

Has Science made God unnecessary?

Think twice about... evolution: St Mary's Painswick



Alison Morgan Sunday 26th September 2010

Introduction

Good morning! What's life all about, and how do we make sense of it? And who are we meant to look to to find out? Is it the traditional religious faiths which have the answer? Or is it modern science, with all its insights into the way things are? And does it really have to be either-or, or could it be both-and? Because often science and faith seem to be in competition with one another.

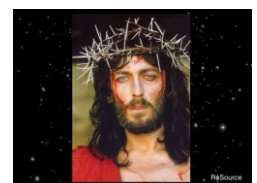
Probably I should start by telling you a bit about myself. I believe in God, and I now work for the Church of England. But that's not where I started. Probably like many of you, we didn't talk about God much in our family, and we certainly didn't go to church. I remember thinking it must be really weird to be a vicar, and have a job that was all about nothing. Later I became so convinced it was about nothing that I became an atheist. I thought God was so improbable he just had to be an illusion. I went off to Cambridge to do first a degree and then a PhD, and it was there that I changed my mind. But that's a different story...

My research area was the 14th century poet Dante, author of the *Divine Comedy*, a work which offers an overview of the whole cosmos. I love the medieval way of looking at things, because everyone was interested in everything. Science and faith struggled together to answer life's greatest questions. Poets studied astronomy and scientists studied philosophy and theology. Now we live in a world of specialists. Each has their own language to describe reality, and often they seem incapable of understanding each other. The question is, is that just their problem, or is it also ours? Do we really have to choose between science and faith, or can we do both?

The protagonists

Let me start by introducing you to some of the main characters in the faith and science story.

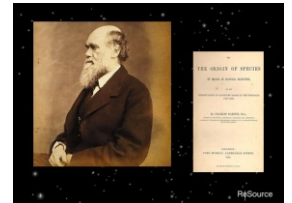
- This is **Aristotle**. Aristotle lived in the 4th century BC. He founded a school of philosophy in Athens, where he taught logic, ethics, politics, poetry, physics, biology and psychology. How did the world begin, and what was life all about? Well, Aristotle decided the physical world could only be explained by the existence of an unmoved mover, a God outside the universe to whom it must owe its existence. So Aristotle gives the first answer to the question. To understand the world you need both science and God.
- Let's jump forwards a few hundred years. This is **Jesus**. Roman historians record that he was executed in what's now Israel in AD 30. Jesus claimed to be the Son of God. He attracted a large following, and was widely known for both his teachings and his reputation for healing people. His followers, many of whom lost their lives for continuing his teaching, founded the Christian church. Jesus claimed to have access to truth in a way that nobody had before, and said that through him it was possible to enter into a meaningful relationship with God, not just as an unmoved mover but as a person you can be real with. Billions of people since then have said that for them that's the case.



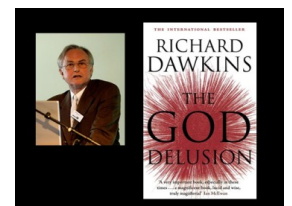
- Next. Here's **Galileo**, a mathematician and astronomer who in 1632 proved that the earth goes round the sun. Although Galileo himself had no problem believing in God and at the same time knowing that the earth goes round the sun, conservative theologians in the Vatican turned out to be completely incapable of adapting to the new information. Galileo was tried for heresy, forced to take it all back, and placed under lifelong house arrest. For the first time in history science and God were in competition.



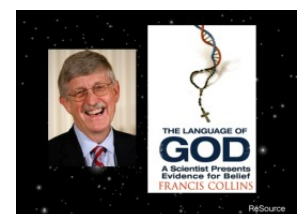
- This is **Charles Darwin**. Darwin was all set to become a clergyman, but in 1831 he got the chance to go to South America as the ship's naturalist on HMS Beagle. Nearly 30 years later he published the *Origin of Species*, in which he advanced the theory of the gradual evolution of species by natural selection. Now you might think that was a massive contribution to science and a great blow to faith in God. But Darwin himself said it had absolutely nothing to do with God, in whom like Galileo he continued to believe; and as far as science went it actually wasn't the publishing sensation you might expect. Whitwell Elwin, editor of the respected British journal the Quarterly Review, was sent an advance copy. He read the book with interest, and agreed that it had merit, but feared that the subject matter was too narrow to attract a wide audience. He urged Darwin to write a book about pigeons instead. Everybody's interested in pigeons, he said helpfully.¹ But Darwin stuck to his guns, and his theory of evolution is accepted by the vast majority of scientists today – and, in this country at least, by most Christians too.



