



MISSION

ISSUE 3 2012

# CATALYST

Intelligent comment on faith and culture



## SCIENCE & GOD: 3 things you need to know

Quantum strangeness, a universe that was expecting us and science without arrogance: ideas from physics, apologetics and philosophy of science. // page 6

WHY SCIENCE? page 2 // THE LIMITS OF SCIENCE page 3 // Q&A: JOHN LENNOX page 4 // PROOFS FOR GOD page 9 // CHRISTIANS AND EVOLUTION page 10 // DAWKINS, DARWIN AND GOD'S TWO BOOKS page 11 // INTERPRETING GENESIS ONE page 13 // SCIENCE BOOKS YOU NEED TO READ page 15

# THE SCIENCE ISSUE

WHY SCIENCE SHOULD MATTER TO MISSION-MINDED CHRISTIANS



When the March 2012 edition of *New Scientist* is entitled 'The God Issue' it reminds us that the interface between science and faith is a hot topic, not least as they both purport to be seekers after truth, even ultimate truth.

So why do faith and science often seem in conflict? For centuries a Christian commitment to the natural sciences has been rooted in the Bible, and a theology that argues that God is discernible in and through the cosmos he has created (Psalm 19: 1; Romans 1: 19). Initially therefore, 17<sup>th</sup> century scientific enterprise, arguably the beginning of the modern scientific era, was seen as an investigation of God's creation. Robert Boyle, the 17<sup>th</sup> century chemist, stated that science was religion's 'invincible ally'. So far so good!

But tensions were not long coming. In the early 17<sup>th</sup> century Galileo's support for the Copernican view that the earth revolved around the sun, rather than vice versa, resulted in his imprisonment as a heretic. The Galileo controversy centred, in part, on the problem of how a literal interpretation of Scripture can lead to error, in this case concerning the immovability of the earth (1 Chronicles 16: 30; Psalm 93: 1; Ps 104: 5).

Even before the full effects of enlightenment rationalism were felt, there was a move away from an unquestioning acceptance of the wisdom of the ancients, whether Aristotle or the Bible. The modern scientific

issues. Whether it's splitting the atom, the development of contraceptives, the cloning of animals or genetic engineering, faith demands that we see the world as more than chemical and physical processes.

Today, the advances of science are taking us into brave new worlds. The predictable 'cause and effect' world of Newtonian physics yielded amazing discoveries but its closed system left no room for God.

Now it is clear that these laws break down in the 'cloudy and fitful' sub-atomic world of quantum physics. Here we see phenomena that are 'uncertain and uncaused'. If Newton's closed world denied the possibility of miracles, the quantum world suggests we exercise caution before we say something simply cannot happen.

So even if science isn't your thing, enjoy some glimpses into a world that shapes our everyday lives in ways seen and unseen.

In that respect, science and faith have a lot in common.

*David*

**David Kerrigan**  
General Director

## “SCIENCE DOES AT TIMES OVERREACH ITSELF”

method was built on categories of doubt, experimentation, theory and proof that were at odds with the authority of Scripture and the magisterium.

This move was seen by some as standing in judgement over God's word. But it can better be seen as understanding more clearly the processes whereby Scripture came to be, or the different genres of literature in the Bible.

The Church does not bear all the blame for the tensions between science and faith. Science does at times overreach itself as in Richard Dawkins' sweeping assertion that science and faith are incompatible.

Error and hubris notwithstanding, science offers us amazing glimpses into the world God has created, but also raises fundamental ethical



## VISIT MISSION CATALYST ONLINE

for linkable versions of these stories and exclusive web content, like:

*JESUS IN SPACE: A GOSPEL FOR ALIENS*

[bmsworldmission.org/catalyst](http://bmsworldmission.org/catalyst)

