who wants to eat them, etc., etc. Well this is all about equipping children with the basic idea that their parents are going to die. They're going to be lost in the great wood forests of the world. You can take seriously the work done by a story of that kind without accepting it literally, so yes, I do accept that distinction." (#61)*

In summary, the shallow end of the hermeneutics discussion is straightforward: religion as consistently, obstinately, unreflectively literal – and therefore incompatible with science. The deep end is complex, however. It isn't enough to say religion demands metaphorical approaches to texts. 'Religion is metaphorical, whereas science is literal' is, in its own way, as shallow as the 'religion is literal' position. In a sense, this part of the discussion demands that we go beyond literal vs metaphorical altogether, and explore the similarities and differences of how language operates in both fields.

And this invites a final point. This challenge is not unique to religion. As one biblical scholar pointed out, there will

always be challenges in the interpretation of any text that is considered to be authoritative, no matter what the arena, whether that is something like the US Constitution or the sacred texts of Marxism.

> *"I think you get the same thing [in] Marxism as well and I understand the logic there. You've a text from Marx and Engels and then you've got a world that's changed quite rapidly over the past 150-odd years, where the Marxists will have to start trying to negotiate, 'well, is this the right application or is this the right application?' because the original writers didn't think that way, but you kind of ideally have that fidelity to what's going on with the text?" (#65)*

As the same interviewee went on to say:

> *"I think the world is a bit messier than simply an either-or about texts and textual history. It depends what the boundaries you set are for interpretation." (#65)*

Anthropology: going beyond material vs spiritual

The way in which the different underlying dimensions of the science and religion debate relate to one another is clear when it comes to the question of anthropology. People's attitude to this is correlated to their epistemology. In effect, as the data in Table 3 indicate, there is a correlation between people's attitude to the human (e.g. whether they see humans as spiritual) and their attitude to knowledge (e.g. whether they see science as sufficient)

Table 3: Attitude to science vs attitude to human

	Humans are at heart spiritual beings – agree	Humans are at heart spiritual beings – neither nor disagree	Humans are at heart spiritual beings – disagree
Science is the only way of getting reliable knowledge – agree	51%	57%	71%
Science is the only way of getting reliable knowledge – neither agree nor disagree	22%	28%	15%
Science is the only way of getting reliable knowledge – disagree	27%	15%	14%

Source: Theos/ Faraday/ YouGov 2021: Q1_2, Q2_8 (n=4754)

In a similar way, there is a correlation between views on human nature and attitude to ethics and science. Seeing humans as spiritual correlates with people agreeing that science has nothing to say about ethics.

Table 4: Attitude to science & ethics vs attitude to human

	Humans are at heart spiritual beings – agree	Humans are at heart spiritual beings – neither nor disagree	Humans are at heart spiritual beings – disagree
Science has nothing to say about ethics – agree	29%	22%	22%
Science has nothing to say about ethics – neither agree nor disagree	29%	41%	25%
Science has nothing to say about ethics – disagree	42%	38%	54%

Source: Theos/ Faraday/ YouGov 2021: Q1_10, Q2_8 (n=4754)

There is a certain logic to this. If you believe science is the *only* legitimate path to knowledge, you are more likely to arrive at an exclusive 'scientific' view of the human, whether that be as an evolved primate or a vehicle for selfish genes. If, conversely, you believe that science has *nothing* meaningful to say about the human, your understanding (and behaviour) will, for example, reject medical intervention and focus entirely, instead, on God, prayer, and issues of eternal destiny.

In reality, of course, in spite of the caricatures, vanishingly few people hold these extreme views. Few scientists believe we are *simply* our genes, and most religious people are entirely at ease with human material existence. As one philosopher-scientist said:

> *"I don't know many religious people who don't believe we can't treat the human body as an organism and can learn from what we find out in other beasts and apply it to treating kidney failure,*

for example. That is a massive area of agreement that goes under the radar. It is not even felt as agreement." (#12)

Just as, in everyday life, we operate freely with multiple epistemologies, so we are comfortable with various understandings of human nature – physical, evolved, biological, relational, social and, for many, spiritual.

In reality, however, while we like to think the direction of travel here is from epistemology to anthropology – our view of evidence and reason informing our view of ourselves – it is also heavily (perhaps even primarily) in the other direction: how we think of ourselves as humans influences how we think. Anthropology is not just a *consequence* of the science and religion conversation; it is a foundation of it.

The views on this, like all these other elements of the debate, can be shallow, the choice allegedly being between humans as entirely material, or humans as being material except for some kind of spiritual entity, like a soul, that has been implanted into us by God. The latter, dualistic view is, according to one interviewee, literally childish:

"Little kids from the age of three or four are already showing in their early language signs of dualism, that mind and body are different, thinking is different than doing, and all of those things. It's deep, deep in our psychology." (#24)

Whether or not it is childish, it is certainly perceived to be *the* religious view. According to one scientist:

"This is what some religious people have said to me, that they can accept there's been evolution, but at some point, God put a soul into humans and not into any other animals. Only humans have souls and that must be an intervention by a divine force." (#72)

At this level of anthropology, therefore, there was a perceived conflict. It wasn't that science could disprove the soul, so much as this soul-ish conception of the human was judged as unscientific.

> *"I think there is a conflict around it with the immortal soul, the immortal soul is a completely anti-scientific concept." (#3)*

That noted, a number of religious interviewees pointed out that this kind of dualistic approach to the material and spiritual nature of the human was not necessarily fundamental to all religions, or at least not to the Christian tradition of which they were speaking. Language of the soul, they claimed, need not refer to a kind of spiritual implantation into our physical bodies, but a spiritual aspect or property that is emergent from our complexity. In the words of one theologian:

> *"All that makes us most distinctive emerges [from] our physicality so people like Nancy Murphy and Warren Brown are very sceptical about the language of the soul, they say that if language has any use we should understand the soul as an aspect of the human being, not a part of the human being." (#97)*

Nor, at least according to one interviewee, was this a clever theological accretion on (i.e. deviation from) the original religious texts.

