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"Science and Religion": the perils of misperception

Nick Spencer





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"Science and Religion"

Contents

"Science and Religion"

This report in 30 seconds	5
Acknowledgements	7
List of figures	9
Executive summary: facts and figures	13
Introduction: the perils of misperception and the "war against science"	18
1. Science, religion, the Bible, God and faith	27
2. Evolution and religion	43
3. Science and scientific progress	84
4. Conclusion: what are we really disagreeing about?	94
Appendix: Science and religion in the UK: data sources	105

This report in 30 seconds

The conflict between science and religion is often talked up in the UK as if it were part of a culture war, as it allegedly is in the US.

In reality, this conflict between science and religion is more assumed than real, although a sizeable minority of the UK population does see conflict between the two.

Research into 'science' and 'religion' is often a selffulfilling prophecy, assuming what it is assessing.

The UK is under-researched in this whole area; the vast majority of existing work being focused on evolution.

There are pockets of antagonism, though the best estimates for creationism stand at around 10% of the UK population. Indifference or confusion about evolution is a bigger problem than outright rejection of it.

The heart of the perceived tension, such as it is, between science and religion is less about God, the age of the earth, or miracles (although all of these can be issues) but about the status and nature of human beings, and the implications for scientific progress and social authority.

Acknowledgements

The data in this report come from a variety of sources (details of which are given in the appendix). Some of the key statistics come from research carried out by Dr Unsworth while at the Faraday Institute, Cambridge. The data in figures 3, 4, 8 and 23 are all as yet unpublished and I am extremely grateful to Dr Unsworth for allowing me to use these. Dr Unsworth can be contacted at the University of Kent: A.Unsworth-61@kent.ac.uk

List of figures

"Science and Religion"

Figure 1: Attitudes to science and religion in general	29
Figure 2: "Science totally undermines religious belief", percent agreeing by sub-group	30
Figure 3: Attitudes to and about 'science and religion'	31
Figure 4: "I think that science and religion are incompatible", by religious group	32
Figure 5: Science and religion in the US	34
Figure 6: "Modern science disproves the Bible"	34
Figure 7: "Modern science disproves the Bible", percent strongly agreeing by sub-group	35
Figure 8: "Science has shown that there is probably no God", by religion	36
Figure 9: "We depend too much on science and not enough on faith 1988-2014	", 38
Figure 10: "God created the earth and all life in it"	45
Figure 11: Attitudes to evolution in general	46
Figure 12: Attitudes to evolution in general, by religious group	47
Figure 13: Attitudes to non-evolutionary viewpoints	48
Figure 14: Attitudes to non-natural explanations for origin and development of life, by religion	49
Figure 15: Attitudes to age of the earth	50
Figure 16: Attitudes to theory of evolution	52
Figure 17: Confidence in evolution, percent agreeing by demograph breakdown	1ic 53
or outdo mit	55

Figure 18: Attitudes to Young Earth Creationism, Theistic evolution, Atheistic evolution, and Intelligent Design	54
Figure 19: Levels of certainty on views of creation and evolution, by percent of overall sample	56
Figure 20: Attitude to origin and development of life on Earth	57
Figure 21: Attitudes to God and evolution	59
Figure 22: Attitudes to God and evolution, by religiosity	60
Figure 23: Attitudes to God and evolution, by religion	61
Figure 24: Attitudes to evolution and Christianity	62
Figure 25: Attitudes to origin of species and development of life on earth, worldwide	64
Figure 26: Attitudes to god and evolution, worldwide	65
Figure 27: Attitudes to human origins and development (BSA)	67
Figure 28: Attitudes to human origins and development, 2009-2016 (Wellcome)	68
Figure 29: Attitudes to evolution and human origins	69
Figure 30: Attitudes to God and human origin and development of lin on earth	fe 70
Figure 31: Attitudes to human evolution	71
Figure 32: Attitudes to human evolution, by religion	72
Figure 33: Attitudes to evolution in general vs evolution of humans	72
Figure 34: Attitudes to evolution and chance	73
Figure 35: Attitudes to evolution and purpose	74
Figure 36: Attitude to value and significance of human beings	75

"Science and Religion"

Figure 37: Opinion of the relationship between human beings and o	ther
living things, by religiosity	76
Figure 38: Attitudes to levels of evolutionary explanation	78
Figure 39: Difficulties with human evolution	79
Figure 40: Evolution and consciousness	80
Figure 41: Opinion of scientists – difference between religious and non-	
religious views	86
Figure 42: Opinion of scientists' activities – difference between	
religious and non-religious views	87
Figure 43: Attitudes to science – difference between religious and no	on-
religious views	88
Figure 44: Benefits vs risks of science, difference between religious a	and
non-religious views	89
Figure 45: Perceived knowledge of science, by religion	90
Figure 46: Actual knowledge of science, by religion	91

Executive summary: facts and figures

Science and religion, the Bible, God and faith

- The percentage of people who agree or strongly agree that science and religion are incompatible (27%), compared to the 39% who disagree/ strongly (figure 3).
- This is around half the percentage that thinks that "many people in this country" think they are incompatible (50%) (figure 3). Similarly, rather more people in the US believe that there is a conflict between science and religion than feel it themselves (figure 5).
- Perceived conflict, where it exists, is less about whether science disproves God (over which opinion is split, figure 8) and is more likely to be around the science and Bible (figure 6), presumably on account of perceptions of the the biblical creation story and stories of miracles.
- Perceived conflict is driven primarily (and not surprisingly) by those without religious belief or affiliation (figure 4).
- The direction of travel in the UK is away from the belief that "we depend too much on science and not enough on faith", although it is important to emphasise that the question(s) underpinning these data assume an antagonistic, zero-sum game between science and faith (figure 9).

Evolution and religion

The level of evolution rejection in the UK, according to the most reliable surveys, stands at around 10% (Unsworth, figure 11), 9% (*Rescuing Darwin*, figure 16), and 9% (*Exploring the Spectrum*, figure 20), although some surveys place the figure higher, particularly when the evolution of humans is highlighted (figure 17), when

the option of Intelligent Design is offered alongside creationism (figure 19), or when the question is cast in sceptical form (e.g. figures. 14, 29).

- The 'hard creationist' line that the earth is less than 10,000 years old and that it was created in six 24-hour days are minority positions, with somewhere between 6% and 10% of the population agreeing with them (figure 15).
- A greater issue than 'evolution scepticism' is 'evolution ambivalence' or 'evolution confusion', with the overall level of confidence in these views – on evolution in particular but also on creationism and Intelligent Design – being remarkably low (figure 18).
- The religious element of evolution rejection is variable. Anglicans and Catholics are no more likely to reject evolution than the population as a whole, Muslims somewhat more so and Independent Christians and Pentecostals still more so. (figure 12) Similarly, there were comparable levels of uncertainty about the age of the earth found across religious and non-religious groups (figure 18).
- Overall, the majority of people felt that it was possible to believe in God and in evolution by natural selection (figure 26).
- Conflict is driven not by creationists but by atheists.
 Thus, for example, of the 19% of Britons who perceived some conflict between God and evolution, only 24% were classed as upholding 'creationist' beliefs, compared to 54% who were classed 'atheistic evolutionists' (figure 26).

- More people object to the idea of evolution of humans, than evolution in general (figure 33), although on balance, when people support evolution, they don't tend to pick and choose but take it whole – i.e. humans and other animals (figure 38).
- The vast majority of people reject the idea that evolution tells us there is no purpose to human life or that humans are just another species with no unique value or significance (figures 34, 35). Religious people are especially likely to reject this view, although even among atheists its remains a minority position (figure 36).
- People tend to have a greater problem with the idea of evolution explaining human consciousness than they do with human (or animal) evolution in general (figure 38).

Science and scientific progress

- Religious people are slightly more positive in their associations with scientists than the non-religious (figure 41).
- Religious people are more anxious about the speed, capacity and potential for science than the non-religious (figure 43).
- With only one exception, religious people thought that scientific development was more risky than beneficial compared with non-religious respondents (figure 44).
- Those technologies about which there is greatest anxiety

 or at least most reservations among the religious are
 synthetic biology stem cell research and GM crops, all of
 which involved modifying life in some way (figure 45).
 Conversely, the one area in which the religious are more

likely than the non-religious to see the benefits is in animal research.

 Although religious respondents felt they were only slightly less well informed than non-religious ones, their actual levels of knowledge were measurably less (figures 44, 45).

Introduction: th<mark>e perils</mark> of misperceptio<mark>n and the</mark> "war against science"

Since 2012, the research agency Ipsos/ MORI has been conducting surveys into, what they have dubbed, the perils of perception. This explores the difference between people's perception of something and its reality.¹ For example, people in the UK overestimate prison population, knife crime, and unemployment but underestimate the impact of climate change and the level of sexual harassment.

Ipsos/ MORI does not ask about people's perception of science and religion, in part because there is no 'reality' figure, such as official measures of unemployment or prison population, to compare it against. Nevertheless, the data in this report suggest that this topic does suffer from the peril of misperception. More people think that there is a general antagonism between science and religion than feeling strongly about it themselves, and there is a general, if vague and largely unmerited impression, that the levels of 'creationism' are higher than they appear to be.

One of the reasons for this lies in the model that America (apparently) provides in the 'science and religion' debate, and therein also lies the real peril. The US, famously – and incomprehensibly to many Britons – has long boasted a high percentage of people – 18% according to the Pew Forum, rising to 38% of white evangelicals – who claim to believe in some form of creationism.² The line between them and evolutionists has become a frontline in the culture wars, across which armies – one allegedly rational, modern, educated, and scientific; the other irrational, pre-modern, ignorant, and religious – square off. The local conflict between evolution and creationism becomes emblematic of the historical battle between science and religion, which then gets caught up in all-encompassing culture war.

In reality, that historical battle has been nothing of the kind. Academic research since the mid-1980s has thoroughly undermined the all-dominant narrative of science-religion warfare. Thanks to the pioneering work of John Hedley Brooke, Ronald Numbers, Peter Harrison, and others, the true complexity of the relationship between science and religion throughout history is now firmly established in the academy, and 'warfare' is recognised as a metaphor manufactured in the later 19th century for almost entirely local, circumstantial reasons. Skirmishes and sabre-rattling there has been aplenty, and battles sometimes, but all out war, no.

This revision has not travelled far from the corridors and seminar rooms of the academy. A recent volume of essays exploring the origins and consequences of the 'conflict' narrative remarks that "notwithstanding all the outstanding work by a generation of historians dismantling the 'conflict model', their revisionist accounts have scarcely made a dent on leading public intellectuals."³ As far as the general public is concerned, the history of science and religion is either a closed book or one that has smoke coming from its pages.

As with history, so today; the perception of conflict is widespread. Thus, Michael Hobart begins his recent book on *The Great Rift: Literacy, Numeracy and the Religion-Science Divide*, by claiming that "Few among us would dispute that we live in an age marked by a deep schism between science and religion."⁴ In a similar vein, Snezana Lawrence and Mark McCartney, on the first page of their volume on *Mathematicians and their Gods* remark that "it is unfortunate that in popular thought the prevailing description of interaction between science and religion is one of warfare."⁵

It's a view that a number of prominent intellectuals are happy to prey on. Richard Dawkins is only the most obvious example. We scientists "do our best [to provide excellent education]," the biologist Steve Jones opined, "but faced with schools or faith groups that get their ignorance in first, we seem to be fighting a losing battle."⁶ The debates between science and religion, remarked the crusading secular former MP Evan Harris, need to be had in public. "Science has nothing to fear from them. I don't think we're winning; we've won a few battles; but there's a war to be fought."⁷ In 2008, Michael Reiss was forced to resign his position as education director at the Royal Society over remarks he made about the teaching of creationism in schools. The Royal Society misrepresented Reiss's attempts to encourage teachers to engage with creationism and explain why it was wrong as a willingness to teach creationism. "We gather Professor Reiss is a clergyman, which in itself is very worrisome," remarked the Nobel Prize winner Sir Richard Roberts. "Who on earth thought that he would be an appropriate Director of Education, who could be expected to answer questions about the differences between science and religion in a scientific, reasoned way?"8 Presumably Sir Richard Roberts would have done a better job. "The beauty of science is that it provides real explanations of the world around us while constantly trying to disprove itself," Humanists UK tweeted a decade later. "This is why humanists look to science for explanations of natural phenomena, and not to dogmatic scriptures."9 Time and again, the perception - these interventions rarely quote data to support their views - is that it's either/or; a battle that is won or lost; faith or reason; explanation or dogma.

Militaristic rhetoric and local skirmishes can easily slide into the idea of wholesale warfare. We catch a glimpse of how this can happen from a BBC Horizon programme first broadcast in 2006 and for which (ironically) Ipsos/ MORI were commissioned to conduct some polling looking at beliefs "on how life started in earth and what should be taught in science classes on this topic."¹⁰ Respondents were presented with three statements to choose from, and then asked about their attitudes to teaching in science classes. The results were used in the ensuing programme, despite the fact that the whole exercise was of highly questionable reliability.

Firstly, respondents were asked which statement best described their view of "the origin and development of life", a framing phrase that elides two, rather different, issues – the "origin" and the "development" of life – without distinction or comment. The idea that someone could have different views on the two almost completely different issues of how life originated and how life developed is not considered.

Second, only three options were presented to respondents thereby compressing a complex issue into a highly limited number. Most surveys, as we shall note below, have (at least) four options.