- So what's all the fuss about? This is **Richard Dawkins**, who was, but is no longer, professor of the Public Understanding of Science at Oxford University. Well known for his research in evolutionary biology, in recent years he's been writing about what he thinks are the implications of evolution for religious belief. His best known book is called *The God Delusion*. Now Dawkins is quite clear that Science *has* disproved God. He holds that everything that needs to be known can be known through science. He's a biologist, so what he talks about most is evolution. Evolution, he says, is true. Not only that, he says we can't believe *both* in evolution and in God - we have to choose. Not all scientists agree - another Oxford professor, Alister McGrath, formerly a research biochemist but now Professor of Historical Theology, has written a rejoinder. He calls it *The Dawkins Delusion*. We'll come back to Dawkins later.



- This is **Francis Collins**, a geneticist and the Director of the Human Genome project which has deciphered the code of human DNA. Collins agrees with Dawkins that evolution can and must be true – but says that it explains neither the existence of life nor the statistically improbable speed with which it came into being. Dawkins, he says, offers a false choice – there is no conflict between being a rigorous scientist and a person who believes in God. Collins is a Christian.

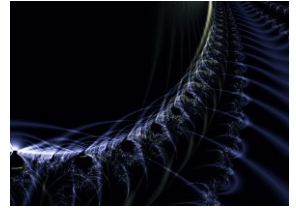


- Finally, let me introduce you to **David Hay**, a zoologist who became the director of the Religious Experience Research Unit in Oxford and now specialises in the biology of human spirituality at Aberdeen University. Hay comes at the question of whether science proves or disproves God by analysing the human brain. Drawing on the latest research by neuroscientists mapping the activity of the brain, Hay suggests that the human brain is actually hardwired to engage in spiritual activity; faith has a biological basis. He says this means we are not actually developing our potential as human beings to the full unless we are exploring not just the physical but also the spiritual dimension of life. For Hay, the latest scientific research actually makes God more necessary, not less.



The debate - physics

So those are some of the people. Let's look now at the issues. Has science made God unnecessary? We've talked a bit about research in biology. What about physics? The past century has seen an extraordinary number of revisions in our view of the physical universe. The search for ultimate reality has led to the discovery of a subatomic world of astonishing and contradictory complexity. Matter and energy are interchangeable. So are waves and particles. We can split atoms into protons and neutrons, and we think that inside those there are leptons and quarks, minute strings or vibrating strands of energy that oscillate in lots of different dimensions. This is called string or M-theory, and it's a bit hard to explain, partly because despite Stephen Hawking's latest pronouncements it remains as yet unproven. I don't want to get it wrong, so this is how physicist **Michio Kaku** puts it:



*The heterotic string consists of a closed string that has two types of vibrations, clockwise and counter clockwise, which are treated differently. The clockwise vibrations live in a ten dimensional space. The counterclockwise live in a 26-dimensional space, of which 16 dimensions have been compactified.*²

Are you OK with that? Because if so, you will be fascinated to know that these strings may be part of a whole network, a string net liquid, which runs throughout the vacuum of the universe.³

So that's the subatomic world. What about the other end of the spectrum, and the universe itself? How did it begin? We now know it was at a specific moment in time, 13.7 billion years ago, with a Big Bang, the background radiation of which is still detectable. Most Christians identify this event with the account of God creating the universe in the book of Genesis – and we will come back to that in a minute. Theoretical physicist **Stephen Hawking** has come up with a mathematical description of this event which he calls a singularity theorem. All physicists agree that the universe began as an infinitely dense, dimensionless point of pure energy – a singularity. But when you calculate back to the singularity, the laws of physics break down.

People react to this in different ways. Some insist that science will sooner or later explain the whole thing. Others point out that actually it may be that the opposite is the case - the further in and the further out physicists go, the more mysterious it all becomes. It's not that we don't have enough evidence – it's that the evidence that we do have is self contradictory. It seems that however far in and far back you go, you can't really get beyond Aristotle and the unmoved mover. Perhaps this is why many scientists find it hard to talk about fundamental reality without talking about God.