> *"I don't believe in the soul. I think that is a Greek imposition again upon the Bible, it has nothing to do with either the Old Testament or the New Testament." (#16)*

This approach shifted the discussion away from substance dualism, helped recapture the *material* nature of religious belief (which was emphasised by some interviewees) and avoided an unnecessary science-religion stand-off. In effect, if (some) people adhere to a narrowly material view of the human

because they understand the only alternative as the artificially implanted soul, this either/or stand-off can be dismantled by understanding the spiritual as an emergent property of the material. After all, no one we spoke to claimed that humans were not social or political animals, because there was no social or political thing to be found within our brain or our genes. Similarly, it is quite possible to say that humans 'possess' a sense of humour or a strong moral compass without imagining that humour or morality are made up of a different substance.

To be clear, there are plenty of religious believers who *do* hold to a straightforward substance dualism here – the soul is a spiritual entity within a material body – and there are presumably some scientists who would find this a scientifically-compatible view (though no-one among those we spoke to). However, the view we heard from our interviews was that 'substance dualism' was (at very least) a potential major tension point in the science and religion conversation, but one that was navigable through a 'deeper' understanding of both the material and the spiritual.

That said, there are still questions left for this approach. One was around Neanderthals, who had a small but honourable walk-on role in a number of interviews, in particular those with anthropologists. If the spiritual evolved or emerged within our species, *when* did it do so? Were Neanderthals, for example, in any way religious?

"I would say they definitely didn't have religion because in my definition it's a formalised structure and there is no evidence of that at all. Did they have a transcendent engagement with the world? Possibly... We see, for example, in our closest relatives like chimpanzees and bonobos, like some of the claims for emotional outbursts at the site of waterfalls and during storms. It's that kind of level of fundamental, emotional reactions to material phenomena that I would be thinking about for Neanderthals." (#79)

Does that mean they had any concept of an afterlife?

"I wrote a paper... trying to work out if Neanderthals had an afterlife and if they had an afterlife then maybe they would have had a religious sense and I came to the view that actually what they had was a concept of the after person but not the afterlife. So when granny keeled over, they knew that granny had gone somewhere and they gave granny a burial and all those sorts of things, but they didn't know where granny had gone to." (#52)[18]

Might their spirituality have emerged further, had it the opportunity to do so?

"Suppose 40,000 years ago modern humans like us had been wiped off the face of the earth, that Neanderthals had survived. They are a closely related species. I would then say it was perfectly possible that they could have evolved to be our kind of level, if level is the right word for it." (#66)

This was all fascinating, if, of course, highly speculative, but it still left the challenge of when and where the *Homo* species became religious.

> *"You still then face the question of how far back would you go? You're talking here about back to about a quarter of a million years ago. What was it like at three million years ago?" (#52)*

Or, put bluntly

> *"Did Neanderthals go to heaven? Well, no, because there is no such thing as heaven, but I think that's a question that maybe if people don't explicitly ask themselves but it's there, implicitly." (#13)*

There was also the current, rather than historical, question of whether other species might also be religious.

> *"For all we know it might already have happened. I mean I'd put my money on the whales, I really would. Singing to each other under the ocean. I'd put my money on the elephants. When elephants meet after separation, the effervescence is unbelievable. It's a feature of social animals." (#52)*

And if so, what would that mean to the idea of humans uniquely being made in the image of God?

> *"If your religion tells you that humans are separate to other animals, that is going to be a block. If your religion tells you that humans are created specifically in the image of a certain god that is going to be a block." (#9)*

A second and closely linked aspect to this conversation was around aliens and astrobiology. A number of interviewees discussed this and were of the opinion that at least life, and possibly intelligent life, was likely elsewhere in the universe. In the words of one geneticist:

> *"Life is an emerging property of natural laws, and I think that enriches the human experience.... my guess is that there is life in the rest of the universe. I think* intelligent *life is extremely unlikely, [but] I think we may find there is life in this solar system." (#35)*

What this might mean was a challenge for religious belief was on a par with Neanderthals, proto-spiritual primates, and effervescent elephants.

> *"If we came across another intelligent species from another part of the galaxy, what God would they believe in? Where does God fit into that? Would they have religious deities? Would these be great people? Would they have souls? Would we recognise them, allow them into heaven? Things that would leave religion struggling a bit." (#37)*

These were challenging questions though not necessarily insuperably challenging. A few interviewees even mentioned the idea of a kind of cosmic incarnation.

> *"Some say oh, well Jesus Christ must have appeared in those planets as well. If it's intelligent life, if it's bacterial life, well. I don't know if that's much of a problem but people with minds and therefore by application, souls, would be a problem." (#54)*

As this quotation suggests, the alien issue is linked, like the Neanderthal one, to the question of souls, and thereby to human nature. Arguably, as one scientist perceptively put it, the biggest challenge here was not to religious belief *per se*, but to the anthropocentric focus into which such belief often slips.

> *"It's not obvious to me again that it need pose any problems for religious belief, but it certainly has been said to potentially do so, because it undermines the human-centredness of religious writing." (#10)*

A third area of contention within the deep end of the anthropology debate lies around the capacity for science to explain those apparently quintessentially human characteristics. Here the conversation homed in on evolutionary psychology and, interestingly, it was the atheist scientist interviewees who were (far) more critical at this juncture.

> *"I am pretty sceptical about a lot of the evolutionary psychology stuff that you see, and we can't really test them, so it does get a bit just-so stories." (#36)*[19]

They were willing to give examples:

> *"There are evolutionary biologists even now ... evolutional psychologists... who argue that women have evolved to be at home and men have evolved to be out at work." (#48)*

> *"So if you say that why women wearing blusher or rouge is an evolved mechanism that reminds men of fruit, or babies cry at night to prevent their parents from having sex and therefore creating more babies which compete with them, all in a peer-reviewed academic study. I could list absolutely millions of these." (#35)*

The point about these examples is not to damn evolutionary psychology altogether – it may just have been an accident that almost all those scientific interviewees who ventured an opinion on the discipline were critical of it. Rather, it is to suggest that the underlying tension here was partly a function of operating at the deep end of the anthropology discussion.