Third, the three options presented to respondents were themselves problematic. First, there was the "evolution theory", which "says that humankind has developed over millions of years from less advanced forms of life." "God", the option then continues, entirely parenthetically, "had no part in this process." Second, there is the "creationism theory", which "says that God created humankind pretty much in his/ her present form at one time within the last 10,000 years." Third, there is the "intelligent design" theory, which "says that certain features of living things are best explained by the intervention of a supernatural being, e.g. God." These options elide scientific explanations with religious ones, work on an either/ or principle, and exclude the mainstream Christian position - the one that is, for example, the official teaching of the Catholic Church – to the effect that evolution is true but its truth says nothing about the existence or involvement of God. In effect, it allows respondents to choose between atheistic evolution, creationism and intelligent design, without offering anything like a theistic evolutionary perspective. In the words of Prof Fern Elsdon-Baker, a specialist in public opinion on evolution, "by its definition in this poll acceptance [of] evolutionary science is acceptance of atheism or agnosticism. In essence, this poll creates 'creationists'." Perhaps not surprisingly, the results reported that only 48% of people favoured the "evolution theory", compared with a whopping 22% that favoured the "creationism theory", and 17% favoured the "intelligent design theory" - results that are, as we shall note, highly anomalous for the UK.

Fourth, having primed respondents in this way, the survey went on to ask whether the theories "should or should not be taught in school science classes." Again not surprisingly, the results reported distinctly anomalous responses with 44% saying creationism theory should be taught, and 41% saying the same of "intelligent design theory".

Finally, all of these data were then deployed for a programme that was entitled *The War on Science*. Religious opposition to science (note: not even evolution, but science) was broadcast. Confirmation of the deep schism in public opinion between science and religion offered. And another front in the culture war battles was opened up.

How much is this accurate? Is the UK heading 'west' in its attitudes to science and religion? Does this perception of

conflict match reality? Is evolution a new battle line opening up? Is there a "war against science"? Do we really know what the general public in Britain thinks about science and religion? And, if there is a sense of conflict here, do we know what people are disagreeing about? The answers to these questions are important, as assuming a conflict may inadvertently generate one or, which is as bad, needlessly forge weapons for eager culture warriors.

This report sets out to answer these questions – or rather to offer the most accurate answer to them that we currently possess. It collates, analyses and draws tentative conclusions from all the publically available research into public attitudes to science and religion in the UK since 2009. In doing so, the words of one of the most important of those studies, *Exploring the Spectrum*, is worth bearing in mind, namely that:

although the relationship between 'science' and 'religion' is often talked about in the media, by public intellectuals, and in public space, very little research has been done that explores what people actually think about their own or others' views on the relationship between science and religion, or by extension rationality, reason, and faith.¹¹

Such paucity of data notwithstanding, the report examines what we have, beginning with public and religious attitudes to science and religion, the Bible, God and faith. It then moves on to attitudes to evolution and its alternatives (where the majority of data lies), and finally explores public attitudes to scientific and technological progress.

It concludes with some thoughts on the state of play here, arguing that (a) rumours of war are greatly exaggerated; (b) there are signs of conflict, and certainly of perceived conflict; but (c) these tend to gravitate to the specific question of evolution, and within that (d) the heart of the matter lies less in creation/ evolution itself and more in questions about humankind, such as how we understand or define humanity, who gets to do so, and what implications this has for questions of social authority and scientific progress.

- 1 For more information see https://perils.ipsos.com/ and Bobby Duffy, *The Perils* of *Perception: Why We're Wrong About Nearly Everything* (Atlantic Books, 2018).
- 2 https://www.pewresearch.org/fact-tank/2019/02/11/darwin-day/
- 3 Jeff Hardin, Ronald L. Numbers and Ronald A. Binzley (eds.), *The Warfare between Science and Religion: The Idea That Wouldn't Die Paperback* (John Hopkins Press, 2018), p. 1.
- 4 Michael Hobart, *The Great Rift: Literacy, Numeracy and the Religion-Science Divide* (Harvard University Press, 2018), p. 1.
- 5 Snezana Lawrence and Mark McCartney (eds.) *Mathematicians and their Gods* (Oxford: OUP, 2015), p. 1.
- 6 https://www.telegraph.co.uk/news/science/8931518/Islam-Charles-Darwinand-the-denial-of-science.html
- 7 https://www.independent.co.uk/news/science/religion-vs-science-can-thedivide-between-god-and-rationality-be-reconciled-955321.html
- 8 Quoted in Priya Shetty and Andy Coghlan, 'Royal Society Fellow Turns on Director over Creationism', *New Scientist*, 16 September 2008.
- 9 https://twitter.com/Humanists_UK/status/1114124661758013443
- 10 https://www.ipsos.com/ipsos-mori/en-uk/bbc-survey-origins-life
- 11 http://sciencereligionspectrum.org/about-2/

1. Science, relig<mark>ion, the</mark> Bible, God a<mark>nd faith</mark>

This section reviews and summarises the various surveys into science and religion, or closely related topics, over the last ten years. Its purpose is firstly to give an overview of public opinion on the two; secondly, to point out particular demographic areas of interest when it comes to that relationship; and thirdly, to summarise and analyse the nature of the public opinion research itself into this topic.

Science and religion

Only two studies have explored directly into public perception of 'science' and 'religion' as overall categories. The 2009 Theos/ ComRes *Rescuing Darwin* study asked respondents one direct question about their understanding of the relationship between science and religion, offering them four options to assess their view. These ranged from the hostile ("science totally undermines religious belief"), through the contentious ("science challenges religious beliefs but they can co-exist"), the neutral ("science neither supports nor undermines religious belief") to the wholly complementary ("science positively supports religious belief"). The results are given in figure 1 below.

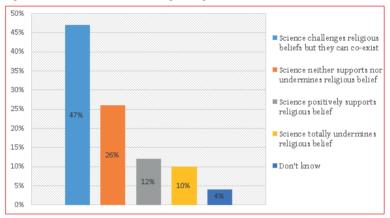


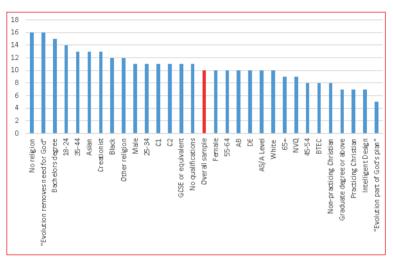
Figure 1: Attitudes to science and religion in general

Source: Rescuing Darwin, 2009, Q17

The data show a plurality, nearly a majority, in favour of a 'middle position' of 'challenged co-existence', with the next biggest proportion being akin to the NOMA (non-overlapping magisteria) position. Two clear minorities adopted the 'hardline' positions at each of the spectrum, 12% seeing science positively supporting religious belief, and 10% seeing it totally undermining it.

Within the demographic and other sub-samples, differences tended not to be significant (see figure 2). Younger respondents were slightly more likely to favour 'hard-line opposition' (and 'challenged co-existence'); better educated (degree level and above) respondents favouring 'challenged co-existence' and, not surprisingly, religiously observant respondents favouring 'hard-line' compatibility, and nonreligious respondents favouring 'hard-line' opposition. When it came to education, those with bachelor degree-level education were more like to see opposition, whereas those of graduate level and above were less likely.

Figure 2: "Science totally undermines religious belief", percent agreeing by sub-group



Source: Rescuing Darwin, 2009, Q17

Amy Unsworth's survey looked at this issue in greater detail, putting to respondents a number of statements such as:

- "Many people in this country think that science and religion are incompatible";
- "I think that science and religion are incompatible";
- "I think science and religion have nothing to do with each other",

as well as

"Scientists tend to be negative about religion"; and

"Religious believers tend to be negative about science".

The overall public opinion on the first three statements can be seen in figure 3.

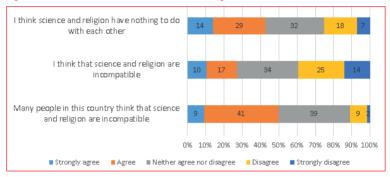


Figure 3: Attitudes to and about 'science and religion'

Source: Unsworth, 2014

A number of things are striking from these data. First, the percentage of people who themselves think that science and religion are incompatible (27%) is considerably lower than the percentage who think that "many people in this country" think they are incompatible (50%). This lends strong support to the hypothesis that the conflict between science and religion is much more assumed than it is personally held.

Second, and giving further support to this point, the percentage of people who *disagree* that science and religion are incompatible (i.e. who see them as compatible to some degree) is somewhat higher (39%) than the proportion of those who see them as incompatible (27%).

Third, nearly half of people (43%) believe that science and religion have nothing to do with one another. While it is doubtful that these respondents will consciously be holding to Steven Jay Gould's non-overlapping magisteria thesis, it does show that for many people it makes little sense to talk of the two as directly comparable (a fact that is obliquely supported by the comparatively high proportions of people who neither agree nor disagree with the statements about science and religion).

Unsworth's data allow for a breakdown of this question by religious group, which is shown in figure 4.

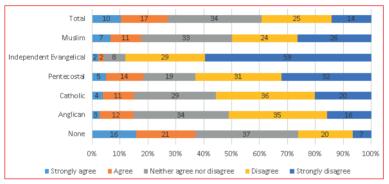


Figure 4:"I think that science and religion are incompatible", by religious group

These data show that *the idea* of conflict is primarily driven by 'Nones' (people of no religion, rather than atheists, though there will be a disproportionate number of atheists in this group), 37% of whom think science and religion are incompatible. By comparison, less than 20% of all religious groups judge the two to be incompatible. Conversely, only 27% of Nones see compatibility in the relationship, compared to 50% of Muslims, 51% of Anglicans, 56% of Catholics, 63% of Pentecostals, and a suspiciously high 88% of Independent Evangelicals.

Source: Unsworth, 2014

In one regard, the obvious response to this is "they would say that, wouldn't they?", with few believers openly holding to beliefs that they think contradict science (a point that, in itself, underlies the cultural supremacy of science). Similarly, just because a religious believer thinks that religion is compatible with science, it doesn't mean that what they believe *is* necessarily compatible. It is striking that the higher levels of perceived compatibility are to be found among those groups that tend to register much higher levels of scepticism towards evolution.

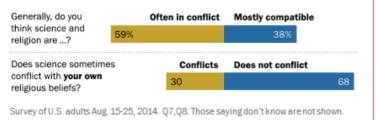
All that noted, these figures are interesting in as far as they do underline the dearth of personally felt conflict among religious believers. And indeed even among Nones, although levels of felt (as opposed to assumed) conflict¹ are higher than among religious believers, and higher than the proportion of those who strongly/ disagree about the conflict, the position still remains a minority one. In other words, while there clearly is a real felt conflict lurking under the assumed conflict, it is not a majority position even among those who might be judged in favour of conflict.

By way of brief comparison with the US, a 2015 Pew survey into the same topic found that the percentage of the US public saying science and religion are often in conflict stands at 59% (up from 55% in 2009). However, when the same survey asked respondents whether science conflicts with their own religious beliefs, only 30% thought it did, compared with 68% who claimed it did not (see figure 5).² In other words, people in the US, like the UK, only considerably more so, believe that there is a conflict between science and religion without necessarily feeling it themselves.

Figure 5: Science and religion in the US

Most Americans Say Science and Religion Conflict, But Fewer Say Their Own Beliefs Conflict With Science

% of U.S. adults



PEW RESEARCH CENTER

Source: http://www.pewinternet.org/2015/10/22/science-and-religion/ pi_2015-10-22_religion-and-science_0-02/

Science and the Bible

A somewhat more antagonistic picture of the relationship between the two is offered by the 2018 Ligioner Study on the *State of Theology*, which asked a nationally representative sample of 2,133 UK adults, among other things, whether they agreed or disagreed with the statement that "modern science disproves the Bible".

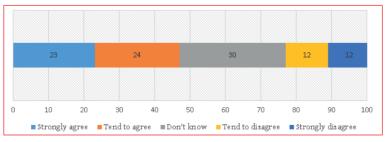


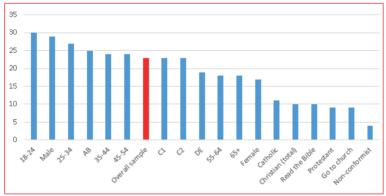
Figure 6: "Modern science disproves the Bible"

Source: Ligioner/ ComRes State of Theology, 2018, Q4

According to these data, a plurality (47%) agree to some extent that modern science does disprove the Bible, while a minority (24%) disagree, with nearly a third saying they don't know.

Within sub-groups, men were more likely to agree (51% vs 42% women net agree) with this statement, as were younger respondents (18-24 and 25-34). Conversely, and expectedly, the religiously affiliated (34% of Christians), those who pray (46%), those who read the Bible (64%) and those who claim the Bible as an authority (71%) were far more likely to tend to disagree or to disagree strongly.





Source: Ligioner/ ComRes State of Theology, 2018, Q. 4

The phrasing of the question – about the 'Bible' rather than 'religion' – is significant in the sense that where it exists, the tension within the science and religion debate tends not to exist at a generic level but at that of specificities. Although we cannot know how different respondents interpreted the statement, the mention of the Bible is likely to have foregrounded either the biblical creation story, or perhaps stories of miracles. Given that both of these offer specific reasons for tension, this would explain the higher level antagonism in this question. If around half of people see "challenged coexistence" as the basis of the relationship between science and religion, (elements of) the Bible probably will be the source of the challenge rather than the co-existence.

Science and God

Unsworth asked her respondents a question about whether they agreed that "Science has shown that there is probably no God". The results are shown in figure 8, overall and by religious group.

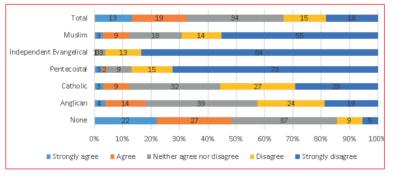


Figure 8: "Science has shown that there is probably no God", by religion

That the overwhelming majority of religious respondents do not think that science disproves God will surprise no one. Moreover, if we recall these categories technically say nothing about what people believe but about their religious affiliation,

Source: Unsworth, 2014

it is no surprise that, for example, 18% of Anglicans strongly/ agree that "Science has shown that there is probably no God", or that only 1% of independent evangelicals do.