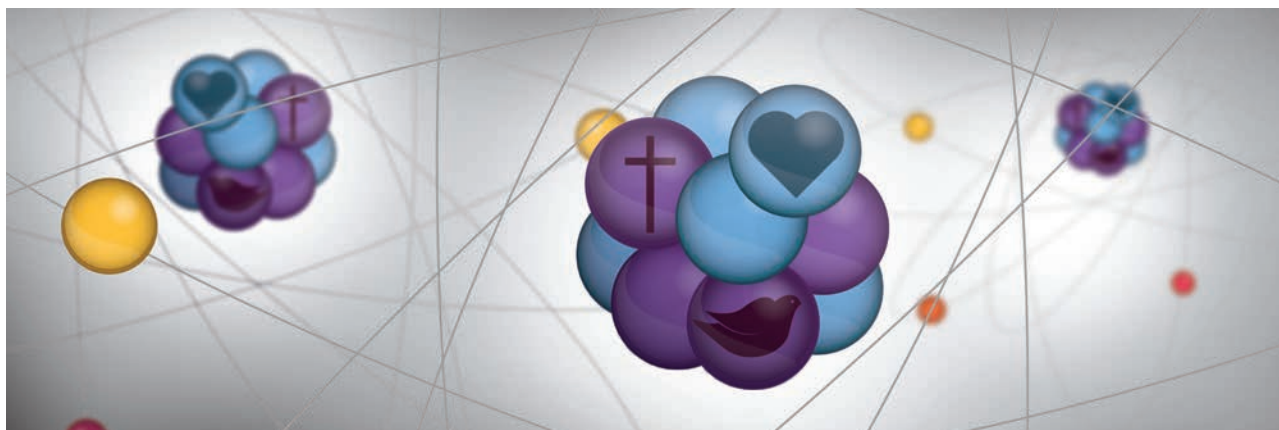


Mission Catalyst is produced four times a year. The views and opinions expressed by contributors in print and online are not necessarily those of BMS World Mission. Email us with comments about Mission Catalyst to: [catalyst@bmsworldmission.org](mailto:catalyst@bmsworldmission.org)

Managing Editor: David Kerrigan Editor: Jonty Langley Research: Katherine Mannion Design: Malky Currie

BMS World Mission, PO Box 49, 129 Broadway, Didcot, Oxfordshire, OX11 8XA Website: [www.bmsworldmission.org](http://www.bmsworldmission.org)

Baptist Missionary Society: registered as a charity in England & Wales (number 233782) and in Scotland (number SC037767)



By Dr Ruth Bancewicz:

Research associate at the Faraday Institute for Science and Religion, working on the 'Test of FAITH' project, previously working with Edinburgh's MRC Human Genetics Unit and Christians in Science.

# THE LIMITS OF SCIENCE

## SCIENCE IS GOOD AND HAS ITS ORIGINS IN CHRISTIANITY, BUT IT HAS ITS LIMITS

**W**e believe that God created the universe, that it is good, and that we are to glorify God by stewarding it to the best of our ability. Science is an exploration of what God has made. So every Christian has a mandate to get involved in the scientific endeavour. For most people this will simply involve encouraging those around them who are studying, teaching or practising science. Only a few will have the privilege of hands-on scientific exploration of God's good creation.

The first scientists in the West were Christians and they saw their work as worship. Science flourished in a Christian culture and theology informed the development of science. For example, the idea of natural law came from the concept of a lawgiver. Previously, Platonic philosophy had been popular in academic circles: sit in your armchair and think about how the world should be based on first principles. But these early scientists believed in a God who created everything

out of nothing and was not bound by pre-existing laws of geometry, so their faith led them to pioneer the experimental method.

### **Justice, love and overreach**

Science involves measuring, collecting or calculating anything that can be measured, collected or calculated. This method is extremely effective; so effective, in fact, that it's not uncommon to hear public figures exaggerate the potential for scientific discovery. At various times over the last 500 years, scientists, philosophers and politicians have claimed that science will cure all ills, explain every aspect of the human experience, and show us the way to live in a new Utopian future. The horrors of the 20<sup>th</sup> century brought 19<sup>th</sup> century dreams crashing down, but at times we're still tempted to overreach in our ideas about what science can do.

Science can't answer every question in life. Experimental results cannot tell us the real value of things, people or

experiences. Data can't help us to decide what we ought to do. I can't find justice, love or a movement for peace in a lab (though the people in the lab will almost certainly believe in all of these things). These are 'metaphysical' questions – things that can't be explained with reference to material things.