As a few interviewees pointed out, many of these discussions that had been appropriated by the discipline of

evolutionary psychology had often been in the domain of religion:

> *"I think there is an inherent tension in how it is able to provide explanations for human behaviours, that previously would have fallen within the realm of religion." (#39)*

Or if not the domain of religion then of the humanities – in the broadest sense of that word.

> *"I think Taylor Swift has much more to say on the concept of love than Richard Dawkins, and you can quote me on that." (#35)*

This was not a claim that a purely spiritual or humanistic or pop music 'explanation' (whatever that might mean) was necessarily better suited to such questions. Rather, if the spiritual (like the moral or social or aesthetic) is simply an emergent property of the material, it can be hard to judge at what point spiritual, moral, social, or aesthetic explanations (or better still, *understandings*) become better suited than material ones. Just as it's hard to draw the historical line between non-spiritual proto-humans and spiritual humans, so it is hard to draw the line between spiritual (or moral) explanations for human behaviour and material or scientific ones. Indeed, there are very few lines at all at the deep end of these discussions. As one philosopher put it

I think Taylor Swift has much more to say on the concept of love than Richard Dawkins, and you can quote me on that.

> *"Although there are tensions within modern thinking, I don't think they're specifically problems for religious belief, they're problems for our ways of thinking about ourselves as human beings." (#5)*

In summary, the way we think of ourselves is every bit as intrinsic to the science and religion debate as the way we think about knowledge or reality or holy texts. It is quite possible to have such anthropological debates in a shallow way – in bluntly opposing the material and the spiritual for example. But a richer and more fruitful conversation about human nature, uniqueness, identity, purpose, and life is possible.

Ethics: going beyond moral polarisation

In a way that was obvious to many people, the New Atheism spasm of the 2000s was ethical rather than scientific in origin. This was partially obscured by the fact that most of its leading proponents were scientists, but the arguments, the language, and the context (Islamic terrorism, Religious Right, decay of secularism) were all highly morally (and politically) charged. That whole affair was a textbook study of life at the shallow end and was recognised as such by those of our interviewees (including atheistic and scientific ones) who mentioned it.

> *"To some extent, particularly I found this with people like Richard Dawkins, they purposely misrepresent it because it makes the religious side of things look more simplistic, more basic." (#99)*

> *"One very simplistic and problematic way of understanding it is the way it's assumed by the New Atheists where they seem to see religion simply as an inferior rival to science." (#93)*

The mistake was not simply categorical or epistemological as these quotations suggest, however.[20] It was ethical.

> *"The fact that a body can fall 32 feet per second is not something I derive a morality from... and the problem with the New Atheists is that they thought science was a value." (#54)*

Talk of religion poisoning everything, of religion as child abuse, or religion as being like the smallpox virus only harder to eradicate were broadsides against religion but ones that were grounded in its allegedly harmful effects or immoral practices. As the popular New Atheist slogan of the time put it, "science flies you to the moon, religion flies you into buildings". Religion might be wrong but, above all, it was *bad*.

Such views were rather rarer among the general population today than they were 15 years ago. In 2006, a ComRes poll, commissioned by Theos found that 42% (!) of adults people agreed that "faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate." (It was not, to put it mildly, what we had hoped to hear from the great British people when we were launched). Today, that figure is 20%.

Such views were even rarer among our expert interviewees, although occasionally a few ventured in this direction.

> *"Decisions need to be made and they are difficult if you don't have a black and white standard. So, religions will give you a black and white standard. Well, it's all right to turn the trolley to kill the apostates, but it's not all right to kill the good Muslims who've been doing their prayers five times a day and so on." (#24)*

As a rule, however, even the most anti-religious interviewees recognised that there was more to the science and religion debate than moral polarisation, whether that was good scientists vs bad believers, or morally-neutral science vs morally-laden (or morally-toxic) religion.

The deep end of this 'ethics' part of the debate in fact had several conversations going on in it, each complex

and challenging in its own way. Some were related to the epistemological dimension of the wider debate, such as the way in which science, for all its rigorous method, depended on ethical commitments or on an ethical framework that it cannot itself supply.

> *"Scientists... clearly have moral commitments to truthfulness, to honesty, they usually value hard work... they hate negligence and deceitfulness. So quite a number of moral things there which clearly are not justifiable in terms of science, but scientists have to proceed with them." (#6)*[21]

Some were specific to certain familiar science and religion topics – or one topic in particular. To a degree, the evolution debate pivoted on moral questions. It was put with force by a number of interviewees.

> *"A great deal of suffering is observed, and this looks to be evidence against a supremely powerful and benevolent creator on the face of it. But then science comes along and it discovers that our suffering hasn't just been going on for the last 6,000 years, it's been going on for the last 200,000 years. That's how long Homo sapiens have been on the planet and then it extends to other sentient life forms, including our predecessors and it goes back millions and millions of years... it's just not plausible that this is the creation of a supremely powerful and benevolent creator who has a special place for us in this universe. We're very late on the scene and all of that horror would appear to be entirely gratuitous in the perspective of such a divine creator. That horror was revealed by science. It massively amplifies the problem." (#42)*