What is noteworthy is that 32% of the total population see incompatibility between science and God (driven primarily by the 49% of Nones who do), which is directly comparable with the 27% that think that science and religion are incompatible. In other words, the existence of God doesn't seem to be driving or holding back the general public view on science and religion, unlike, it appears, aspects of the Bible, which seems, at least according to the Ligioner study, to be a bigger issue.

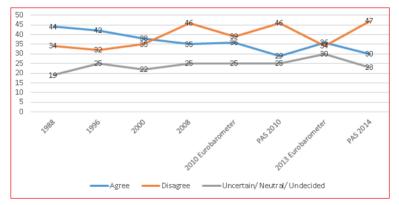
Science and faith

Questions about 'science and religion', 'science and the Bible' or 'science and God' are comparative rarities in public opinion research. More common in UK public surveys are those on 'science and *faith*'. Indeed, one of the commonest polling topics/ questions in this field is the perceived relationship between science and faith, with a number of surveys putting to respondents the statement "we depend too much on science and not enough on faith" (or a slight variant thereof), and assessing the levels of dis/ agreement.

There are highly significant (epistemological) assumptions underlying this question and, more precisely, the way in which it is asked. The question assumes (or at least implies) for example, that the practice of science requires no faith, that science and faith are comparable entities, that science and faith are in a kind of zero-sum game, and its pays no attention to what areas of life we might depend on one rather than the other. The conviction of the physicist Max Planck, and indeed that of many practising scientists, that "anybody who has been seriously engaged in scientific work of any kind realises that over the entrance to the gates of the temple of science are written the words: Ye must have faith! It is a quality which the scientist cannot dispense with," would have no place in such a discussion.³ There are, of course, significant restrictions on public polling of any kind, particularly of a kind as abstract as this, and one cannot expect too much epistemological finesse in a single question. However, the raft of assumptions within this question are significant and risk prejudicing answers.

The 'balance' of science and faith is one area where we have the advantage of (relatively) longitudinal data to track trends, the same question being asked in a succession of *Public Understanding of Science*, *Public Attitude to Science* (PAS) and Eurobarometer surveys. The results can be seen in figure 9 below.

Figure 9: "We depend too much on science and not enough on faith", 1988-2014



Sources: Ipsos/ MORI/ Eurobarometer

The general pattern over the last 30 years in this area is towards disagreement, with over 40% of people agreeing with the statement in the 20th century surveys, moving towards around 30-35% over more recent ones. The level of people not knowing or being undecided has remained relatively constant, meaning that the percentage of those who disagree with the statement has shown a clear increase. People today are less likely today to think that we depend too much on science and not enough on faith than they were 20 or 30 years ago.

The different waves of surveys here also allow for a degree of comparison across sub-groups and different countries. Thus, according to PAS 2014, the groups most in agreement (that "we depend too much on science and not enough on faith") were social grades DE (42%), Londoners (42%), over-75s (43%), respondents with low scores on a science knowledge quiz (43%), people with no educational qualifications (46%), BMEs (56%) and weekly attendees at religious services (56%).

Internationally, in 2010, the UK figure was about average for the EU when it came to agreement (EU 38%; UK 36%) but above for disagreeing (34% EU vs 39% UK). There was quite a spectrum of opinion within the EU on this matter, with figures very broadly corresponding with the level of religiosity or secularisation in the country. Thus, in Cyprus 66% of respondents agreed that we depend too much on science whereas only 20% of respondents in Denmark and 23% in the Netherlands and in Norway agreed.

The PAS 2014 study offered the starkest difference in public opinion in the UK – 30% agreeing verus 47% disagreeing – which, if indeed representative of the whole of the UK, would mark it as increasingly different from the EU average. According to the Eurobarometer 2013 wave, this was 39% agreeing that "we depend too much on science and not enough on faith" versus 32% disagreeing – although it is important to note that the UK figures for Eurobarometer 2013 – 36% agreeing versus 34% disagreeing – were closer in line with the EU average than with PAS 2014.

Overall, it seems as if the direction of travel in the UK is away from the belief that "we depend too much on science and not enough on faith". However, as noted above, what is perhaps most interesting in this question is assumption that 'faith' and 'science' operate together in some comparable, zerosum game where more of one naturally means less of another.

66

In the UK as in the US, the proportion of people who think that other people sense a conflict between the two is greater than the proportion of people who sense that conflict themselves. The conflict between science and religion is much more assumed than it is personal held.

Conclusion

The research that we do have into public attitudes to science and religion (and related issues) suggests that the alleged conflict between the two is somewhat more imagined than experienced. In the UK as in the US, the proportion of people who think that other people sense a conflict between the two is greater than the proportion of people who sense that conflict themselves. The conflict between science and religion is much more assumed than it is personally held.

Conflict, where it is felt, tends not to be around the question of

God, as the overwhelming majority of religious respondents do not think that science disproves God. Rather it is more likely to surface concerning the compatibility of the Bible and science, presumably on account of perceptions around the creation story and/ or stories of miracles. The other area of potential generic contrast is epistemological. People in the UK are less likely today to think that we depend too much on science and not enough on faith than they were 20 or 30 years ago. It is worth noting, however, that this fact, and the question(s) underpinning it assume a kind of antagonistic zero-sum game between science and faith, presupposing a competitive tension and then asking about that. In this regard, research into science and faith can be simply a self-fulfilling prophecy.

- 1 Though that is higher still, with 51% of Nones strongly/ agreeing that "Many people in this country think that science and religion are incompatible".
- 2 For more on this see: http://www.pewinternet.org/2015/10/22/ science-and-religion/
- 3 Max Planck, Where is Science Going? trans. J Murphy London: Allen & Unwin, (1933), p. 214.

2. Evolution and religion

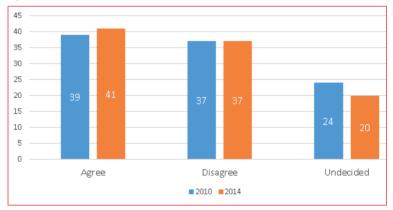
By far and away the best researched area in the field of science and religion is the perceived relationship between religious beliefs and evolution. This is not surprising, given the way in which this issue has been a lightning rod for science and religion disagreements for over a century, and given how it has attained particular salience in UK public discussion over recent years. However, it is nonetheless highly significant in itself. As far as public opinion polling is concerned, nine times out of ten we approach the question of the relationship between science and religion through the lens of evolution, and this has serious consequences for the whole debate, the evident difficulties that some people (we will see how many below) have with evolution being interpreted as a cipher for wider problems with science, as illustrated by Horizon's title The War on Science.

Because a number of surveys have tackled this topic, the precise language used to determine the public's view also varies. In particular, surveys regularly talk about (people's views of) the 'origin of life' when in actual fact they are about the process of evolution, rather than its origins. Accordingly, except when we specify otherwise, talk of public opinion about the 'origins of life' in this report means public opinion about evolution and its attendant subjects.

Rather than lump all the evolution-focused questions together, we have separated them according to the particular focus of each, whether, for example, they explore the relationship between evolution and a specific religion, evolution and God, evolution and humans, or evolution in general. As we will see, there is a subtle difference in public opinion about evolution of organisms in general and evolution of humans in particular, especially when some of the more prominent alleged implications of human evolution (e.g. its undermining of distinctive human identity and capacities) are taken into consideration. We begin first with the data on evolution in general.

Evolution and religion (in general)

The *Public Attitude to Science* survey, undertaken in 2010 and 2014, asked respondents to respond to a statement about God creating life ("God created the earth and all life in it"). The results are given below.





Source: Public Attitudes to Science, 2010 and 2014

It is hard to know what to make of these data (beyond the fact they don't change much over the two survey waves) as this question is almost hopelessly ambiguous. Precisely what "God created the earth and all life in it" means is not spelled out, and could include anything from Young Earth Creationism to deistic forms of evolution. This is presumably why the figures are so high, far exceeding even the most 'generous' figures for creationism in the UK. In somewhat greater detail, with very helpful analysis according to sub-samples, is Amy Unsworth's study of 2014. This asked the public to respond (on a five point scale) to a range of statements about evolution, creation, and the age of the earth. We examine those exploring evolution in general here.

First, we have two statements about evolution in general: "There is strong, reliable evidence to support the theory of evolution" and "Plants and animals have developed over time from simpler life forms". The results are given below.

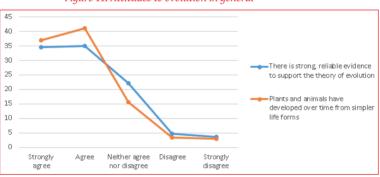


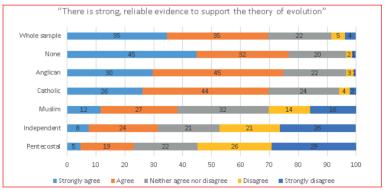
Figure 11: Attitudes to evolution in general

Source: Unsworth, 2014

Here we see strong if not unanimous support for evolution among the general public, with between 70% and 80% of respondents strongly/ agreeing with evolution in theory and in reality when it comes to plants and animals. By contrast, some way less than 10% of respondents (actually 9% and 7%) disagreed with each statement.

Unsworth's study is especially helpful in understanding the extent to which these attitudes to evolution were shaped by respondents' existing religious, or non-religious, commitments, as, by oversampling on certain religious groups – Church of England/ Anglican/ Episcopal; Roman Catholic; Pentecostal (e.g. Assemblies of God, Elim Pentecostal Church, New Testament Church of God, Redeemed Christian Church of God); Evangelical – independent/ non-denominational (e.g. FIEC, Pioneer, Vineyard, Newfrontiers); and Islam/ Muslim – she was able to generate sufficiently robust sub-samples as to enable that level of analysis.¹ In addition, respondents were allocated to a 'Non-Religious' category on the basis of both affiliation (no religious affiliation) and attendance (attendance at religious services about once or twice a year or less).²

Thus, looking at the statement "There is strong, reliable evidence to support the theory of evolution" it is clear that opinions vary significantly according to religious group, with 'nones', Anglicans, and Catholics being about as likely as the overall population to agree, but Muslims, Independent Christians, and Pentecostals less – indeed considerably less – likely to agree, with only 5% of Pentecostals agreeing strongly, compared to 35% of the overall population.





Source: Unsworth, 2014

Approaching the same issue but from the other end of the telescope, so to speak, Unsworth also asked about levels of belief in non-evolutionary viewpoints, such as whether respondents agreed with the statements that "The whole human race is descended from Adam and Eve" or "Life is too complex to have evolved solely by natural processes".

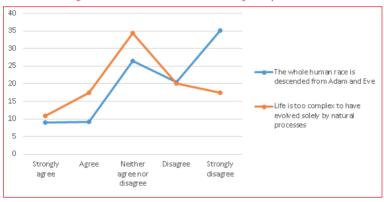


Figure 13: Attitudes to non -evolutionary viewpoints

Source: Unsworth, 2014

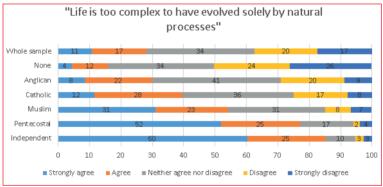
As one would expect, the results here were an approximate mirror image of those pro-evolution questions asked above, with the majority of respondents disagreeing with the statements. That recognised, several points are worth noting here. The first is that the more 'creationist' line, involving descent from Adam and Eve, was less popular than the idea that life was simply too complex to have evolved solely by natural processes but that, even then, 27% neither agreed nor disagreed, and that 18% either agreed or agreed strongly.

The second is that only a plurality (37%), and not a majority, of respondents disagreed that that life was simply too complex to have evolved solely by natural processes, with over

a third neither agreeing nor disagreeing, and over a quarter (28%) agreeing or agreeing strongly. However much the 'science and religion' conflict might be assumed and talked up by focusing on evolution, there is clearly a real issue here.

Again, the differences by religious groups were marked by the same pattern observed above, namely Muslim, Pentecostal and Independent antagonism towards the 'natural processes' explanation.





Source: Unsworth, 2014

Along similar lines, Unsworth asked respondents about their attitude to the related subject of the age of the earth, giving respondents two opposing options – "The earth is billions of years old" and "The earth is young – less than 10,000 years old" – with a third 'creationist' option added in "The world was created in six 24-hour days".

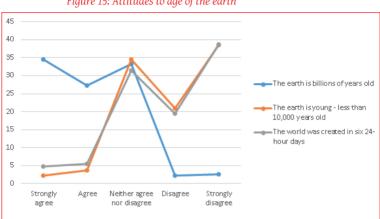


Figure 15: Attitudes to age of the earth

Source: Unsworth, 2014

The 'hard creationist' lines here – that the earth is less than 10,000 years old and that it was created in six 24-hour days - were clear minority positions, with somewhere between 6% and 10% of the population agreeing with them. By contrast, the accepted geological dating for the world - in billions of years - was accepted by over 60% of the population and rejected by less than 5%.

All that noted, it is worth registering how the 'neither agree or disagree' position was high for all statements, gathering almost exactly a third of respondents irrespective of whether it was a creationist or a scientific statement. This might show a high level of uncertainty among the general public on this question, or alternatively a high level of disinterest.

Unsworth also asked a question pertaining to the evolution of humans, to which we will return, but in the meantime it is worth noting here conclusions that "the number of 'creationists', particularly 'young earth creationists', has been greatly over stated in previous polls carried out in Britain." She found that "only 2% of the British population adhere to the Gallup-poll-question type of creationism, that is, a position requiring both rejection of human evolution and acceptance of a young earth". That noted, her study also showed that "many people hold unconfident or inconsistent views regarding evolution, with similar levels of uncertainty about the age of the earth found across Religious and Non-Religious groups", and that there were significant and seemingly growing pockets of religiously affiliated people who reject evolution.