And perhaps it's why far more research scientists than the average believe in God. Henry Schaefer, Professor of Chemistry at the University of Georgia, remarks that it's unusual for a physicist to be an atheist. An American poll a few years ago showed that on any given Sunday, 41% of PhD scientists are found in church. In the UK, the Professor of theoretical physics at London University and the former Professor of theoretical physics at Cambridge are both Christians; there is, they believe, no other way to make sense of the beauty and complexity of the universe they seek to understand through their research. For many top scientists, science and faith are equally indispensable.

The debate - biology

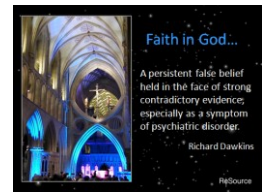
It is increasingly difficult to talk about science and faith without mentioning **Richard Dawkins**. Dawkins is an evolutionary biologist with a long and distinguished academic career. But since becoming Professor of the Public Understanding of Science at Oxford in 1995 Dawkins has focussed not so much on science as on the challenge of science to faith. His most recent book is called *The God Delusion*.



I read it. Quite frankly, I was amazed. Not by his compelling arguments, but by the astonishing tirade of insults, inaccuracies and caricatures it contains. It's nothing like any serious academic book I've ever read, and it wasn't at all what I was expecting. Let me give you some examples.

This is Dawkins' definition of faith: '*a persistent false belief held in the face of strong contradictory evidence, especially as a symptom of psychiatric disorder*'.

This is what he says about God: *the most unpleasant character in all fiction: jealous and proud of it; a petty, unjust, unforgiving control-freak; a vindictive, bloodthirsty ethnic cleanser; a misogynistic, homophobic, racist, infanticidal, genocidal, filicidal, pestilential, megalomaniacal, sadomasochistic, capriciously malevolent bully.*



For good measure, he throws in that Mother Teresa was a sanctimonious hypocrite. He says miracles can't be discussed because they violate the principles of science. Theologian Thomas Aquinas' demonstration of the existence of God is 'vacuous', and Dawkins actually ends his summary of 12th century theologian Abelard's work with the sentence 'nur nurny nur nur'. He dismisses the personal faith of the 72% of the population who say they believe in God with the one-line statement that he dealt with hallucination in chapter 3; and concludes the book with the observation that religion in general is best regarded as the failure to give up a comfort blanket. At worst, it's the root of all evil and the sooner we get rid of it the better for all of us.

The response to Dawkins has been mixed, to say the least! Philosopher of science Mary Midgely describes him as a scientific fundamentalist who seems to think that knowledge reduces to one fundamental form, which is the statements of science – whereas in fact science is only a small, specialised part of what anybody knows. Other scientists have said he brings science into disrepute. One eminent psychiatrist declared that having read the *God Delusion* he's concluded that Dawkins knows nothing about God, and nothing about Delusion. A leading atheist and philosopher of science, Michael Ruse, has said Dawkins makes him embarrassed to be an atheist.

The story I like best, though, is one told by one of my colleagues who was asked to speak about Science and Faith at a men's breakfast in Oxfordshire. At the end of the meal a man came up to him to continue the debate. He was the chairman of an IT company, and for 30 minutes he disagreed with everything Martin had said. Then at the end he said, 'Thank you. That was very helpful'. Martin, who felt he'd been on his back foot the whole time, said *helpful*, how had it been *helpful*? 'The trouble is,' said the man jabbing his finger in the air, 'I want to believe Richard Dawkins. But he isn't happy, and you are!'. Well, that's scarcely evidence, said Martin, who used to be a lawyer. 'It'll do for now!'.

What accounts for Dawkins' ferocity? Well, I don't know. I used to be an atheist, but it never seemed to me that it was worth getting het up about something I thought didn't exist. I'm not an atheist now, but I'm still very happy with the theory of evolution, as are most Christians including the Archbishop of Canterbury and the last Pope. Evolution is, as Darwin himself said, a theory of the mechanism by which species diversified, and has nothing to do with God. It need not shake our faith any more than the fact that the earth goes round the sun needs to shake our faith. It's a compelling theory, and if you want to look at it from a Christian point of view I suggest you read Francis Collins. Dawkins, however, insists we must choose between evolution and faith. It's a false choice - the real conflict is not between science and faith but between atheism and theism. Scientists inevitably bring to their science a particular framework of belief. Some, like immunologist George Klein, are quite clear about this. He says, 'I am an atheist. My attitude is not based on science, but rather on faith'.⁴ Dawkins would be wise to say the same.