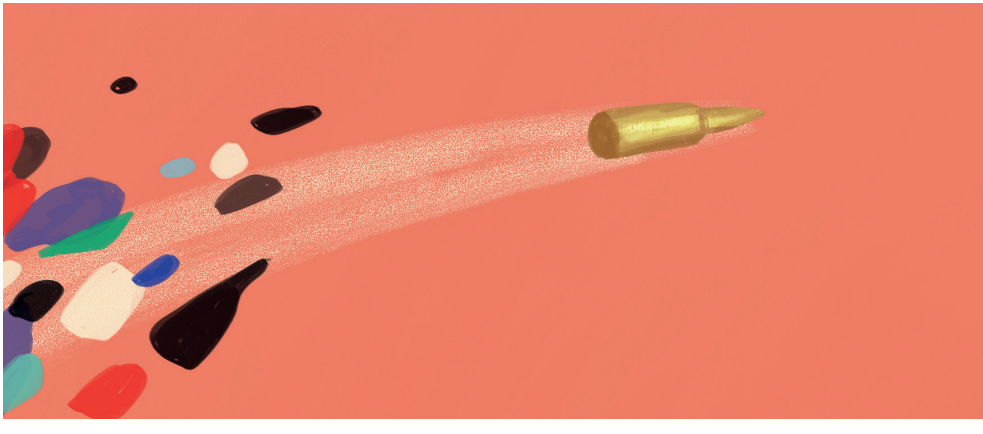
There were answers – or at least responses – to this point. Some interviewees claimed that the argument omitted consideration of the good and beauty that results from the

process (a consideration that Darwin himself drew into his reflections on this question). As one scientist said:

> *"I think that the only possible approach to the problem of evil is, oddly enough you can find implicit in Darwin, that suffering is part of the price of evolution but that overall in the life of any organism the good outweighs the bad, otherwise organisms would [feel] depression, he actually does use the word depression in this context." (#46)*

Some pointed out that it ignored any consideration of eternity and redemption which are central to (many) religious views.[22] Others said that the severity of the challenge presented by evolutionary suffering depended on the implicit image of God with which it was being compared.

> *"Unless God is an all-controlling engineer who simply makes things, it's bound to have a degree of freedom and unpredictability about it which I believe is at the core of creation, so in that sense, if it's messy and seems to keep changing its course, this is not incompatible with anything other than an engineering God who made the cosmos with fiat." (#75)*



Interviewees remarked that the whole discussion was predicated on a highly contestable sense of what was 'wasted'.[23] And some pointed out that pain was simply a reflexive mechanism without which life could not be sustained (the so-called 'only way') defence.[24]

Whether these constituted adequate responses was far from clear, however, and there were several religious interviewees who were prepared to admit that the problem of suffering, amplified by our scientific understanding of deep history, did present (certain forms of) religious belief with an insuperable problem.

> *"The creator of the world is one who doesn't care about the fact that 99 plus percent of all species are extinct now. Or they are suffering. Or that death is an integral physical part of life. It is very, very difficult to square that with a loving, omnipotent god." (#88)*

Whichever way one comes down here, however, the relevant point for our argument is that this critically important part of the science and religion debate is shot through with ethical considerations.

Beyond these specific parts to the ethical dimension within the science and religion debate, there was one additional, generic but very important one. In essence, it is not possible to separate science from technology, and technology from progress. Questions of whether and what we are progressing to, why, how fast, and by what means, are all irreducibly ethical, and that meant that science itself could not help be tied up with wider moral debate, whose connection with religion was obvious to all.

This could be seen at various levels. At the level of individual scientists' behaviour, if science depended on honesty and integrity, that meant it was also vulnerable to dishonesty and fraud. The practice of science could be good or bad. Science got nowhere by ignoring ethical considerations.

At the level of programmatic research, the topic and method of research was similarly embedded in ethical considerations. Nobody claimed that scientific research was in itself *necessarily* morally good.

> *"Science can be as immoral as the rest of us. The Nazis used scientists. And we know that they experimented on not only Jews, but they experimented on mentally and physically handicapped people... One reason why, apparently, African Americans at the moment will be dubious about the vaccine is that they were experimented upon by white scientists, way back in [the previous] century." (#73)*

And then, at the level of application, it was clear that the way in which science shaped technology and technology shaped progress was rife with moral challenges. As one philosopher put it:

> *"I think science is absolutely shot through with moral stuff. I mean AI is a great example, and I worry about it. The idea that progress in AI is being made in this moral vacuum... [or] by predominantly male people who quite often – you look at people like Elon Musk frankly, and you've got to wonder whether they're approaching all of this stuff with an appropriate sense of the moral implications of what they might be doing." (#64)*

It is important to be clear here. Just because everyone we spoke to recognised that there was an irreducible moral dimension to science – its practice, its programmes, its

application – did not mean that everyone (or even a majority) thought that this meant religion should be involved in the ensuing discussions (we will return to this important area in the next section). Some were very clear that it did not.

> *"I don't really see religion as playing any distinctive role in that issue, except insofar as you might think that the religion is the thing that grounds the ethics. So, it seems like fundamentally an ethical issue and then you might bolt on the religion as a way of giving you your ethics, which obviously I think would be a mistake." (#13)*

Others were rather more sympathetic.

> *"I think there is a real tension but I think it's an area, having said that, where having religious people and scientists together discussing it can be very interesting and possibly fruitful." (#47)*

The point was simply that there was an irreducibly moral dimension to this debate, and that, as one atheist philosopher put it:

> *"The religious communities often have a developed ethical vocabulary that helps people to think about ethical issues, for example, the just war tradition." (#5)*

Religion being indissolubly connected with ethical reasoning meant that, like it or not, ethics was a key part of the science and religion debate.

Politics: going beyond 'playing god'

In his work on recasting the science and religion conflict in the US, John Evans highlights the political dimension of the debate there. There is a profound conflict, he writes, "over which institution will set the meaning and purpose of society."[25] This view has been supported by the work of Elaine Howard Ecklund[26] and even though the political climate is less fraught in the UK than in the US (and less shot-through with religiously-motivated activism), this is nonetheless an important, if under-reported, dimension to the debate here.

As ever, it was possible to catch glimpses of shallow end debate in this.