A further range of questions were put into field by the *Rescuing Darwin* survey and by the *Exploring the Spectrum* study. We will examine each of these in turn, partly because they offer the most detailed analysis of public opinion in this area but also because, in doing so, they show that the picture of public opinion is more nuanced, complex and contradictory than single questions within larger studies allows for.

We examine the (relevant) *Rescuing Darwin* results first. As well as asking about science and religion in general, the survey also looked at the specific relationship between evolution (and non-evolutionary viewpoints) and religion in considerable detail, and from a number of different angles. The survey asked respondents directly about what they thought about evolution, focusing on the level of proof or evidence they felt there was for the theory. The results were positive but hardly overwhelmingly so.

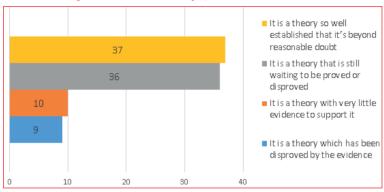


Figure 16: Attitudes to theory of evolution

Source: Rescuing Darwin, 2009, Q6

What we see from this is a plurality (not even a majority) of UK adults believe that evolution is beyond reasonable doubt, while approximately the same proportion believe it is still "waiting to be proved or disproved". Far fewer people are more or wholly sceptical of its validity – 10% thinking it has very little evidence to support it, and 9% thinking it has actually been disproved – but between them these are still far from negligible segments of the population.

When it came to a demographic breakdown of this, the survey showed that the non-religious were most confident in evolution (although still less than half of them were), while practicing Christians were among the least. By this sample, better educated respondents were more confident but, counter to other data, younger respondents were less confident than older ones.

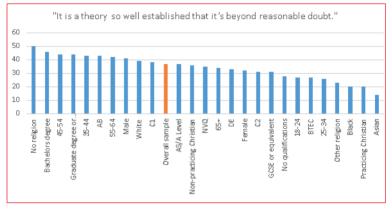


Figure 17: Confidence in evolution, percent agreeing by demographic breakdown

Source: Rescuing Darwin, 2009, Q6

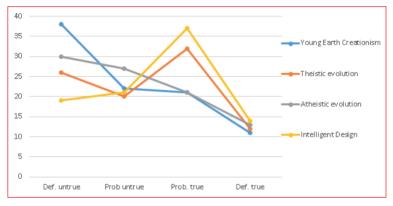
In addition to this question, the survey also put four definitions – of Young Earth Creationism, Theistic evolution, Atheistic evolution, and Intelligent Design – before respondents and asked of each whether respondents thought they were "definitely true", "probably true", "probably untrue", or "definitely untrue". The four definitions were:

- Young Earth Creationism is the idea that God created the world sometime in the last 10,000 years.
- Theistic evolution is the idea that evolution is the means that God used for the creation of all living things on earth.
- Atheistic evolution is the idea that evolution makes belief in God unnecessary and absurd.
- Intelligent Design is the idea that evolution alone is not enough to explain the complex structures of some living

things, so the intervention of a designer is needed at key stages. $^{\scriptscriptstyle 3}$

That noted, the responses to these statements can be seen below.

Figure 18: Attitudes to Young Earth Creationism, Theistic evolution, Atheistic evolution and Intelligent Design



Source: Rescuing Darwin, 2009

The results for these questions show a number of things. Firstly, the level of absolute positive confidence in any of the four positions is low. It seems that when the detail of a position is outlined to respondents (as opposed to their understanding being assumed) confidence levels drop.

Second, there is a comparatively strong negative confidence level in Young Earth Creationism, with 38% of the population seeing it as definitely untrue, and similarly with atheistic evolution, which 30% of people saw as definitely untrue. Third, the single most popular position judged to be "probably true" was – remarkably – Intelligent Design, chosen by 37% of the sample, following which was theistic evolution on 32%.

Overall, rating the four options from +2 ("Definitely true") to -2 ("Definitely untrue"), only Intelligent Design scored a mean above zero (and then only just at 0.06), followed by Theistic evolution -0.17, Atheistic evolution -0.45 and Young Earth Creationism -0.6. That Young Earth Creationism and Atheistic evolution were the generally least popular scores is telling.

This picture is considerably more complex than a straightforward single-question analysis allows, and the *Rescuing Darwin* survey underlined this by assessing not only how people responded to these questions about creation and evolution (and the others mentioned earlier) but also to how consistent they were in their answers.

Thus, as respondents were all grouped into the Young Earth Creationists, Intelligent Design believers, Theistic Evolutionists and Atheistic Evolutionist categories outlined above, each of these samples was further divided according to the level of consistency and coherence with which they were held. This division created categories that were named 'convinced hard core', 'hard core', 'soft core' and 'peripheral' depending on how consistently they expressed their views over five different questions.

Essentially the 'convinced hard core' were wholly consistent in their views (whether atheistic evolutionary, theistic evolutionary, ID or creationist), the 'hard core' were broadly consistent, the 'soft core' were in some way inconsistent and the 'peripheral' were transparently inconsistent. A fifth group were unclassified, in that they did not state an answer or stated "don't know" for the relevant question.⁴ Figure 19 below gives the overall percentage from the total sample of people who held certain positions, e.g. the proportion of hard core creationists, or soft core theistic evolutions, or peripheral Intelligent Designers, etc.

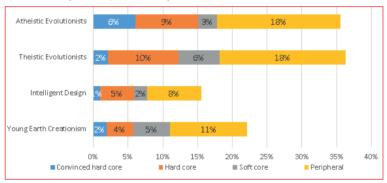
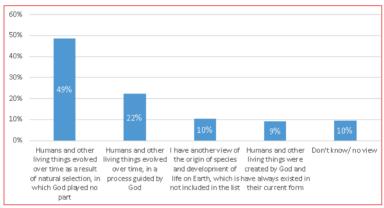


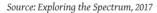
Figure 19: Levels of certainty on views of creation and evolution, by percent of overall sample

Source: Rescuing Darwin, 2009, Q5, 9-12

These figures show clearly that the proportion of people who are either wholly or largely consistent in their views was comparatively small, with only atheistic evolutionists achieving more than a negligible proportion of people who were wholly consistent. By contrast, the comparatively high proportion of respondents who qualified as peripheral indicates quite how many respondents selected certain options (at Question 5) but then went on to contradict themselves and say that this is probably or definitely untrue later on. In short, echoing a core finding from the *Rescuing Darwin* survey, the overall level of confidence in these views on evolution, creationism and Intelligent Design is remarkably low. Turning to *Exploring the Spectrum*, this study incorporated a range of important questions pertaining to the evolution of humans and particular human capacities, which are explored below. One of its questions was (a variation on) those asked above.







This study gives a higher figure for atheistic evolution (49%) than a comparable one from *Rescuing Darwin* (34%). It also suggests that one in ten respondents have 'other' views (in addition to the one in ten who just don't know), although we have no way of understanding what those views are.

Overall, therefore, those surveys that deal with the issue in any detail suggest a number of things on the evolution/ creation landscape can be identified with some confidence. (1) Evolution is the most popular position and (2) atheistic evolution is the most popular within that. (3) Levels of certainty are not high; indeed if there is any single 'winner' in all this it is uncertainty/ lack of confidence. (4) Levels of coherence are even lower; only a minority of respondents hold any particular position with complete coherence. (5) Hard antievolutionary positions like creationism remain the provenance of a minority. (6) Softer ones, like Intelligent Design, can be surprisingly popular, if only perhaps because respondents are inclined to hedge their bets. (7) Attitudes to evolution are hard to pin down to any particular demographic, though men and younger respondents tend to be more positive about it. That said, (8) antagonism does lie more heavily within religious believers, and especially observant ones, in particular among Muslim, Pentecostal and Independent Evangelical circles. For this reason, as well as for many obvious historical ones, (9) it is possible to sustain the 'science vs religion' hypothesis when it comes to public opinion if (a) you concentrate on specific religious groups and/ or (b) deploy shorter/ simpler questions over the longer surveys.

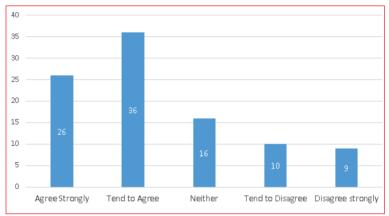
From having looked at evolution/ creationism in general, we proceed to some more specific areas of comparison.

Evolution, God and Christianity

The *Public Attitudes to Science* 2014 survey asked a second question pertaining to evolution and religion, namely whether respondents agreed that "it is possible to believe in a god and still hold the view that life on earth, including human life, evolved over time as a result of natural selection." This statement includes the parenthesis "including human life" and so could be included in the section on evolution and humans below, but as it is one of the only questions to ask about evolution and God, we look at it here.

Figure 21: Attitudes to God and evolution

"It is possible to believe in a god and still hold the view that life on earth, including human life, evolved over time as a result of natural selection"





The data show a clear majority of people – 62% – either agreed or tended to agree that you could 'do both', i.e. hold to belief in 'a god' and in evolution, with 19% disagreeing or tending to disagree. There was little significant difference here according to gender, age, or social class. More interestingly, there was little difference according to religiosity.

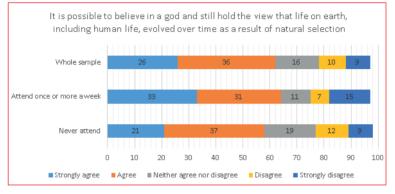


Figure 22: Attitudes to God and evolution, by religiosity

Source: Public Attitudes to Science, 2014

Although it is the case that those who attend a religious service regularly (once a week or more) are more likely to strongly agree that you can 'do both', they are also more likely to strongly disagree – meaning that they are generally more likely to hold a strong opinion. Overall, however, balance between agreeing and disagreeing is not significantly different according to religiosity. (The shortfall in each instance is due to a small number of respondents who did not know/ would not answer.)

Unsworth 2014 also posed the statement "It's possible to accept the theory of evolution and also believe in the existence of a creator God".

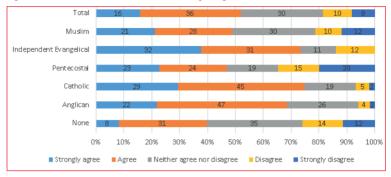


Figure 23: Attitudes to God and evolution, by religion

Source: Unsworth, 2014

The results here were slightly more sceptical than PAS 2014, with 52% strongly/ agreeing (compared to 62%), but a comparable proportion (18% vs 19%) strongly/ disagreeing. Nones were, predictably, most hostile to this idea, although not significantly so (39% agreeing), although this figure is considerably lower than the comparable ones among never attenders from PAS 2014.

A subset of the question about whether you can hold to belief in 'a god' and in evolution, is the question of whether you can hold to belief in a specific god, say the God of Christianity, and in evolution. The 2009 *Rescuing Darwin* study asked a variant of this when it looked at how respondents perceived the relationship between evolution and Christianity, giving them four options to choose from.

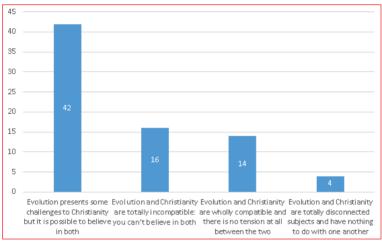


Figure 24: Attitudes to evolution and Christianity

Source: Rescuing Darwin, 2009, Q7

As with the broader question of science and religion, the plurality position here was of 'challenged co-existence' with minorities taking harder positions of complete incompatibility (16%) and complete compatibility (14%).

Interestingly, the one significant difference here is in the NOMA position, with only 4% of respondents saying that evolution and Christianity are "totally disconnected", compared with 26% saying science neither supported nor undermined religious belief. Even allowing for the fact of stronger wording of the Christianity question – evolution and Christianity "are *totally disconnected* subjects and have *nothing* to do with one another" – this seems to indicate that the specificities of Christian (and perhaps by extension other monotheistic) religious belief presents more opportunity for interaction with evolution than does the vagueness of 'religious belief' in general. At the same time as *Rescuing Darwin*, the British Council's ten country study *Darwin Now* was commissioned. This posed ten questions in total, including several on the relationship between evolution and God. The first of these gave respondents a range of different views about the "origins of species and development of life on earth" and asked them which came closest to their views. These were:

- Life on earth, including human life, was created by a God and has always existed in its current form.
- Life on earth, including human life, evolved over time in a process guided by a God.
- Life on earth, including human life, evolved over time as a result of natural selection, in which no God played a part.
- I have another view on the origins of species and development of life on earth, which is not included in this list.

As Fern Elsdon-Baker, who ran this survey, subsequently remarked, this phrasing was intended to make a clear distinction between "Atheistic evolution" (option 3) and "Theistic or Deistic evolutionist" (option 2), so as to avoiding categorising automatically as 'creationists' those who believe in God and evolutionary theory. That noted, that came at the cost of not having a separate explicit option for Intelligent Design, although it is conceivable that those holding to this position would have categorised themselves under option 2. (Also, as Elsdon-Baker remarked, "as this was an international poll and ID is best known in the United States, it was felt that it would confuse respondents and skew the results.) The results for the UK and comparisons with other countries are given below.

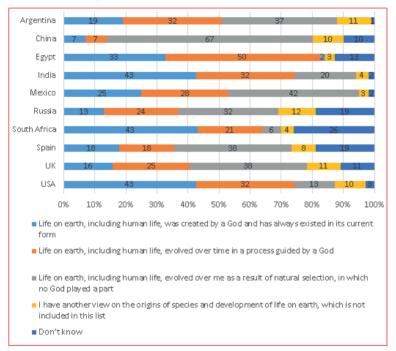


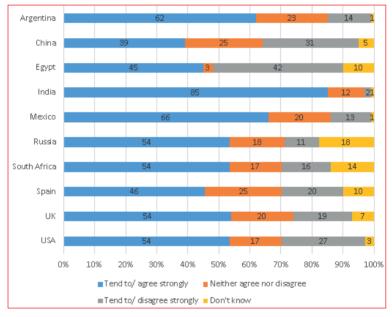
Figure 25: Attitudes to origin of species and development of life on earth, worldwide



This question showed that 16% of UK respondents held to a 'creationist' position, a significant minority although lower than any other country bar Russia and China. In contrast, 38% of respondents favoured the 'atheistic evolutionist' view, a figure only exceeded by Mexico (just) and China (considerably).