### **Death, freedom and God**

Human beings could be described in a number of ways: a few pounds worth of chemicals, a highly complex organism, a conscious being, or a person with social capital. But none of those scientific categories can explain why our society nearly always values individuals very highly, including those who offer little in return.

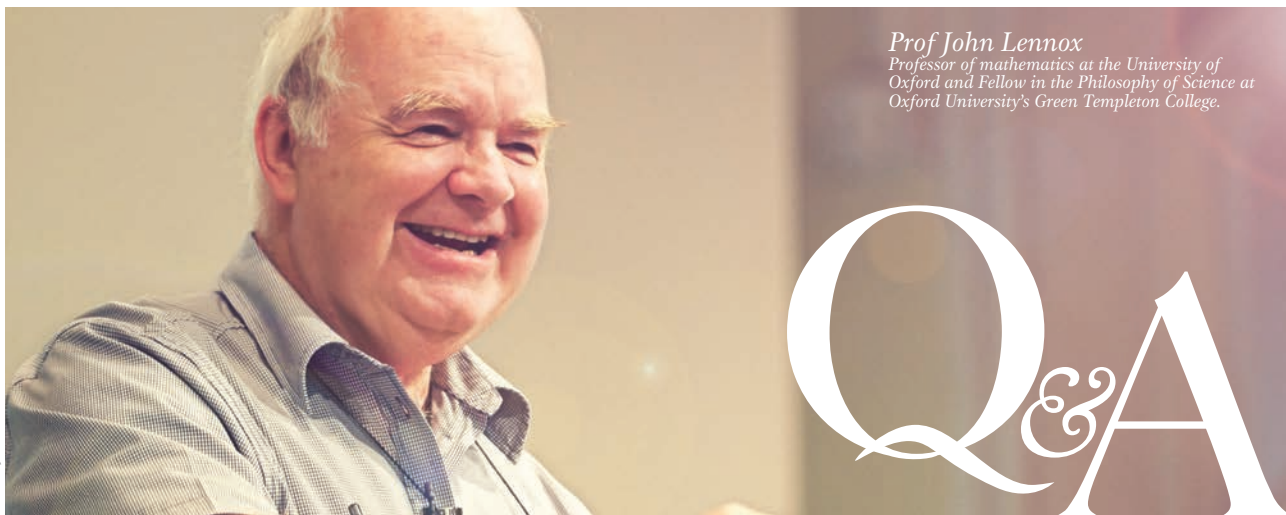
Most scientists recognise the importance of metaphysical questions. Some are Christians or religious, or generally 'believe in God' (and if US surveys are anything to go by, usually in similar numbers to the general population). Others simply think of themselves as 'spiritual' or are open to meaning in other areas of life outside the laboratory.

In examining the relationship between science and faith, we need to pay more attention to the everyday scientific endeavour. Most of us live relatively near to some sort of research campus, science park or science-based industry. If you get to know some real scientists, you can have some fascinating conversations.

*"Is there something more to the human person than just our genes? The experience of human freedom, the experience of transcendence or religious experience, the experience of self-reflection – not just on our own identity but on death... there are questions that we can't understand fully without reference to some other wider context, and that context for me is relationship with God."*

*Rev Dr David Wilkinson, astrophysicist & theologian, St John's College Durham, in 'Test of FAITH'*

Photo © John Cairns



*Prof John Lennox*  
Professor of mathematics at the University of Oxford and Fellow in the Philosophy of Science at Oxford University's Green Templeton College.

# Q&A

# PROFESSOR JOHN LENNOX

ONE OF BRITAIN'S MOST POPULAR AUTHORS ON THE SUBJECT OF SCIENCE AND CHRISTIANITY TALKS TO JONATHAN LANGLEY ABOUT PROVING GOD, UNHELPFUL CHRISTIANS AND MISSIONAL SCIENCE

**Is it important for Christian leaders to have a thirst for scientific literacy?**

I think it's immensely important. Science has enormous cultural authority. In a sense, nature has replaced God and scientists have become nature's high priests. There is concern on the part of churches of all kinds to increase scientific literacy because that is where a threat is perceived. And of course it is. Because who are the gurus of the age? Dawkins and co – who are scientifically literate, or at least claim to be.