> *"I think religious people assume authority because they're wearing a certain costume... nothing will offend a religious person more than if you challenge their authority... That's a real problem with religious authority... it sees itself as somehow above the fray." (#14)*

In a similar, if less polemical vein, there was some reference to the idea of 'playing God' as a kind of blanket

objection made by the religious to scientific advances, particularly those around the life sciences.

> *"As I see it a lot of religious people have an objection to the idea of genetically manipulating human beings on the grounds that it's playing God and that this is an improper thing for us to do." (#46)*

As we noted earlier in the report (see Table 1) there is some evidence to back this view up.

The phrase 'playing God', when used, was not used approvingly. Nevertheless, as the same respondent went on to explain, there was at least some logic to the underlying sentiment.

> *"Now while I disagree with their argument as they state it, I nonetheless have a lot of sympathy with what I think is the emotion underlying it. And that is that we will be doing something extremely complicated with unforeseen consequences. And it might be wiser if we were to be at the very, very least very cautious here." (#46)*

Others concurred. Science could make astonishing discoveries. Technology could achieve astonishing changes. But scientists, they claimed, could sometimes be dangerously enthusiastic or naïve about their achievements.

> *"Particularly to do with ethics I think that scientists often lose sight of the ethical implications of their work, and they often want to just plough through ethical boundaries. This is particularly with biosciences and biotechnology, and they just see them as being an unnecessary obstacle to what they see as progress." (#13)*

This was not to claim that scientists could not contribute to these ethical debates. They could.[27] However, they were not necessarily best placed to make decisions here. Quite a number of respondents were insistent on this point.

> *"Scientists have no particular authority about what aims we ought to have and how we should weigh them and scientists have no particular weight on that matter." (#55)*

> *"I think unfortunately science and religion both are engaged in practices of control that are probably doing a disservice to it and certain control over women for example." (#71)*

> *"Science is based on measurement. And measurement takes no notice of secondary qualities... never mind value or meaning." (#12)*[28]

Interestingly, one writer posited that the problem here was intrinsic to science and, ironically, to its position of cultural authority, which denied it the uncertainty needed in serious ethical debates.

> *"Given the public image of science it would be difficult for scientists to speak with as much moral authority... I think there's a cultural problem in terms of our caricature of what science is that limits how possible it is for a public scientist to speak with nuance because they're always seen as the voice of facts." (#81)*

The need, then, for a wider "societal and ethical debate" was almost universally recognised. The issue was, who should participate or, more accurately (because most people at least paid lip service to the idea that everyone had a right to participate), *who should decide?*

This was the 'profound conflict' over which institutions will set the meaning and purpose of society to which John

Evans refers, and aside from the shallow end view that scientists alone should decide it (which pretty much nobody held) or religious people alone should decide it (which pretty much nobody held), the answer was inevitably messy.

> *"Who has authority? Who are the priests in a society? Is it people with neuro in front of their name, or is it the Archbishop of Canterbury? Is it the chief medical officer, speaking into a pandemic or is it some religious professional? Who's going to listen to whom?" (#84)*

The idea that religious people and religious perspectives should *participate* in these public ethical debates was relatively uncontroversial. This could be for as passive a reason as "because they are a part of society too" (#39)[29] but there were more substantive ones. Religious groups had a long-developed "ethical vocabulary" and traditions (as noted above). Religious groups had a helpful distance from the scientific coalface (a logic that extended to "judges, or architects, or economists, or whoever, ...get[ting] involved in these discussions as well." (#29))[30] Religious groups remained numerically large, even in the comparably secular West, and were predominant elsewhere. Religious groups were perceived (at least by some interviewees) to tend towards a more fallibilist and conservative approach, which was an important corrective to the techno-utopianism that could characterise science and technology.

> *"I think that sometimes religious traditions or religious people can be very useful just to put a brake on that and say, look just think about it, slow down." (#13)*

For these reasons, and others, religious voices were expected within these scientific-technological-ethical debates. *How* they participated raised another question. Here

the contributions again could occasionally slip towards the caricature.

> *"If they're saying... you'll just have to take my word for it, or you'll just have to believe it because it says so in this book written by we're not quite sure who, a couple of thousand years ago, I can't really take that very seriously, I'm afraid." (#42)* [31]

Others pointed out that while many ordinary believers might indeed make this kind of argument, rarely did those theologians, ethicists and religious representatives who participated in these debates do so. Some observed that it was rare that there was only one, single incontestable and authoritative religious position on an issue.[32] Others remarked that actual contributions to such debates were almost always of a much higher standard than the simple argument from authority.

> *"I think the recent report on AI which the House of Lords did where Bishop Steven Croft from Oxford was on that committee [which] was [an] exemplary piece of work bringing religious thinkers and scientists together to talk about artificial intelligence." (#16)*

In effect, this conversation around how religious (and, for that matter, other) voices contributed to shared ethical debate over scientific-technological developments gravitated to a wider discussion of *public reasoning*, with the arguments of the political theorist John Rawls, who made the best-known case for public reasoning, hovering just out of sight.[33]

A conversation on public reasoning naturally linked to the wider one of public legitimacy, and the ultimately always-contestable question of who then gets to *decide* on these

matters. As ever, the extremes were obvious: not religious people alone, nor scientists alone.

> *"I don't think that the religious have got any particular claim on morality. If the particular moral stance is peculiar to a particular religion, then those who hold on to that religion have got no right to impose it on the rest of us." (#46)*

> *"The only people who have any legitimacy to dictate to us what we can and can't do are democratically elected representatives. ... Whereas scientists aren't elected, we don't choose them, so they can't have that level of authority." (#40)*

Beyond that, however, the question of public legitimacy when it came to shared issues of moral significance on the back of scientific-technological developments was highly debateable, drawing the science and religion debate into the domain of political theory, and touching on debates about secularism, establishment, the House of Lords, and what constitutes legitimate public authority.