A second question asked respondents to what extent they agreed or disagreed "that it is possible to believe in a God and still hold the view that life on earth, including human life, evolved over time as a result of natural selection?" The results can be seen below.

Figure 26: Attitudes to god and evolution, worldwide "It is possible to believe in a god and still hold the view that life on earth, including human life, evolved over time as a result of natural selection"



Source: Darwin Now, 2009

Overall, the majority of people across the ten countries (55%) felt that it *was* possible to believe in God and in evolution by natural selection, and although there wasn't a majority in every country (Spain, Egypt and China were all under 50%), there was a plurality/ majority for this position in every one. In other words, in all countries polled, more people agreed than disagreed that it is possible to believe 'in both'. By contrast,

19.5% worldwide disagreed (i.e. believed there was an inherent clash). Within this global picture, UK respondents were uncannily typical, with 54% agreeing that you could do both, and 19% seeing a conflict.

Interestingly, Elsdon-Baker also analysed these figures according to respondents' belief in evolution/ creationism, so as to gain insight into the source of the perception of conflict. This analysis showed that of the 19% who perceived some conflict between God and evolution, only 24% were classed as upholding 'creationist' beliefs, compared to 54% who were classed 'atheistic evolutionists'. As she remarked, "this challenges any assumption that it is predominantly 'creationists' who feel there is an incompatibility between belief in a God and the acceptance of evolutionary science", something she put down to the prevalence of the 'new atheist' stance over previous years. (She also noted, however, that this clash narrative is more likely to be upheld by 'atheistic' respondents in China, Spain, Argentina, Mexico and Russia also.)

Evolution and human origins

The area of seemingly greatest interest to research within the whole science and religion category is not simply evolution and religion, but specifically evolution and religious accounts of the origins and development of human beings. In some form, the question of whether humans are evolved, created or both has been asked by the various studies.

In 2008, a British Social Attitudes (BSA) survey gave respondents three options concerning human origins and development. These were:

- Human beings have developed over millions of years from less advanced forms of life, but God guided this process.
- Human beings have developed over millions of years from less advanced forms of life, but God had no part in this process.
- God created human beings pretty much in their present form at one time within the last 10,000 years.

The figure below shows a majority in favour of the atheistic evolutionary position, with a large minority in favour of (some kind of) 'theistic evolution', and a small, though by no means negligible, proportion favouring a hard-line creationist account.

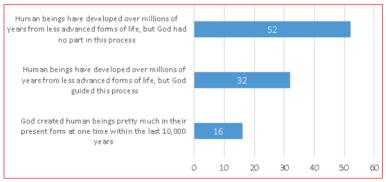


Figure 27: Attitudes to human origins and development (BSA)

Source: British Social Attitudes, 2008

The question was also tackled in each of the three waves of the Wellcome Trust Survey, which also gave respondents three options.

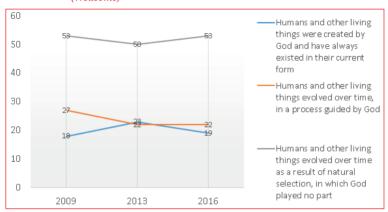


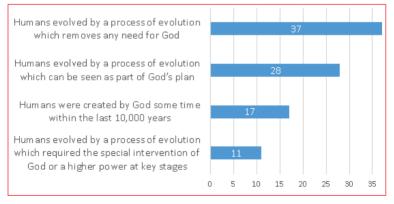
Figure 28: Attitudes to human origins and development, 2009-2016 (Wellcome)

Source: Wellcome Trust, 2009, 2013, 2016

This reported a comparably high level of support for 'atheistic evolution' but a closer split between 'theistic evolution' and a creationist position. The reason for this is probably due to the fact that, unlike the BSA survey, the Wellcome study did not specify a certain number of years for the creationist option, thereby making it easier to support among respondents.

The 2016 Wellcome study found that men were more likely than women to believe that life evolved by natural selection, with God playing no part (58% vs 48%), as were younger respondents over older ones. Predictably, the difference according to religion was greater still, with 76% of the non-religious and 43% of the nominally religious⁵ adhering to atheistic evolution compared to 9% among the regularattending religious,⁶ a low figure almost certainly due to the implied if not necessary atheism of the statement. Both the Wellcome and PAS surveys gave respondents three options for the origin and development of human beings – broadly: atheistic evolutionary, theistic evolutionary, and creationist. In contrast with these, the *Rescuing Darwin* survey offered four options, retaining the atheistic evolutionary and the creationist, but in place of the theistic evolutionary having an interventionist evolutionary option (essentially Intelligent Design) and a non-interventionist theistic evolutionary position. This splitting of options is significant as it reflects a wider and more nuanced approach to the question of the relationship between science (evolution) and religion (human development).

Figure 29: Attitudes to evolution and human origins

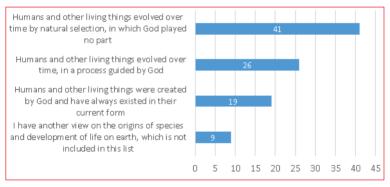


Source: Rescuing Darwin, 2009, Q5

No single position achieves a majority here, the plurality of respondents favouring atheistic evolution, with the next largest proportion going for the non-interventionist theistic evolutionary position. Thereafter, a surprisingly high percentage of people went for the hard-line creationist position (which included a mention of the number of years) and only a minority for the Intelligent Design position. This is partly, we assume, because Intelligent Design remains a relatively unfamiliar position to the general public but also because a higher proportion of people tend towards nonevolutionary positions (even hard-line creationist ones) when humans are introduced into the equation. Whereas evolution in general is (relatively) easy to believe for some, the same people often baulk at the idea of evolution of humans specifically.

Halfway between the three options of BSA and Wellcome and the four of *Rescuing Darwin*, the *Public Attitudes to Science* 2014 survey gave respondents four options, three of which are familiar, with the fourth being a kind of wild card: "I have another view on the origins of species and development of life on earth, which is not included in this list".

Figure 30: Attitudes to God and human origin and development of life on earth

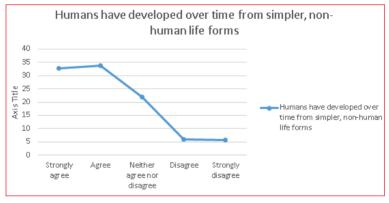


Source: PAS, 2014

Again here, the atheistic evolutionary position was most popular, with theistic evolution coming next, followed by a comparatively high level of support for a creationist position (although one without a number of years specified). The wild card option was, predictably, a minority one, and we are not able to tell whether the 9% who responded here did so on the basis of holding to a well-thought through position (such as non-interventionist theistic evolutionary), or were essentially don't know/ don't care.

The Unsworth study also put to respondents the statement "Humans have developed over time from simpler, non-human life forms", asking them to register their level of agreement.





Source: Unsworth, 2014

The results showed strong support for evolution, although again there was significant difference according to religious sub-groups.

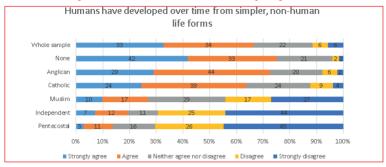


Figure 32: Attitudes to human evolution, by religion

Source: Unsworth, 2014

As with the other questions in Unsworth, Muslim, Independent and especially Pentecostal groups were antagonistic to this idea, with only minorities agreeing, and very small minorities *strongly* agreeing with it.

Equally interesting is the comparison that the Unsworth data allows to be made between evolution of animals and plants and evolution of humans, the latter being slightly but noticeably less popular among respondents.

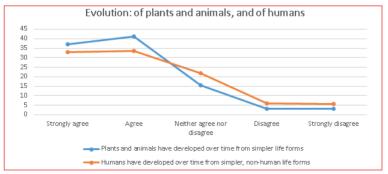


Figure 33: Attitudes to evolution in general vs evolution of humans

Source: Unsworth, 2014

Altogether nearly 12% more people were willing to agree with evolution as explaining the development of plants and animals over time, than were of humans, a fact that leads us to the question of human characteristics and uniqueness.

Evolution, and human purpose and significance

Contemporary debates around evolution are often as loaded with metaphysical significance, as they are anthropological. Just as the question of science and religion often slips into the narrower question of evolution and religion, and that question slips into being about evolution and specifically human origins, so *that* question in turn becomes entangled with questions of evolution and human significance and purpose. In essence, your attitude to evolution is liable to be shaped by whether you understand evolution as a mechanism by means of which species develop or as a 'dangerous idea' that explains – or explains away – anything and everything that is quintessentially human.

In the light of this, the *Rescuing Darwin* study asked respondents whether they thought that evolution had an ultimate direction or purpose.

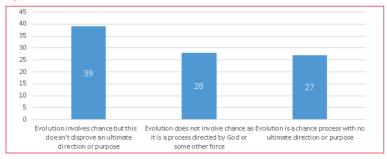


Figure 34: Attitudes to evolution and chance

Source: Rescuing Darwin, 2009, Q8

The preferred choice by respondents was an understanding of evolution but one that didn't preclude an ultimate direction or purpose (a view that is at odds with many mainstream interpretations of natural selection, which see it as utterly directionless and purposeless). The rest of the sample, minus the small number of "don't knows", was split evenly between a more heavily directed version of evolution ("by God or some other force") and a wholly non-directed version, which saw evolution as without "ultimate direction or purpose".

Along similar lines, the *Rescuing Darwin* study also asked respondents what they thought evolution said about the purpose of life, giving them three options to choose from.

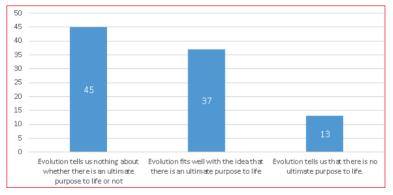


Figure 35: Attitudes to evolution and purpose

Source: Rescuing Darwin, 2009, Q15

Here the data show an even greater deviation from the Daniel Dennett/ Richard Dawkins interpretation of evolution, with a plurality of respondents claiming that evolution says "nothing about whether there is an ultimate purpose to life or not" and an only slightly smaller proportion (37%) claiming that it "fits well with the idea that there is an ultimate purpose to life." Only 13%, by some way the smallest proportion, agreed that evolution tells us that "there is no ultimate purpose to life."

The survey also, finally, asked respondents their opinions about human beings, with particular reference to their value and significance (or otherwise).

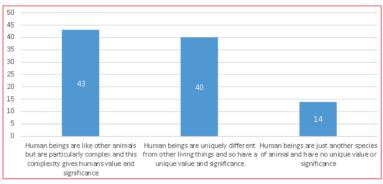
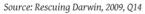


Figure 36: Attitude to value and significance of human beings



The results show division between two different views of human significance – humans have value and significance because they are – so to speak – *quantitatively* different from other animals: like them but particularly complex; and humans have particular value and significance because they are – again, so to speak – *qualitatively* different from other animals: "uniquely different". By contrast, a minority of people agreed that humans have no unique value or significance because they are "just another species of animal". This is perhaps where we see the most acute differences across the sample according to religious belief.

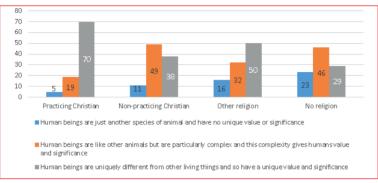


Figure 37: Opinion of the relationship between human beings and other living things, by religiosity

Source: Rescuing Darwin, 2009, Q14

The results here show significant differences by religion. Practicing Christians are overwhelmingly likely to reject the idea that "Human beings are just another species of animal and have no unique value or significance" (only 5% agreeing) and overwhelmingly likely to believe that "Human beings are uniquely different from other living things and so have a unique value and significance". Those of other religions show the same pattern, if less acutely. By contrast, whereas nonpracticing Christians are nearly as likely to reject humans as just another species, they are far more torn between quantitative and qualitative understandings of human difference, tending to prefer the idea that humans are "particularly complex and this complexity gives humans value and significance". Finally, the non-religious are the most divided group for this question, with sizeable minorities split between human qualitative uniqueness (29%) and no human difference (23%) and a plurality favouring the 'middle' option. Clearly the correlation between what one believes (and practices) about God and what one believes about human beings is a strong one.

Evolution and religion

The weight of evidence here in favour of some sense of human specialness and uniqueness is supported by a question in the 2010 *Public Attitudes to Science* survey, which asked respondents whether they thought that "we are put on earth for a purpose", to which 57% agreed and 20% disagreed (23% took no position). Within this overall balance, the highest level of agreement was among black and ethnic minority respondents, over-75s, social grade DEs, and those with no educational qualifications. Conversely, respondents least likely to believe that there was a purpose to their existence were men, social grade ABs, and those with a higher education. This is a familiar demographic split, though it is worth noting that even among these latter groups, it is still a minority of people who are prepared to dispense with the idea of human purpose altogether.

More light is thrown on this topic by the *Exploring the Spectrum* study, which probed respondents on what exactly they did believe was explained by evolution and what was their problem with it (if they had one). Concerning the first, the study put before respondents four explanatory areas – animal evolution (excluding humans); all evolution (including humans); evolution of the human brain; and evolution of human consciousness – and examined, on a(n unusually sensitive) seven-part agreement scale, where public opinion rested. The four statements were:

- Statement 1: Animals evolve over time but evolutionary science cannot explain the origin of human beings.
- Statement 2: Evolution is a natural process that explains how all organisms, including humans, have developed and continue to develop.

- Statement 3: Evolutionary processes cannot explain the existence of human consciousness.
- Statement 4: Evolutionary science explains how the human brain developed.