I think though it helps to understand where Dawkins is coming from, which is mostly to do with what's going on in the US rather than what's going on here. Just as the 17th century church couldn't handle Galileo, so some parts of the contemporary church can't handle evolution. Evolution can't be right, they say, because the book of Genesis teaches that God created the world exactly as it is, all in one go. This perspective is called creationism.

In 2007 a 27 million dollar Creation Museum opened in Kentucky. It sets out to demonstrate that the book of Genesis is not just poetically true but literally, factually, scientifically true. That the universe was created in 6 consecutive 24 hour periods, that the earth is 6,000 years old, and that all human beings are descended from two individuals named Adam and Eve. It has a special effects theatre, complete with vibrating seats, where you can watch a video of the Great Flood and learn how dinosaurs survived on board the Ark. I'm as embarrassed

by that as Dawkins' fellow scientists are by him. For me it just shows a misunderstanding of the opening chapters of Genesis, which is not a scientific text but a poetic account of the beginning of life. Maths and poetry can talk about the same thing, but they do it in different ways. I actually rather like this rewriting of the opening verses of Genesis, in the language of physics:

'In the beginning was the big bang. As the world sprang forth from the fuzzy singularity of its origin, first the spatial order formed, as quantum fluctuations ceased seriously to perturb gravity. Then space boiled .. blowing the universe apart with incredible rapidity in the much less than 10^{-30} seconds that it lasted. The perfect symmetry of the original scheme of things was successively broken as the cooling brought about by expansion crystallized out the forces of nature as we know them today. For a while the universe was a hot soup of quarks and gluons and leptons, but by the time it was one ten-thousandth of a second old, this age of rapid transformation came to a close and the matter of the world took the familiar form of protons and neutrons and electrons. The whole cosmos was still hot enough to be the arena of nuclear reactions, and these continued until just beyond the cosmic age of 3 minutes. The gross nuclear structure of the universe was then left, as it remains today, at a quarter helium and three-quarters hydrogen. It was far too hot for atoms to form around these nuclei, and this would not occur for another half a million years or so. By then the universe had become cool enough for matter and radiation to separate. The world suddenly became transparent and a universal sea of radiation was left to continue cooling on its own until, 15 billion years later, and by then at a temperature of 3 K, it would be detected by 2 radio astronomers working outside Princeton.' - John Polkinghorne, *Science and Christian Belief*

If that's too complicated for you, you may prefer Terry Pratchett's one line summary: 'In the beginning, there was nothing, which exploded.'

Back to evolution. Why are creationists so reluctant to accept it? Well, a lot of the current American reaction against evolutionary theory comes from the so-called social Darwinism of the early 20th century, which coined the term 'survival of the fittest' and taught that it can be applied not just to biological species but to whole people groups - thus paving the way for racist philosophies such as Nazism. If that's what evolution teaches, they said, then it sounds pretty unacceptable. Let's stick with the Bible.

Creationism infuriates Dawkins. He knows that the world was not created 6000 years ago. We know it too. To give a random local example, I live near Cheddar, where in 1903 a skeleton was discovered which became known as Cheddar Man. He lived 9000 years ago.

The limitations of science

So it's clear that both physics and biology tell us a lot about both ourselves and the world we live in. It's also clear that for many top scientists they tell us nothing which is not perfectly compatible with faith in God. But is there anything which faith can do for us which science cannot? Is there any area of life in which science has nothing to contribute?

Let me just tell you two stories. They are quite different; but both concern areas of life that are real, but that can't be understood in scientific terms. My brother is a professor too, a specialist in the 18th century novel. When he was still a student he went on holiday in an old cottage deep in the English countryside. He was woken in the middle of the night by a draught coming from the window, sat up, and found himself staring straight through a ghost. It was a man wearing kind of Elizabethan black robes, with one of those frilly white ruffs round its neck. Now me and my brother, as I said earlier, we weren't brought up to think about things like that. So, in the best traditions of research, my brother told me I was on no account ever to tell anyone. And got on with his book on the early English novel.

The other story is more recent. Two years ago I was in Zambia, and to cut a long story short a woman called Rhoda asked me and a colleague to pray for her. She said she had genital boils and AIDS. We prayed. Nothing spectacular happened. She thanked us and went home. This year I went back. Did I remember Rhoda, they asked. After we prayed the boils cleared up, and her blood count improved so much they took her off the anti-retroviral drugs. As her health improved so did her confidence. She applied for jobs. One meant she had to have a complete medical. The medical found her to be HIV negative.