It just so happened that almost all of our interviews were conducted in the first year of the Covid pandemic when precisely these questions were in the air (although without specific reference to any religious element). As one scientist put it:

> *"Yes. I think the way that we – in this country – the way that we have handled the Covid crisis has been a good example of the role of science. Scientists have advised the government. The scientists, they have set up the SAGE committee. One of the most interesting things is that, of course, the scientists don't agree on the SAGE committee. The politicians listening to the discussion have still got to make a decision. But anyway, that is the nature of science. You don't get universal agreement." (#26)*

As anyone who followed the media during this period will know, not everyone was so positive about the process and decisions made. But that, of course, is precisely the nature of these debates. As one journalist said:

> **It is both infuriating and absolutely desirable.**

> *"I think we have a messy democratic debate, as we always have done. And I am sure it will end up with lots of stuff that I'll find infuriating and massively disagree with. But that is the only way we can do it. It is both infuriating and absolutely desirable." (#39)*

"Infuriating and absolutely desirable": it is an epithet that well describes the entire science and religion debate, in all its wide, deep, often conflictual, but always interesting fullness.

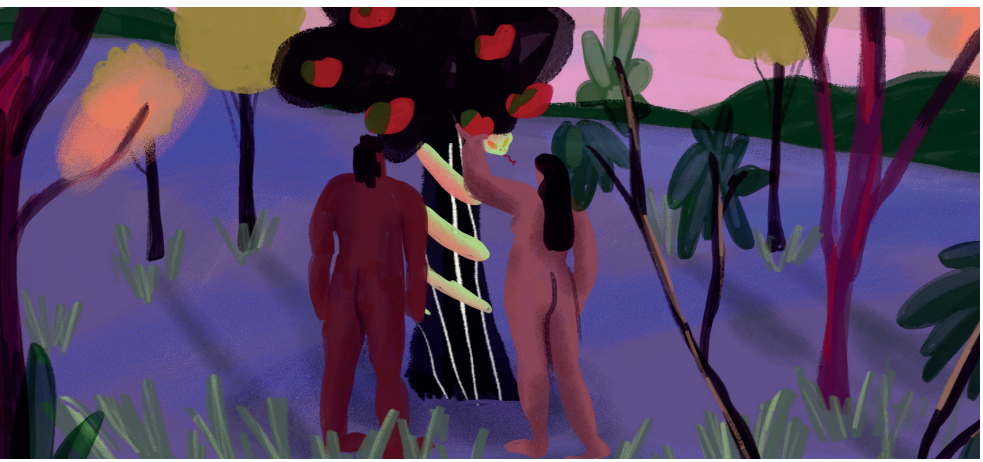
Conclusion: returning to the usual suspects

This report began by stating that the science and religion debate has been unduly captured by a handful of topics – evolution, cosmology, neuroscience – and sometimes, worse, by some of the loudest (and not necessarily best informed) voices within those debates. In reality, 'science and religion' is about so much more, in large measure because both 'science' and 'religion' are vast, sprawling, ill-defined categories, both highly relevant to the question of how we live our lives together.

None of this means that the usual suspects are either unimportant or uninteresting. On the contrary, all three mentioned are fascinating and valuable. Each does, however, take place within a wider context – the entire swimming pool that has been our controlling metaphor – in which a whole host of other issues form our views.

Questions of epistemology (how do we know what we think we know?), metaphysics (what are our prior commitments? what do we think are the basic ingredients of reality?) hermeneutics (how do we read texts, especially those that claim to be authoritative?), anthropology (who do we think we are as humans, and what value do we associate with ourselves?), ethics (what is good, and what constitutes genuine progress?), and politics (who gets to contribute to and decide on shared issues of moral significance?): all these are science and religion questions. Indeed, it is arguably these questions that decide opinions before they even reach the specifics of evolution, cosmology or neuroscience.

By thinking through our answers to such questions we can help clarify our thoughts to the more familiar science and religion subjects. We may not arrive at hard answers to any of them, but that is not necessarily a problem. Ultimately, the real joy of the science and religion conversation is not in finding the answer and then moving on, but in debating the questions themselves.



1 For example, "I don't have to be an expert at fairies at the bottom of the garden to know that I think that's probably incompatible with science." (#18)

2 "A lot of views put forward by scientists are speculation. Interesting hypotheses and in a sense, Popper was right about them. They haven't been proved yet" (#55)

3 "What we observe is limited by what we're able to observe and like any creature humans. For example, there is only a certain spectrum of wavelength of light that we're able to see. There's only so much that we can detect through our senses. Our bodies are limited in what they can observe. So to assume that we can observe everything, that's not a scientific or rational way of thinking." (#48)

4 The difference (at least according to critics) was that the authority in science was warranted: "In so far as I see scientists having an authority which I go along with, it's quite different from the idea of a religious revelation, it's a rationally grounded acceptance of things that I have good reason to accept on the authority of the experts because I understand why they are experts." (#5)

5 "You have to have faith that the peer review system actually does, on the whole, weed out rubbish and that you can rely on data and theorizing that you read in the journals." (#24)

6 "Science is a complex messy business which is learnt by apprenticeship rather than by systematic formula teaching. So, science is an art not a science if you see what I mean." (#16)

7 "Undermines this idea that scientists start from the neutral position. I don't think anything starts from a neutral position, we all have a set of assumptions and ideas about the world." (#48)

8 "Science is that it presents itself as this objective route to truth and it is a very powerful route to knowing about the world, but when it has these prejudices built into it, you almost can't question it." (#36)

9 "Everyone falls into the trap because scientists are human beings. And if they have a favourite model theory, they're not the same thing I know. Like Fred Hoyle had. Fred Hoyle had his favourite theory of the steady state and he wouldn't let go. That can be quite useful at times of being tenacious and following things through. But it's a drawback when it's wrong. And Fred Hoyle didn't know when it was wrong unfortunately." (#46)

10 "It uses imagination, it pairs down out of all the possible things that it needs to test. It doesn't test them all objectively equally, well it would never get off the ground." (#75)