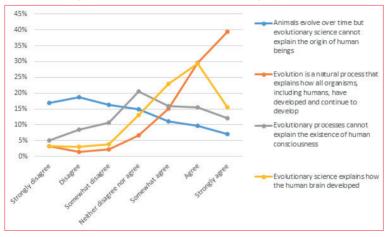


Figure 38: Attitudes to levels of evolutionary explanation

Source: Exploring the Spectrum, 2017

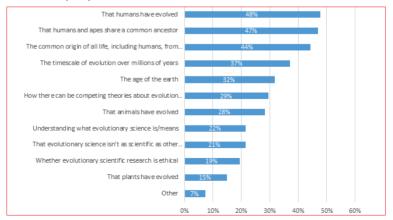
These data show that the complete evolutionary explanation – i.e. of all organisms and humans – remains the most popular one, with, on balance, respondents "agreeing" with it (scoring a mean of 1.8 when the seven options are graded -3 (strongly disagree) to +3 (strongly agree). The idea that "Evolutionary science explains how the human brain developed" was similarly popular, although slightly less so, with a mean of 1.2.

By contrast with these, the population was more ambivalent about the idea of evolution explaining the existence of human consciousness, with the sample on average slightly *agreeing* with the idea that evolutionary process *cannot* make that explanation.

Of the four statements, the only one for which the average of the sample was in (slight) disagreement was the idea that "Animals evolve over time but evolutionary science cannot explain the origin of human beings", which scored -0.6 on the same scale. This confirms the fact that, on balance, when people support evolution they don't pick and choose but take it whole – i.e. humans and other animals, rather than just the latter. However, the relative strengths of the opinions suggests that there remains certain pockets of 'resistance' around some of these quintessentially human characteristics, and this was borne out by another question asked by the study, of those who voiced some objection to evolution (with therefore a smaller sample size, of 251 rather than 2,129).

Figure 39: Difficulties with human evolution

What do you find difficult to accept about evolutionary science in reference to your personal beliefs?

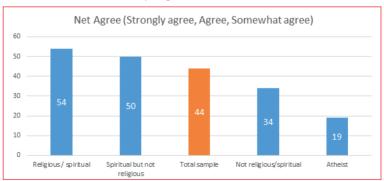


Source: Exploring the Spectrum, 2017

These data show that it is primarily the human element of evolution that critics have a problem with: nearly a half of those who do have a problem highlighting the fact that humans have evolved, that humans and apes "share a common ancestor", and that there is a common origin of all life, "including humans, from single cells" as the problem. By comparison, the percentage of people who have a problem with plant or animal evolution is much lower (15% and 28% respectively).

As one would expect from these data and those earlier, when we analyse the relevant *Exploring the Spectrum* data according to religiosity, we see the same correlation between belief in God and belief in humans as we did with *Rescuing Darwin.* Thus, the responses to the statement "Evolutionary processes cannot explain the existence of human consciousness" by religious belief looks like this:

Figure 40: Evolution and consciousness



Evolutionary processes cannot explain the existence of human consciousness, by religious belief

Source: Exploring the Spectrum, 2017

Those respondents who are more likely to consider themselves to be spiritual and especially spiritual *and religious* are notably more likely to have reservations about the evolutionary origins of human consciousness, whereas those who consider themselves neither spiritual nor religious, and in particular those who prefer the label atheist are (much) less likely to have a problem with this.

Conclusion

The level of outright evolution rejection in the UK is somewhat lower than merits headlines, with best estimates putting it at slightly under 10%. That noted, a roughly similar proportion of people hold to alternative views (such as Intelligent Design), and perhaps more worryingly, the actual percentage

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The level of outright evolution rejection in the UK is somewhat lower than merits headlines, with best estimates putting it at slightly under 10%.

of people who confidently and coherently hold to evolution is also quite small, probably somewhere between a quarter and a third of the population. By far the biggest issue here is not 'evolution scepticism' but 'evolution ambivalence' or 'evolution confusion', with a plurality of people simply not knowing, understanding or caring about evolution.

Evolution rejection, where it exists, is powered by religious views although not monochromatically (Anglicans and Catholics are no more likely to reject evolution than the population as a whole, with Muslims, Independent Christians and Pentecostals far more antagonistic)

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By far the biggest issue here is not 'evolution scepticism' but 'evolution ambivalence' or 'evolution confusion'. or solely (there is a sizeable minority of those with no active religious affiliation who reject evolution).

The key issue, however, tends not to be about God *per se* (although that isn't to say there is no perceived conflict between evolution and God or Christianity among some) but about human nature, with slightly more people objecting to

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It seems that perhaps the biggest battle in the science and religion relationship, is not about science and religion in general, or science and God, but specifically what science says (or claims to say) about the nature of the human. the idea of evolution of humans, than do evolution in general (figure 33), but considerably more rejecting the idea that evolution tells us there is no purpose to human life or that humans are just another species with no unique value or significance.

The heart of the issue in the alleged conflict between science and religion lies in the vicinity of evolution and creation, and the heart of that issue lies near the question of human nature, in particular its uniqueness, purpose and significance. It seems that perhaps

the biggest battle in the science and religion relationship, is not about science and religion in general, or science and God, but specifically what science says (or claims to say) about the nature of the human.

- 1 The five religious samples were weighted for age, gender and social class, and for whole sample analyses, cases were weighted for religious group to ensure that the proportions in our 'whole sample' matched the proportions of those religious groups found within the adult population at large (Anglican 19.5%, Catholic 8.76%, Muslim 3.9% (age 18+), Pentecostal Christian 0.7%, Independent Evangelical Christian 0.6% and All others 65.64%. Source: BSA 2009–2013 and English Church Census 2005).
- 2 Those other cases that did not satisfy these criteria were allocated to an 'Other' category.
- 3 Defining such positions is always difficult and doing so with language and at a length suitable for public opinion survey is even more so. Accordingly, some of these definitions were criticised by some advocates of Intelligent Design who were unconvinced by the definition of Intelligent Design, with the survey's authors responding in the journal. See Sylvia Baker's article in *Public Understanding of Science*, 'The Theos/ComRes survey into public perception of Darwinism in the UK: a recipe for confusion', August 2010, and our response in the same journal in April 2011.
- 4 Specifically, the 'convinced hard core' group, with the highest level of certainty and consistency, was made up of those who chose the position they think is most likely in Question 5 and went on to say that this position is 'definitely true' in the relevant question in Ouestions 9-12 and did not say that any of the other three positions is 'definitely true' in Ouestions 9-12. The 'hard core' group was made up of those who chose the position they think is most likely in Question 5 and went on to say that this position is 'probably true' in the relevant question in Questions 9-12 and did not say that any of the other three positions is 'definitely true' in Questions 9-12. The 'soft core' group was is made up of those who chose the position they think is most likely in the Ouestion 5 and went on to say that this position is 'probably true' or 'definitely true' in Ouestions 9-12 but also said another position is 'definitely true'. The 'peripheral' group were people who selected an option for being most likely in Question 5 but then went on to say that this is probably or definitely untrue later on. Finally, the remaining 'unclassified' group did not state an answer or stated 'don't know' for the relevant questions.
- 5 Those who regard themselves as belonging to a religion, but who attend services or meetings connected with their religion no more than twice a year.
- 6 Those who regard themselves as belonging to a religion, and who attend services or meetings connected with their religion at least once a month.

3. Science and scientific progress

One other area in the science and religion nexus is also worth examining in as far as it sheds light on the debate (and we have sufficient public opinion data). This is whether religiosity makes any difference when it comes to attitudes to science, scientists and scientific progress.

These data are gathered in the Ipsos/ MORI *Public Attitudes to Science* survey, which allow their analysis according to religiosity, specifically the frequency of attendance at a religious service.¹ This question was asked with some granularity, but for the sake of clarity and sufficiently robust sample sizes, the answers were gathered into three groups, essentially reflecting practicing ("once a week or more"), partial ("less than once a week") and non-religious ("never/ no religion"). These are not perfect categorisations but comparing data for practicing and non-religious allows us to get an impression of whether this measure makes a difference to people's attitudes to science, scientists and scientific progress.

On balance, the religious are slightly more positive in their associations with scientists than the non-religious. PAS put to respondents a series of paired words – interesting-boring; narrow-minded-open-minded; ethical-unethical – and asked them which they associated with scientists. The difference in opinion between religious and non-religious with regard to the positive words (the negative ones are, in effect, a mirror image) is shown below.

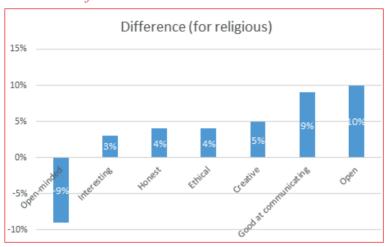


Figure 41: Opinion of scientists – difference between religious and nonreligious views

Source: Public Attitude to Science, 2014

In six of the seven word pairings, religious respondents were *more* likely to have a positive attitude to scientists than non-religious ones, albeit usually by narrow margins. The biggest differences were over whether scientists were 'good at communicating' (as opposed to poor at communicating), which was favoured by 57% of the religious and 48% of the nonreligious, and 'open' (as opposed to secretive) with 46% versus 36%. The only association over which religious people were more negative (noticeably so) was whether scientists were open-minded, with 74% of religious respondents saying this compared with 84% of non-religious.

PAS 2014 also put a series of statements to respondents concerning scientists' activities, which allow for comparison according to religiosity.

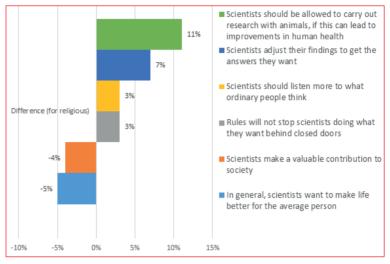


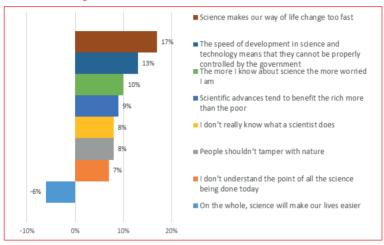
Figure 42: Opinion of scientists' activities – difference between religious and non-religious views

Source: Public Attitude to Science, 2014

The majority of attitudes here were not significantly differentiated by non/ religiosity, although broadly speaking it seems that religious people were slightly more negative towards the activity of scientists than non-religious (the difference rarely being significant however). It is worth noting that religious respondents were more inclined to agree that "scientists should be allowed to carry out research with animals, if this can lead to improvements in human health" than non-religious ones (74% vs 65%), a finding to which we will return.

Attitudes to science can be ascertained in the same way, with PAS putting a large number of statements on the topic to respondents. Those where there is a difference of more than 5%, in either direction, between the religious and non-religious is given below.

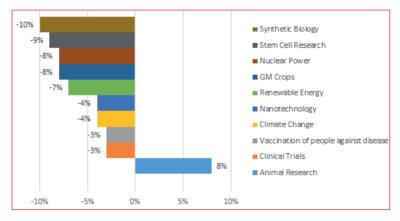
Figure 43: Attitudes to science – difference between religious and nonreligious views



Source: Public Attitude to Science, 2014

The clearest signals here lie in the significantly greater inclination among religious respondents to think that science is moving too fast. 45% of the religious, as opposed to 28% of the non-religious, say that "Science makes our way of life change too fast", and 51% (as opposed to 38%) think that "The speed of development in science and technology means that they cannot be properly controlled by the government". Similarly, 30% of religious respondents said that the more they knew about science the more worried they were, and 61% said that they thought people shouldn't tamper with nature, compared with 53% of the non-religious. The data seem to suggest that the religious seem to be slightly more anxious about the speed, capacity and potential for science than the non-religious. This conclusion is especially borne out in the PAS data on public attitudes to science and risk. The survey put before respondents a range of scientific development and asked them the extent to which they thought the benefits outweighed the risks in each (or vice versa).

Figure 44: Benefits vs risks of science, difference between religious and non-religious views



Source: PAS, 2014

The results here are interesting as much for their consistency as their specific details: with only one exception, the religious thought the scientific development in question was more riskier than beneficial than did non-religious respondents. Thus, among the statistically more robust differences, 41% of non-religious thought that the benefits far or slightly outweighed the risks, compared to 33% of the religious.

That said, two details are particularly noteworthy here. The first is that those technologies about which there is greatest anxiety – or at least most reservations – among the religious are synthetic biology, stem cell research and GM crops, all of which involved modifying life in some way. This fits with the idea that the religious attitude is less one of 'antagonism' to science *per se* than it is a particular respect and reverence for the language of life.

Conversely, the one area in which the religious are more likely than the non-religious to see the benefits is in animal research, with 55% thinking the benefits outweigh the risks as compared to 47% of non-religious. This chimes with the figure above, regarding "scientists [being] allowed to carry out research with animals", and is arguably explained by some religious respondents having a worldview with a clearer demarcation between humans and other animals.

The PAS study also asked respondents whether they felt informed about science, and gave them a short quiz as a means of ascertaining how well informed they really were.² These questions reported how, although religious respondents *felt* they were only slightly less well informed than non-religious ones...

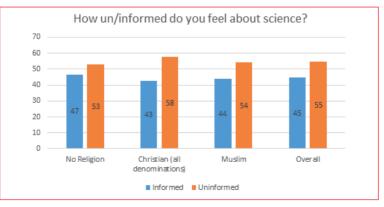


Figure 45: Perceived knowledge of science, by religion

Source: PAS, 2014

...their actual levels of knowledge were measurably less, with 38% of non-religious respondents scoring high on the science quiz and 11% scoring low, compared to 22% and 33% respectively among the religious.