I could tell you lots of stories like those two - stories from a dimension that has nothing to do with physics and biology and everything to do with a spiritual dimension which we seem to be able to participate in often in defiance of the natural laws of the universe – just as Jesus said we would.

This is the view of Erwin Schroedinger, a Nobel prize-winning quantum physicist:

*I am astonished that the scientific picture of the real world around me is very deficient. It gives us a lot of factual information, puts all of our experience in a magnificently consistent order, but is ghastly silent about all that is really near to our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity. Science sometimes pretends to answer questions in these domains but the answers are very often so silly that we are not inclined to take them seriously.*⁵

Gradually we are becoming aware that science can't give us the whole picture. It tells us a lot about the world out there; but doesn't deal so well with the world we find inside ourselves. It's possible, for example, to talk about love in terms of chemistry, or even in terms of evolutionary biology – which is what Dawkins does. But does that work for you? Or does it seem to you that there's more to it than that?

One of the people I introduced you earlier to was Professor David Hay. David ran a research project in Nottingham, asking non churchgoers whether they think there is a spiritual dimension to life.⁶

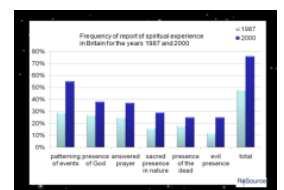
This is Matthew:

It's probably just a nagging instinct, that while all the material evidence is telling me, this is ludicrous, you know, this is all complete chaos, nonsense, it's arbitrary, you know, we're a rock in a vacuum just spinning through nothingness and, you know, the consequence of impersonal cosmic forces, nothing beyond it. Whilst my sort of intellectual faculty can tell me that, there is this other, and I'm not going to use the word 'soul', but there's this other bit of me which is just sort of going, 'hang on', you know, 'What if, pal?'



Matthew is typical of people all over the country. He thinks there's more to life than the physical, but he doesn't know how to explore it. More and more people feel the same. These are some of the **statistics** from a survey commissioned by the BBC in the year 2000 and compared with the same questions asked by a Gallup Poll in 1987. The column to look at is the one on the far right, which shows that 76% of the UK population now say that there is a spiritual dimension to their lives – up from 48% in 1987. The most striking of the other columns is the third - 37% of people say they have experience of answered prayer.

Why is this? Well, perhaps it's because after 200 years of incredible scientific advances, people are beginning to realise that science isn't the answer to everything. There are dimensions of human experience which can't be investigated by particle physics or molecular biology. Science does tell us some amazing things – your body is made of atoms which were once part of a star. 6 trillion chemical reactions take place in your body every second.⁷ You may have as much as 20m km of DNA bundled up inside you.⁸



And we are each so atomically numerous and so vigorously recycled at death that a up to a billion of our atoms probably once belonged to Shakespeare.⁹ But none of the atoms I now have are the same as the ones I was born with – which makes me think, who am I? Am I just a physical being, or is there more to me than that? Am I just a body; or do I have a soul? Is science the only language of reality, or is there another one which we might call faith?

I think this about sums it up:

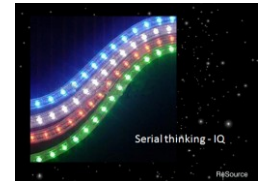


Science and spirituality

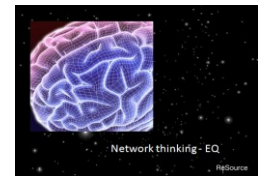
David Hay believes that the human brain is specifically wired up for faith. I'm fascinated by the overlapping new fields of neuroscience and what is coming to be called neurotheology. Let me introduce you to another Oxford academic, Danah Zohar. She has a research degree from Harvard in physics and psychology, she teaches in the Strategic Leadership Programme at Oxford and lectures all over the world on the application of neuroscience to psychology and human relationships. She's written a number of books with her psychiatrist husband, the best known of which are *The Quantum Self* and *Spiritual Intelligence*. Zohar draws on the research of a neuroscientist called Rodolfo Llinas who has found that there are 3 distinct processes in the brain: pathways, networks and oscillations.