11 "I do think that it's very important to acknowledge intuition, subjectivity, a sense of something being the case." (#45)

12 "The practice of science is a little ... a little more human in we all have our favourite models and the universe is complicated. And the information we get is often complicated. So if you get a piece of information that challenges your favourite model, actually you have to ask the question, is that because it challenges your favourite model, because your favourite model is wrong. Or is that the universe is just a little more complicated? And often actually the universe is somewhat complex. The processes we look at are somewhat complex. So just because a piece of data challenges your cherished model, doesn't mean it's wrong." (#43)

13 "I would say that the scientific methodology is a western-centric approach to knowledge. Other cultures have considered the value of experiential reality as being, in some cases, just as important, or also important. I think what is defining about what we call the west, or western empiricism, is the idea that this is the only valid form of knowledge. Which has implications that in some ways are rooted in colonial perceptions of what valid knowledge represents, because any other knowledge than that, derived by western centres of thinking were not deemed to be enlightened, valuable, rational." (#59)

14 "Who is funding the science? With medicine, it's practically all funded by pharmaceutical companies, so it's not surprising that we end up trying to treat everything with drugs, and those are really important questions that journalists should be asking, religious leaders, everybody should be asking." (#36)

15 The stories of Woo-Suk Hwang, Marc Hauser and Jan Hendrik Schon, among other scientific fraudsters, are told in *Fraud in the Lab* (Harvard, 2021)

16 Thanks to our colleague, Natan Mladin, who pointed out the literalistic vs literary reading comparison. We have retained literal vs metaphorical, simply because these terms were the ones that tended to be used by interviewees (presumably because they have greater popular purchase), but we agree that literalistic and literary is better here.

17 60% of self-identifying Muslims interviewed for the quantitative research agreed with the statement that the Qur'an is "the actual word of God and to be taken literally, word for word", whereas 5% of self-identifying Christians thought that of the Bible, and even only 21% of weekly/ fortnightly churchgoers did.

18 Simliarly, "Highly social groups of animals performing rituals. Particularly around the dead of their community. And I think that has got a lot to do with the idea that elephants have this imagined reality, chimps have this imagined reality." (#63)

19 Similarly, "[...] described evolutionary psychology as just-so stories, and I think that is exactly right. They're post-hoc rationalisations, there's no testing, there's no proper scientific process." (#37) "There is a lot of low-quality evolutionary psychology research. There is a heck of a lot of just-so stories. And I would have probably put, tentatively, some of the stuff trying

to explain religious ideas as having evolved, as being among those." (#39) We could give others.

20 As well, incidentally, anthropological: "[Religion is] thoroughly natural to us and... that's useful against claims that have been made in the past by New Atheists to suggest that you have to indoctrinate people to be religious, they wouldn't naturally be that way and it's a form of child abuse." (#83)

21 Similarly "Science definitely needs ethical frameworks and they can't come out of science." (#40)

22 "So the first one I'll do is there is such beauty along the way, along the lines of Ecclesiastes. He has made all things beautiful in their time but he has also set eternity in our hearts, we see this beauty but we know it's fleeting and transient and somehow we know we are part of that fleeting and transientness, and that points us to the one whose beauty doesn't fade." (#43)

23 "[The] idea of wastefulness...[this is due to] the part of us that worships utility and efficiency, but there's nothing that suggests that the cosmos works like this at all... God is able to create something which looks to the human mind wasteful, but it isn't wasteful because it issues in what was needed, whatever means are that are needed for it those means have to be done. The whole idea that evolution is wasteful is a mistake." (#75)

24 For example "My question is really quite simple. 'Is there another way of creating the world, or creating intelligent life?'... Then they tell you, 'Well it could have been created without suffering.'...And I ask, 'How do you know that?'" (#6).

25 Evans, *Morals not Knowledge*, p.15

26 See for examples, *Religion vs Science: What Religious People Really Think*, chapter 7

27 "I think that science has some things to contribute to a discussion of ethics. How we develop ethical principles, but I certainly don't think that science can provide us with ethics and judgements of right or wrong" (#10) Similarly: "Science could inform morality, in that it can help you understand the consequences of decisions, but ultimately if you are weighing up different values, it should be nihilistic. That doesn't mean that scientists are bad, or that science is bad, but there is nothing intrinsically within science that says I should seek to maximise the greatest good of the greatest number of people. But science can tell me how to do that." (#39)

28 Similarly, "it would and does worry me that the authority of scientists sometimes is extended into non-scientific areas..." (#5) and "Scientists do often trespass far beyond their disciplinary expertise." (#81)

29 Or, in full, "We need to start debating it. And part of that debate will naturally, as it should, include religious people taking a religious perspective on it, because they are a part of society too," (#39)

30 Similarly, "I think there is a real tension but I think it's an area, having said that, where having religious people and scientists together discussing it can be very interesting and possibly fruitful. So although there may be no resolution I think it's good to have the dialogue between people in those areas because it may help both sides to have a better grasp of what's going on. Both the scientists and religious people. The Bishops and the Professors coming together to discuss those problems even if they're never going to agree on a solution, it might help both." (#47)

31 "It could very well be that a religious body might have some sensible things to say on these matters which would command agreement even from people who don't share their outlook, but if the premise of the view were that this is forbidden by the deity, or 2000 years ago, that was the view that was taken by the founders of our movement, that kind of argument, *argumentum ad verecundiam*, the appeal to authority, isn't and shouldn't be [acceptable]. (#61)

32 For example, "Whereas within the realm of religion if the Pope says something then the Presbyterians might say something different, or the southern Baptists say something, there's no single authority if you belong to religion, there's all sorts of authorities. And there's also many different points of view. A plurality of interpretations" (#41). Or, "[there is] a political power struggle between people of progressive, more secular bents as opposed to those of a more conservative, and conservatively religious bent." (#28)

33 See John Rawls, *Political Liberalism* (New York: Columbia University Press, 1993). For a critique of this position see Jonathan Chaplin, *Talking God: The Legitimacy of Religious Public Reasoning* (London: Theos, 2008)

Appendix 1: Qualitative research

We spoke to 101 interviewees for this project, from a wide range of backgrounds within science, philosophy, religion, and communication. Interviews lasted around an hour, although some were (much) longer and a few (slightly) shorter. Interviews were conducted between the autumn of 2019 and the autumn of 2020. All were recorded and transcribed for analysis. Although many interviewees said they were happy to be quoted in person, a few were not and we have preserved the anonymity of all quotations (interviewees were told that they were going to be named as having been interviewed but not identified further; the numbers for interviewees above do not correspond with the list below, which is alphabetical).