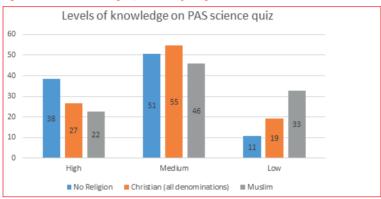


Figure 46: Actual knowledge of science, by religion

In short, although the idea of a profound religious antagonism towards science is not borne out by the data, there does seem to be a real problem concerning the level of religious knowledge of science.

Conclusion

Overall, the PAS study itself shows that the idea of an innate religious hostility to, still less war on, science is unjustified by the data. What we see is a more complex but also more interesting picture. Broadly speaking, the religious are about as positive about science and scientists as non-religious; indeed, when it comes to general associations with scientists, they are more positive. Similarly, where they are different, the differences tend to be quite small.

Source: PAS, 2014

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Religious people are more likely to be conservative/ hesitant/ reserved/ anxious when it comes to scientific developments. However, there are two areas of significant and consistent difference. First, religious people are more likely to be conservative/ hesitant/ reserved/ anxious when it comes to scientific developments. They are more inclined to see the risks over the benefits and more inclined to see the pace of scientific change as worrying or too fast.

Second, they are especially conservative/ hesitant/ reserved/ anxious when the issue is rewriting genetics, presumably on the basis that this is the language of God, to use the phrase made popular by Bill Clinton and Francis Collins, former head of the human genome project. The religious seem to have a more respectful attitude to life in as far as they are less inclined/ more nervous about modifying it at a fundamental level.

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The religious seem to have a more respectful attitude to life in as far as they are less inclined/ more nervous about modifying it at a fundamental level. There is also the additional observation, seemingly true though without sufficient data to be confident, that religious believers buck these trends by being more willing to countenance animal testing, perhaps because their religious beliefs give them a more solid line of division between the human and the animal.

- 1 Through statements such as: "I don't understand the point of all the science being done today"; "Science is such a big part of our lives that we should all take an interest"; "Even if it brings no immediate benefits, scientific research which advances knowledge should be funded by the government"; "The benefits of science are greater than any harmful effects"; "Government funding for science should be cut because the money can be better spent elsewhere"; "It is important to know about science in my daily life"; "On the whole, science will make our lives easier"; "The more I know about science the more worried I am"; "Science should be seen in isolation from other aspects of human knowledge"; "Scientists make a valuable contribution to society"; "Scientists adjust their findings to get the answers they want"; "Scientists should listen more to what ordinary people think"; "Scientists should be allowed to carry out research with animals, if this can lead to improvements in human health"; etc.
- 2 This comprised a series of nine factual, 'textbook' style questions, with respondents being invited to say whether they think each is definitely true, probably true, probably not true, definitely not true (or don't know). Responses were coded so that correct answers (either probably or definitely) are scored as 1 while incorrect and 'don't know' are scored as 0. The statements are:
- Atoms are smaller than electrons.
- Lasers work by focussing sound waves.
- More than half of human genes are identical to those of mice.
- It is the mother's genes that determine the sex of the child.
- All radioactivity is man made.
- By eating a genetically modified fruit, a person's genes could also become modified.
- The cloning of living things produces genetically identical copies.
- The oxygen we breathe comes from plants.
- All plants and animals have DNA.

4. Conclusion: what are we really disagreeing about?

Assuming a conflict

This report has given an overview of the last ten years of public opinion research into science and religion in the UK. There are almost certainly other surveys, especially occasional ones, which have escaped our notice, as well as significantly more analysis of these surveys, not to mention international comparisons that could be done. This report is an overview rather than a comprehensive study.

The first thing that should be observed of the state of public opinion polling on science and religion in the UK is that there is not much of it. This is something that those most familiar with the topic recognise. Thus Fern Elsdon-Baker has remarked that "outside of the United States within the European context, there has been little comparative research undertaken to gauge the nature or distribution of creationist beliefs."

This (inadvertently) underlines a second point, which is about how much of the work that has been done is on evolution and creation rather than on science and religion. Indeed, it is not too much of an exaggeration to say that questions of evolution, creationism, and religion have served as a cipher for science and religion, sometimes simply by implication, and sometimes more directly and egregiously, such as in the MORI research on evolution to justify a programme entitled *A War on Science*.

This example leads to a third point, namely the assumption in so much research that there *is* a conflict between science and religion. This can come out in a number of ways. Sometimes, it is in the very nature of the question asked. Thus, questions about relying on science or relying on faith force the two into a kind of competitive zero-sum game,

compelling respondents to choose either one or the other. Sometimes it is through extreme ambiguity and vagueness in the phrasing of questions. Thus the repeated confusion of the *origin* and *development* of life in questions, or in statements like "God created the earth and all life in it".

Sometimes, it is in the nature of the options available. Thus, at its most problematic, such as in the 2006 BBC *Horizon* programme, polling strictly limits the options available to respondents in such a way as to force them into a conflictual narrative (namely *A War on Science*). When presented with the 'evolution theory' (where "God had no part in this process"); the 'creationism theory' (which specifies young earth creationism "within the last 10,000 years") or the 'Intelligent Design' (which specifies direct intervention of a supernatural being"), where exactly could a mainstream theistic evolutionist stand?

Sometimes, it is in the mere assumptions that lie behind the polling. Thus, the 2009 Wellcome study justifies its approach in the following way:

The basic tenets of many religions and the traditional assumptions and approaches of science, including the direct testing of hypotheses to establish knowledge, often have the potential to conflict with one another, by upholding different key assumptions. It was therefore considered important to understand how far the public adopt religious or scientific explanations for a number of key questions around human life.

Not only does this assume that there is *either* a religious *or* a scientific explanation for "key questions around human life", but it also assumes that there is a single scientific explanation for certain issues. Both of these might be tenable positions if we are talking straightforwardly about atheistic evolution

versus Young Earth Creationism, but that is precisely the kind of dichotomy that we are trying to avoid. Moreover, neither is it tenable when we start talking about ethical and existential questions about human life (as Wellcome is here). Thus Wellcome goes on to say:

Traditionally, proponents of a religious approach have tended to view human life as beginning earlier than those adopting a scientific approach, who have tended to focus on when the foetus develops key functions and awareness.

The statement assumes that there is a *scientific* approach to the question of when human life begins and that it is assumed straightforwardly "as when the foetus develops key functions and awareness". But the question of when human life begins is an ethical or philosophical question; perhaps one that is aided and clarified by knowledge of foetal development provided by medical science, but surely not decided by it. Science cannot adjudicate on the *values* that are central to such questions.

The result of all this is that the controlling idea of science versus religion is assumed and appears everywhere in the analysis and literature of the topic. Thus, Wellcome 2009:

the public might hold these different viewpoints for a range of different reasons and we cannot necessarily conclude that they represent the adherence to a wholly religious or scientific understanding or way of thinking, or a compromise between the two.

Or the respected website British Religion in Numbers:

Comparing data from [the 2010 Eurobarometer study] with a 2005 study, this led the British Religion in Numbers analysis to comment that, 'the religion versus science scales would still appear to be finely balanced in the UK, albeit a growing number are backing science rather than faith.¹

Or Wellcome, 2013:

The majority of people in the UK do not hold religious beliefs about the origins of life – five in ten adults and almost six in ten young people think that life evolved as a result of natural selection, with God playing no part in this process.

Time and again, the premise is either/ or, a tilting balance, faith or science, natural selection or God.

Asking questions on such topics is, of course, a highly sensitive matter. In their paper on assessing and improving survey questions on religion, Bader and Finke report that responses to questions about human origins would vary considerably, depending on factors such as the ordering, phrasing, and nature of the questions asked (especially whether the answer categories offered were mutually exclusive).² However, such sensitivities have not been well served in much research to date.

This has been recognised by the leading researchers in this area. This whole topic of questioning the general public on evolution has been extensively studied and critiqued by Elsdon-Baker who points out that polls often present "an overly simplistic binary choice – either you accept evolutionary science or a creator God."³ Unsworth and Voas, referencing Evans and Evans' paper on 'Religion and Science: Beyond the Epistemological Conflict Narrative', speak of "an assumption of epistemological conflict between religion and science [that] is present in many studies".⁴ From the US, Locke, in a paper on the 'Discourses of Creation Science', remarks that treating rejection of evolution as tantamount to a wholesale rejection of science could potentially mask a more nuanced public understanding of the nature of 'science', and that in actual fact, such surveys "may tell us something about the public understanding of science, but perhaps what they mainly tell us about is the researchers' own boundary work."⁵ It remains, however, an under-recognised and serious problem, which new research should address and rectify. We are in danger of assuming a conflict and then finding one.

The heart of the matter: humans, not God

All that duly noted, it is certainly not the case that the data show no conflict between religion and science in public perception, or no religious antagonism toward science. In particular, evolution is an issue for certain religious believers, disproportionally independent (evangelical) Christians, Pentecostals and Muslims. Longitudinal data simply do not exist here, but it would be reasonable to guess that levels of anti-evolutionary feeling have increased over recent decades, perhaps in line with the fragmentation of the Christian landscape and/ or with the prevalence of creationism and Intelligent Design in the US – even if the level of anti-evolution sentiment reached is usually less than headlines allege, and nothing that would merit the idea of a "war" on science.

When one looks more closely at these issues, however, it seems like, to a large degree, what is at stake is less a question of God and more a question of human nature. Certainly, there are believers (and, oddly, some non-believers) who reject the scientifically established age of the earth or the mechanism of evolution for the origin of species, but those numbers almost always increase when questions of human development, and in particular human uniqueness, consciousness and dignity, come into question. Similarly, the number of people who adhered to evolution in general is generally higher than the number who adhere to an understanding of evolution that denies purpose in human life or states that humans are just another species with no unique value or significance – both views widely popularised by prominent evolutionists over recent years. What seems to matter is what evolution says about human nature and, in particular, whether it implies or states that its understanding of human nature excludes any other, such as might incorporate the soul, purpose, significance, or uniqueness.

This reading is obliquely supported by the data on non/ religious attitudes to science and technology. Here, the data show that although the religious are slightly more positive in their associations with scientists than the non-religious, they are more anxious about the speed, capacity and potential for science and have greatest reservations with issues such as synthetic biology, stem cell research and GM crops, which involve modifying life in some way. The exceptions to this are also instructive. The religious are less anxious about animal research, and are more likely than the non-religious to see the benefits in animal research. In other words, where the religious differ from the non-religious here is in their attitudes to the human: more conservative when it comes to the issue of modifying life, but more willing to countenance animal experimentation as a means of improving human life.

This is an attitude that is arguably born of two distinct metaphysical commitments. The first sees human life primarily as a gift, certainly not beyond modification, but nor as malleable as those who do not believe its origins and value are rooted in the divine. The second sees human life as qualitatively (rather than simply 'quantitatively') different to that of other animals, this being the root of the religious opposition to evolution (particularly when they are presented with a zero-sum choice between options), just as it is to the comparative religious willingness to experiment on animals.

This reading is supported by research in the US, where the levels of data and understanding on these issues are substantially greater, as the work of professors Elaine Howard Ecklund and John Evans have shown. Elaine Howard Ecklund is Herbert S. Autrey Chair in Social Sciences, Professor of Sociology and director of The Religion and Public Life Program at Rice University, and has published a number of detailed social scientific studies on the perceived relationship between science and religion.⁶ In the most recent of these,⁷ the data show that the notion of a straightforward and univocal religious opposition to science is simply wrong.⁸

This did not mean there was no conflict. Ecklund showed that there are religious reservations about science but that they tended, at heart, to be about something other than their apparent focus. Thus, Young Earth Creationism, she argues, is less about the age of the earth. Rather, "what is most important are the theological implications - that the broad narrative of life's origin and development leaves room for an active God and respects the sacredness of humanity". Ecklund narrows these wider issues down to two. First, religious Americans have serious questions about what 'science' means for the existence and activity of God, and second, they have questions about what it means for the sacredness of humanity. This does not necessarily blunt the reality of the antagonism, where it exists, between 'science' and 'religion', but it does help show that this apparently straightforward conflict between the two, is about something more than geology or even evolution. It's about (in her analysis) the freedom of God and the nature of human kind. John Evans, Professor of Sociology at UC San Diego, has made a similar point, most recently in his book *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict Between Religion and Science.* This, like Ecklund's work, explores precisely the question of what different people are disagreeing about when they are disagreeing about science and religion, and undermines the idea that there is "a foundational conflict" between science and religion in the public mind, especially one that is based on "ways of knowing".

Evans teases apart 'elite' discourse on science and religion from public or popular discourse. The former, he argues, is focused on disagreements over knowledge – what we know and how we come to know it. Science and religion are in conflict, when they are, because they make differing and incompatible claims about reality, or because they have differing and incompatible ways of making them.

The popular discourse, by contrast, locates conflict on moral grounds, such as (a) which institutions ('religious' or 'scientific') get to set the moral purpose and meaning of a society; (b) what implicit moral ideas are embedded in scientific claims, and particularly those scientific claims, like Darwinism, that have implications for the nature of the human; and (c) how medical technology, such as that dealing with embryonic stem cells or genetic modification, should be used and regulated.

It is important to emphasise that not all 'popular' conflict between science and religion would qualify as moral. Evans specifies that there is genuine 'knowledge conflict' within the conservative Protestant tradition in the US (although even here it is tinged with moral consideration). These are not hermetically sealed conceptual categories. Nevertheless, the point and importance of Evans' work, both theoretical and empirical, is to underline the extent to which the science and religion conflict, such as it is, is not simple or monochromatic but complex and variegated, depending not only on the issue at hand (e.g. is the disagreement about evolution, cosmology or neuroscience) but also on the wider moral, social and anthropological context.

In this way, both the work of Ecklund and Evans underline one of – perhaps the – main argument of this report. Where there is conflict in the public mind between science and religion, it is not so much about specific religious or religious claims, unless they are (a) about the nature of the human, (b) tinged with exclusivity (i.e. either the scientific or the religious interpretation of the human must be right; they can't both be), and (c) have significant wider social and political implications.