**What should Christians be literate about in terms of scientific theories?**

The problem lies more in the philosophy of science rather than science itself. People need to be aware that science is limited. 'Scientism' is the big enemy at the moment – [the view that] science is the only way to truth. There is immense effort being put into this, to try and invade every area. The latest, very important one is ethics. Einstein rightly said, "You can talk about the ethical foundations of science but not the scientific foundation of ethics". But the pressure is to make science the arbiter of everything. And it's that more than anything else that needs to be discussed. It's learning that science is limited.

**Do science and religion really ask fundamentally different, distinct questions about the universe?**

Not entirely distinct but largely distinct. It was Stephen Jay Gould who popularised the notion of 'non-overlapping magisteria' (Noma, he called it) where you kept them completely separate. My own take is to say: yes, in general, science largely answers the 'how' question, whereas religion would answer the 'why' of purpose. But there is an overlap since, speaking as a Christian, the Bible does talk about the real world that physics and chemistry talk about. So there is an overlap – it's small but it's highly significant.

**And significant because that is a position that seems to have driven a lot of Christians, particularly in North America, to a kind of anti-science position. Do you find that that is helpful to the debate, to the Church and to the world?**

Absolutely not. I think it's a major tragedy, because it's what the new atheists over here love: 'you've got to choose: God or science.' And I want to fight against that choice. I want to say that asking people to choose between God and science is like asking them to choose between Henry Ford and the laws of internal combustion to explain a motorcar. Which is just foolish

because you need both a description in terms of our agency (Henry Ford), and law and mechanism (the science side). School kids can see it, but Dawkins and many of his colleagues cannot. They think scientific explanation is exhaustive, which of course it isn't.

**Why do you think the anti-science movement in the Christian Church has become so popular?**

I think it's broader than anti-science. There's an anti-intellectual streak that comes from a confusion about the nature of faith. The new atheists have scored a big hit in redefining faith as believing where there is no evidence – you know, what we'd normally call 'blind faith'. I think that's where a lot of the problem lies. Some Christians have bought into [the idea that] faith is something that just happens to you; it's believing where there is no evidence so we don't need to enter this kind of debate. In my view this is not biblical.

**Quantum physics seems to be quite important for Christians because it in some ways undermines the idea that nature is fixed and rigid, and science leaves no room for anything we can't explain in simple, mechanical terms.**

But that has not connected with the public mind, unfortunately: that the old clockwork universe of Newton is no longer with us, so to speak. That opens up a whole lot of possibility obviously. The universe gets more and more mysterious. You're absolutely right – there's that element in there and it needs to be mentioned. How far you can take it is another matter as we don't really understand it.

**Should Christians consider Thomas Kuhn's idea of paradigm shifts good news in terms of scientific apologetics?**

Yes and no. I think the old idea of the objective scientist observing a clockwork universe has gone. The social critique

the continent – they're just not regarded as serious thinkers at all! Even though their books are bestsellers.

“ **THERE'S AN ANTI-INTELLECTUAL STREAK IN THE CHRISTIAN CHURCH** ”

of sciences, in that sense, has done the service of recognising that science is done by communities and they all have their belief systems and we bring our theories to our observations. To quote the well-worn phrase: “observations are theory-laden”. However, there is a danger in taking that to its extremes where you get the post-modern, relativism of truth [that holds that] everybody's theory is as good as anybody's else's.

And I think I would say – although this might be a controversial thesis for some – that most working scientists are critical realists. They believe there is truth out there – we never get absolutely to it but certainly Newton's an improvement on Aristotle or Ptolemy, and Einstein is an improvement on Newton. We are getting somewhere. But some people are more modest these days in making their truth claims because they are aware of the Kuhnian social critique of science work.

**Anthony Flew [a philosopher of science who made his name attacking religion and later came to the conclusion, based on scientific evidence, that God must exist] said that people like Dawkins were beyond their fields of expertise by making philosophical judgments...**

Well, that's absolutely right. And Dawkins is a rotten philosopher. The best way, if you read German, is to see what's being said about Dawkins and Hawking on

**Do you believe we can prove God's existence?**

No. The word 'proof' is loaded. It has several meanings and I'd have to give you a yes/no answer. If by 'proof' you mean mathematical proof, which is my subject, well, no of course you can't – you can't prove anything except things in mathematics. You can't prove my wife loves me. You can't prove that Napoleon fought at Waterloo, or anything like that.