Interviewees were recruited primarily for their professional expertise, though we were clear that we wanted a majority of non-religious and non-believing interviewees, primarily because we were interested in locating the perceived tension points between science and religion and this is easier to do with non-religious and non-believing respondents. We did not, however, recruit on the basis of their views of science and religion compatibility, which we only discovered after inviting them to interview.

Of our interviewees, 60% were male and 40% female; 63% were not religious and 31% were (6% did not say).

When it came to their stated beliefs, 55% said "I do not believe in God"; 6% said "I don't know whether there is a God and I don't believe there is any way to find out"; 7% "I don't believe in a personal God, but I do believe in a higher Power of some kind"; 6% said "I find myself believing in God some of the time, but not at others"; 15% said "While I have doubts, I feel

that I do believe in God"; and 13% said "I know God really exists and I have no doubts about it".

When it came to their attitude to science and religion compatibility, 12% said they thought the two were strongly incompatible, 24% that they were incompatible, 41% that they were compatible, and 23% that they were strongly compatible.

Interviews were conducted by means of a semi-structured interview guide, and were recorded. All the interviews were transcribed in full (resulting in close to a million words worth of transcripts) and then analysed by means of detailed re-reading and coding, using NVivo software. A series of meta-categories were then identified – e.g. physical sciences, life sciences, brain sciences, epistemology, metaphysics, methodology, religion, science and religion models, conceptions of the human, ethical discussions, social and political discussions. These were then further broken down into sub-categories with the connections between each being drawn out. Through this iterative process of reading and analysis, we arrived at the six overarching dimensions or categories that have structured parts 2 and 3 of this report. Although others might have been chosen, we believe that these best cover the breadth of discussions within the interviews.

The full of interviewees, given in alphabetical order, and not indicative of the ascriptions within the report follows:

- David Adam, Science Journalist
- Joshua Andrews, Lecturer in Eastern Religion (University of Bangor)
- Bryan Appleyard, Award Winning Science Journalist and Author
- Hana Ayoob, Science Communicator, Podcast Host and speaker

- David Baddiel, Author, Screenwriter, Television Presenter and Playwright
- Julian Baggini, Philosopher, Journalist, Author
- Philip Ball, Science Journalist, Author
- Helen Beebee, Samuel Hall Professor of Philosophy (University of Manchester), President of the British Society for the Philosophy of Science
- Michael Berry, Professor of Mathematical Physics (University of Bristol)
- Sue Black, Popular Author, Professor of Anthropology, (Lancaster University) President of the Royal Anthropological Institute of Great Britain and Ireland.
- Sue Blackmore, Parapsychologist, Author
- Paul Braterman, Professor of Chemistry (University of North Texas and University of Glasgow), science writer and educator
- Justin Brierley, Broadcaster, Podcast Host
- Andrew Brown, Journalist, religion correspondent, editor
- Steve Bruce, Chair of Sociology (University of Aberdeen) and contributor to the British Social Attitudes Survey
- Geoffrey Cantor, Professor of the History and Philosophy of Science (University of Leeds)
- Bernard Carr, Professor of Mathematics and Astronomy (Queen Mary University of London)
- Tom Chivers, Science Journalist
- Stewart Clark, Professor of Physics (University of Durham)
- Stuart Clark, Author, Astronomer, Broadcaster, Consultant for the European Space Agency and former editor for Space Science.
- Joanna Collicutt, Karl Jaspers Lecturer in Psychology and Spirituality (University of Oxford)

- Brian Cox, Author, Broadcaster, TV Host, Documentary Maker, Professor of Particle Physics at The University of Manchester and The Royal Society Professor for Public Engagement in Science.
- Lee Cronin, Regius Chair of Chemistry, Director of Cronin Group Research Group (University of Glasgow)
- James Crossley, Professor of Bible, Society and Politics (St Mary's University, London)
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- Linda Woodhead, Professor of Sociology of Religion, (Lancaster University)
- Rebecca Wragg-Sykes, Author and Archaeologist (University of Liverpool)

Appendix 2: Quantitative research

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.) The questionnaire for the survey is available at www.theosthinktank.co.uk

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"'Science and Religion' is a lot like a swimming pool. All the noise is up at the shallow end."

We have got 'science and religion' all wrong – or at least out of proportion.

For too long, the conversation has fixed on a limited number of (scientific) topics – evolution, Big Bang, neuroscience – and often on the loudest voices there. The result has frequently turned conversation into debate, and debate into argument. One of the consequences of this is that when you ask people about the relationship between 'science and religion', opinions are largely negative.

However, when you ask the same people about *specific sciences* and religion, or about science and specific religions, their views are more complicated. And when you look at expert scientific and philosophical opinion on the matter – even among the non-religious people and atheists – views are not only more nuanced but also more positive.

In short, the 'science and religion' conversation is needlessly shallow and needlessly noisy.

This ground-breaking report draws on a three-year project in which the researchers conducted over a hundred in-depth interviews with leading academics and science communicators, and commissioned a YouGov public opinion poll of over 5,000 UK adults.

It outlines the conversation around 'science and religion', and shows what it isn't, what it is, and what it could be.

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ISBN 978-1-8382559-1-6

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