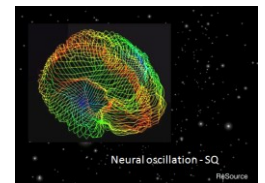
This is how it works. When we are engaging in logical thinking, messages are passed along **serial pathways**, like a chain of rope lights. This is what's going on in your brain when you are doing maths or filling in your tax form. Measuring the efficiency of this activity gives you what we know as IQ.



But when we are experiencing emotional activity or doing automatic things like riding a bike, the brain works in a different way, with patterns of activity transmitted across **neural networks**. Zohar says this corresponds to the more recent notion of EQ or emotional intelligence. It's the gut stuff.



Then when we are engaging in spiritual activities such as meditation or prayer there is a third pattern, in which a series of **oscillations** pass across the surface of the temporal lobes of the brain – so she calls this SQ, or Spiritual Intelligence. The oscillations occur at an exact speed – 40Hz, and are so precisely located that the relevant part of the brain is now popularly referred to as the God spot.



David Hay summarises some research done by Michael Persinger in the course of his investigations into epilepsy. Persinger designed a helmet which stimulates the God spot with a magnetic field of a precise wavelength. Some people report extraordinary spiritual experiences when wearing this helmet. Dawkins apparently tried it and said he felt nothing more than a mild tingling. People are good at different things; perhaps it is the logical, scientific part of Dawkins' brain which works best.

Horses for courses

So, how do we cope with all this? Well, I think by using a device which one of Dawkins' colleagues, Stephen Gould, has called NOMA. NOMA stands for *non-overlapping magisteria*. That is, that you know different things in different ways, and make use of different but complementary disciplines to investigate them. In other words, we use science to explore one dimension of reality, and faith to explore another.

In other words, it's about using HORSES for COURSES. You don't use a racehorse to plough a field. Shire horses tend not to win the Grand National. You need the right tool for the job. Science and faith are different tools which do equally important but different jobs.



Now I'm actually not a scientist or a theologian. I'm a linguist. I like to think about science and faith as being two different languages, and you need to use the right language on the right occasion.

Every human culture has to come up with the answers to 2 fundamental questions:

1. The first is, how do we know things?

2. And the second is, how do we make sense of them?

Every culture has its own way of answering these questions. We in the West are unusual in that we have come at them from 2 different directions. It's as if we have 2 different languages, and instead of using one for each question, we've tried to use first one and then the other for both questions. One is the language of science, and the other is the language of faith. Science helps me understand the inner workings of the atom and the intricacies of the human genome. But it doesn't help me think about whether there is a God, or how to develop the spiritual part of myself. And because our society is much better at the science language, we tend to find it difficult to talk about the spiritual side of life. That's really unhealthy, because it's a fundamental dimension of what it means to be human. If we are afraid to talk about God, we get boxed into a view of life which is all about material things, and not about the spiritual side of our makeup.

The consequences? Journalist Clifford Longley comments:

Having constructed a society of unprecedented sophistication, convenience and prosperity, nobody can remember what it was supposed to be for. Just enjoying it does not seem to be enough. Indeed enjoyment as an end in itself quickly turns to ashes in the mouth. Not only is it boringly bland. It is even more boringly purposeless. There is more to human life than comfort, entertainment and the avoidance of suffering.¹⁰

Stephen Hawking has put it slightly differently:

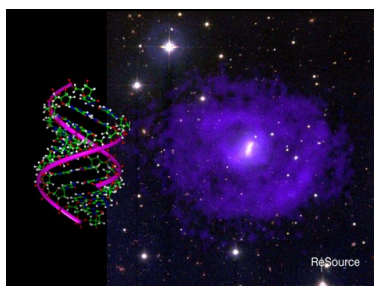
Although science may solve the problem of how the universe began, it cannot answer the question 'why does the universe bother to exist?'. I don't know the answer to that.'



As Christians I think that we do have some answers. My experience is that we find those answers in a dimension of existence of which Richard Dawkins has no knowledge. We find them in the context of a relationship with God, one made possible by Jesus. In a way it's more accurate to say that where science stops, faith starts – there's a whole new world out there waiting for us to explore.

Let's give the last word to Francis Collins, director of the human genome project:

'There is no conflict in being a rigorous scientist and a person who believes in a God who takes a personal interest in each one of us. Science's domain is to explore nature. God's domain is in the spiritual world, a realm not possible to explore with the tools and language of science. It must be examined with the heart, the mind, and the soul – and the mind must find a way to embrace both realms.'



Alison Morgan works as a thinker and writer for ReSource.

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