In short, while we should not underplay the extent to which there is a perceived conflict in some quarters, between science and religion, nor should we overplay it, exaggerating it into a full-scale war between vast and irreconcilably opposed armies. Rather, we should seek to understand it in its complexity and respond, not with disparagement or contempt, but with intelligent and reasoned dialogue.

- 1 http://www.brin.ac.uk/2010/science-and-religion-in-the-european-union/
- 2 Bader CD and Finke R, 'Toward assessing and improving survey questions on religion: The ARDA's measurement wizard', *Journal for the Scientific Study of Religion* 53 (2014), pp. 652–661.
- 3 Elsdon-Baker F, 'Creating creationists: The influence of "issues framing" on our understanding of public perceptions of clash narratives between evolutionary science and belief, *Public Understanding of Science* 24 (2015), pp. 422–439. As an aside it has also been examined in the US, which, as noted, has far more experience in these matters, with one 2014 study addressing these methodological problems "by disaggregating the components of common survey questions about human origins". J.P. Hill, *National Study of Religion & Human Origins* (Grand Rapids, MI: BioLogos, 2014); https://gallery. mailchimp.com/f65102f84ebd4b661e06bae96/files/dbb742d8-5074-4e54-8830aaed366ceedd/nsrho_report.pdf
- 4 Evans JH and Evans MS, 'Religion and science: Beyond the epistemological conflict narrative'. *Annual Review of Sociology* 34 (2008), pp. 87–105.
- 5 Locke S, Constructing 'The Beginning: Discourses of Creation Science (Mahwah, NJ: Lawrence Erlbaum Associates, 1999), p. 18.
- 6 See Science vs. religion: what scientists really think (New York; Oxford: Oxford University Press, 2010) and, with Christopher P. Scheitle, Religion vs. science : what religious people really think (New York, NY: Oxford University Press, 2018).
- 7 Religion vs. Science: what religious people really think.
- 8 Religious Americans were interested in science, although many believed that scientists were hostile to them. Among the group where hostility is supposed to reign supreme, nearly half (48%) of evangelicals say they view religion and science as being "in collaboration with each other", rising to 73% among evangelical scientists.

Appendix: science and religion in the UK: data sources

The level of public opinion research into the (perception of the) relationship between science and religion in the UK is lower, more occasional and more piecemeal than that in the US. Only a handful of studies in the last ten years have focussed on 'science and religion' in any detail, although a number of others have touched on the subject obliquely.

This appendix gives an overview and then full details of those studies that have some element of science and religion data which have been conducted in the UK over the last ten years.

Over the last ten years, three major studies have collated significant data on this topic. In 2008-09, Theos and the Faraday Institute, in a project funded by John Templeton Foundation, commissioned ComRes to conduct research into the public's knowledge of and attitude to Darwin, evolution, theism, and more generally science, religion, supernatural beliefs and practices. The project, known as *Rescuing Darwin*, was timed to coincide with the big 2009 Darwin anniversary, and asked 2,060 adults (18+) 25 questions (in addition to demographics). The questions were focused primarily on evolution, but some asked for respondents' more generic opinions about the relationship between science and religious belief.

In 2014, Dr Amy Unsworth commissioned the polling company YouGov to conduct a survey of a nationally representative sample of the adult (18+) British population, to explore attitudes to evolution. The total sample size was 6,020 individuals, comprising a nationally representative sample British adults in terms of age, gender, social class and newspaper readership, together with supplementary ('booster') samples of five specific religious affiliations (Anglicans, or Episcopalians; Catholics; Muslims; Pentecostal Christians; and Independent Evangelical Christians) in order to allow for robust analysis of the data according to religious group. The survey put eight statements¹ to respondents, all pertaining to evolution, in an attempt to gain a fully rounded and nuanced understanding of public opinion in this area.

In 2017, Prof. Fern Elsdon-Baker and other researchers (based at Newman University, York University, the University of Kent, and the British Library), conducted the *Exploring the Spectrum* project. This sought "to build an understanding of the social and cultural contexts of public perceptions of the relationship between 'science' and 'religion' across all faiths and none." The project, which was funded by the Templeton Religion Trust, made use of four approaches – (1) social science; (2) oral history, historical and media analysis; (3) experimental social psychology; and (4) a large-scale survey of public perceptions, attitudes and identity formation in the UK and Canada. Its focus was primarily on people's attitudes to evolution and evolutionary science, and it interviewed (in the UK) 2,129 UK adults (16+).

In addition to these three major public opinion studies into science and religion conducted in the last ten years, it is worth mentioning three other regular and obliquely related surveys that add to our overall picture: Eurobarometer, the Wellcome Trust *Global Monitor*, and the Ipsos/ MORI *Public Attitudes to Science* survey.

Eurobarometer is a regular survey of public opinion in EU countries, which dates back to the 1970s. Usually biannual, there are also occasional supplementary surveys on a wide range of topics, among them science and technology, which includes a regular question on science and faith. The UK sample is of c. 1,300 adults (15+) per wave. Being EU-wide, the results of this are useful for making international comparisons. The Wellcome Trust also conducts regular surveys into public opinion on public views science, health and medical research through its Global Monitor. The UK Monitor is triennial, and explores, among other things, how people's religious views affect attitudes to relevant science issues, such as the origins of life.

The Ipsos/ MORI Public *Attitudes to Science* survey, conducted on behalf of the Department for Business, Innovation and Skills, was a series of surveys looking at UK public attitudes to science, scientists and science policy. Unlike the previous two surveys, which allow for international comparison, this one is UK specific. However, it makes up in some measure in depth what it loses in geographical scope, having a wider range of questions on the relationship between science and religion.

There are, then, six significant data sources for assessing UK public understanding of science and religion, some of which offer a measure of direct international comparison. Beyond these there are various occasional surveys and polls that add to our picture (details of which can be found at the end of this document) and a number of studies that explore (a specific aspect of general question of) science and religion among a specific segment of the population.²

- 1 These were: (1) The world was created in six 24-hour days; (2) Plants and animals have developed over time from simpler life forms; (3) Humans have developed over time from simpler, non-human life forms; (4) The whole human race is descended from Adam and Eve; (5) There is strong, reliable evidence to support the theory of evolution; (6) The earth is young – less than 10,000 years old; (7) The earth is billions of years old; (8) Life is too complex to have evolved solely by natural processes.
- 2 For example, there is a Wellcome Trust report among young people (aged 14-18) attending state-funded schools exploring their attitudes to science, and an Ipsos/ MORI survey for the Scientific and Medical Network into religion and spirituality among science professionals.

Year	Name of study	Sample details	Topic/ focus	Sponsors/ Agency	Link
2009	Rescuing Darwin	2,060 adults (18+), UK	Knowledge of and attitude to Darwin, evolution, theism, and more generally science, religion, supernatural beliefs and practices.	Theos/Faraday/ ComRes/JTF	https://www. theosthinktank. co.uk/research/ 2009/01/16/ rescuing-darwin
2009	Darwin Now	10 countries (UK, USA, Mexico, Argentrina, Spain, Echina, Russia, India, Egypt and South Africa)	Attitudes to Darwin and evolution.	British Council/ Ipsos/ MORI	https://www.ipsos. com/ipsos-mori/en- uk/darwin-survey- shows-international- consensus- acceptance-evolution
2009	Wellcome, 2009	1,179 adults plus 374 young people (14-18)	Attitudes to pseudoscience, the origins of life, and medical and genetic research.	National Centre for Social Research (NatCen) and Northern Ireland Statistics and Research Agency	http://www.brin. ac.uk/sources/2996/ https://wellcome. ac.uk/sites/default/ files/monitor-wave1- wellcome-sep09.pdf
2010	Eurobarometer study, 2010	Adult (15+) population in EU (+ Croatia, Turkey, (+ Croatia, Turkey, Switzerland, Iceland Norway). UK sample 1,311 adults	Attitudes to the relative dependence on science and faith, the opinion of religious leaders in commenting developments, religious affiliation, churchgoing, and belief in God (as well as lucky numbers).	European Commission/ TNS	http://ec.europa.eu/ commfrontoffice/ publicopinion/ archives/ebs/ ebs_340_en.pdf

Footnote: ¹	http://www.brin. ac.uk/2012/sciences- unanswered- questions/	https://wellcome. ac.uk/sites/default/ files/monitor-wave2- full-wellcome-may13. pdf	https://www.ipsos. com/sites/default/ files/migrations/en- uk/files/Assets/Docs/ Polls/pas-2014- main-report.pdf	https://www.ipsos. com/sites/default/ files/migations/en- ult/files/Assets/Docs/ Polls/pas-2014- tables-all-adults.pdf	http://ec.europa.eu/ commfrontoffice/ publicopinion/ archives/ebs/ ebs_401_en.pdf
Department for Business, Innovation & Skills/ Ipsos/ MORI	UKTV	Wellcome	Department for Business, Innovation & Skills/ Ipsos/ MORI		European Commission, Directorate-General for Research & Innovation/ TNS UK
Public attitudes to science.	Science's unanswered questions.	Religious beliefs, "origin of life" (i.e. evolution), knowledge about science and attitudes towards medical genetics.	Public attitudes to science.		Responsible Research and Innovation (RRI), Science and Technology.
2,103 UK adults (16+)	2000 UK adults	1,396 UK adults 460 Young people (14-18)	2,064 adult (16+), comprising a main sample of 1749, with 48% response, and a booster sample of 315 adults aged 16-24		1,306 UK adults (15+)
PAS, 2010	UKTV, 2012	Wellcome, 2013	PAS, 2014		Eurobarometer, 2013
2010	2012	2013	2014		2013

http://cdn.yougov. com/cumulus_ uploads/document/ mm7go89rhi/ YouGov- University%200f%20 Lancaster-Survey- Results-Faith- Matters-130130.pdf	Unsworth, A., & Voas, D. (2018). Attitudes to evolution among Christians, Muslims and the Non- Religious in Britain: Differential effects of religious and educational factors. Public Understanding of Science, 27(1), 76-93. https://journals. sagepub.com/ 10.1177/ 09636625 17735430	https://wellcome. ac.uk/sites/default/ files/monitor-wave3- full-wellcome-apr16. pdf
University of Lancaster/ YouGov	YouGov	Ipsos/ MORI/ Wellcome Trust
Faith issues in general, but included a question on "Which, if any, of "The following do you rely on for guidance as you live your life and make decisions?" (including science).	Attitudes to evolution among Christians, Muslims and the Non- Religious in Britain	Attitudes to, and knowledge of, science and biomedical research in relation to religion.
4437 GB Adults	6,020 UK adults	1,524 UK adults (18+)
Westminster, 2013	Unsworth	Wellcome, 2016
2013	2014	2016

Wellcome: Religion in relation to science Spirituality survey	Young people (aged 14-18) attending state-funded schools General public General public	Religion in relation to science. Religion and Religion and controlity among	Wellcome Trust/ Kantar Public, support from the Royal Society, the Department for Business, Energy, and Industrial Strategy and the Department for Education Ipsos/ MORI/ Scientific and Medical	http://www.brin. ac.uk/sources/ religion-in-relation- to-science-3747/ https://www.ipsos. com/ipsos-mori/ com/ipsos.
	(UK, France, Germany). UK sample 1,003		funding from the Salvia Foundation	spirituality-among- spirituality-among- engineering- technical-and- medical-professionals https://www.ipsos. https://www.ipsos. com/sites/default/ files/ct/news/ documents/ 2017-09/science- spirituality- professions-tables- 2017.pdf
Exploring the Spectrum, 2017	2,129 UK adult (16+)	Attitudes to evolution and evolutionary science.	Newman University/ YouGov/ TRT	https:// sciencereligion spectrum.org/ in-the-news/ press-release- results-of-major- new-survey-on- evolution/

Not available online	http://www. comresglobal. com/wp-content/ uploads/2018/10/ ComRes_Ligonier_ State_of_Theology_ Tables_April_2018. pdf	https://www.jpsos. com/ipsos-mori/ er-uk/advertising- execs-rank-below- politicians-britains- least-trusted- profession
Christian Research/ Resonate	ComRes ComRes ComRes	h c c c e e e e f e f e
Science and religion in church.	Included a question "Modern science disproves the Bible".	Measures the trust in various professions, including scientists and clergy.
1038 members of the Science and religion Resonate panel of in church. 5000 practising UK adult Christians	2,133 UK adults	1,001 adults GB aged 15+
Science and religion in church	Ligonier (The State of 2,133 UK adults Theology) 2018	Ipsos/ MORI 2018
2017	2018	2018

(https://www.jpsos.com/ipsos-mori/en-uk/Assets/Docs/Polls/sri-pas-2011-main-report.pdf) are no longer available online, but a useful summary The data for this study (https://www.ipsos.com/ipsos-mori/en-uk/Assets/Docs/Polls/ipsos-mori-pas-2011-computer-tables.pdf) and the analysis and commentary is available here: http://www.brin.ac.uk/2011/public-attitudes-to-science/ -



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The 'conflict' between science and religion is sometimes talked up in the UK as if it were part of an emerging culture war, as it apparently is in the US.

But what is the real picture in the UK? Is Young Earth Creationism on the rise? Do religious people think more negatively about science? And if there is a conflict between science and religion, who perceives it and why?

Published to coincide with his new three-part Radio 4 documentary *The Secret History of Science and Religion*, Nick Spencer's new Theos report "*Science and Religion*": *the perils of misperception* gathers over ten years of polling data to give the fullest picture yet of the science and religion landscape in the UK.

Drawing on 18 major studies, the report looks at public opinion – on science and religion; evolution and creationism; scientists, scientific progress, and its moral implications – and reveals "pockets of antagonism" (rather than all-out conflict), which focus less on God or evolution than they do the nature and status of human beings.

66 Nick Spencer is Senior Fellow at Theos

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