But if you mean 'proof' in the informal sense, which means 'prove beyond reasonable doubt', that is 'give evidence for', well, that is another matter. You can't do it in the sense of mathematics, but don't run away with the idea that there is not very strong evidence for belief in God and Christ, enough to stake your life on it. It's that sort of thing you want to get across.

**Is engagement with science a missional issue?**

Utterly. We are in a battle for what is truth. And that is why many people are very happy when I talk about abstract, philosophical evidence of the existence of God, but they become very unhappy when I talk about Christ. That's too much for them. That's what Dawkins hates of course.

We have been insuring Baptist churches since 1905. **Our customers tell us it shows.**



The level of customer service we provide, the fact we understand their needs and our expertise are the top three reasons our customers tell us they chose us to insure their church.\*

Maybe it's time for you to talk to Baptist Insurance?

Call today on **0845 070 2223**, quoting **BMS12**, and talk to us about protecting your church, or visit **www.baptist-insurance.co.uk**

\*Source: Baptist Insurance Customer Opinion Survey 2010.

The Baptist Insurance Company PLC. Registered in England No. 83597. Registered Office: Beaufort House, Brunswick Road, Gloucester GL1 1JZ. Authorised and regulated by the Financial Services Authority. FSA registration number 202032. A member of the Association of British Insurers and the Financial Ombudsman Service.



SCIENCE  
& GOD

3

THINGS  
YOU NEED  
TO KNOW

## THERE ARE IDEAS EVERY CHRISTIAN LEADER SHOULD BE ABLE TO SHARE FROM WITHIN SCIENCE, SCIENTIFIC APOLOGETICS AND THE PHILOSOPHY OF SCIENCE

**I**gnorance is no excuse anymore. In 2012, scientific literacy is not an optional extra for mission-minded Christians. It is essential. If we are to be able to talk to ordinary people about their doubts and misgivings about faith and God, we need to be able to answer the questions and challenge the assumptions of the popular (and populist) atheists whose ideas have formed at least some of those doubts. Many of them, in the name and language of science, espouse a philosophy of 'scientism' – a belief that any and all questions that matter can be answered by science.

If Christianity is to be relevant to a world of genome-mapping and large hadron colliders, Christians need to be scientifically literate. And that involves some familiarity with scientific apologetics, key scientific theories and the philosophy of science. This short list is just a taster of the kinds of ideas every Christian leader could do with knowing – and sharing with those they serve.



### SCIENCE POINTING TO GOD: THE FINELY-TUNED UNIVERSE

We're lucky to be alive. In fact, we're lucky to be here at all. And when it comes to the question of the 'fine-tuning' of the universe, we are lucky there is a 'here' at all. Our growing understanding of science has revealed that our existence is only possible because the universe seems fine-tuned to allow it.

Often called 'the anthropic principle', fine-tuning has been much-discussed in secular scientific circles, and Fred Hoyle, a Cambridge astronomer and mathematician, himself an atheist, famously said:

"A commonsense interpretation of the facts suggests that a super-intellect has monkeyed with physics, as well as with chemistry and biology, and that there are

no blind forces worth speaking about in nature."

The facts in question relate to conditions at the beginning of the universe and what physicists call 'constants'. These are numerical values in scientific calculations that are believed to be universal and constant, like G, the gravitational constant, essential in calculating the force of gravity.

Just after the Big Bang, all the matter in existence was evenly distributed and gravity is what caused atoms to start clumping together, eventually forming planets, stars and galaxies – pretty essential preconditions for life. If the force of gravity had been stronger, all matter would have concentrated together, eventually collapsing back in on itself. If it had been weaker, atoms wouldn't have come together and those all-important planets and stars would not have formed. Moreover, if the speed at which matter rushed away from the universe's starting point (its 'rate of expansion') had been slower or faster, even by miniscule amounts, similarly disastrous consequences (for us and all life) would have been inevitable.

#### Margins for disaster

That some necessary conditions need to be met for things to be the way they are is hardly earth-shaking news. But, what makes fine-tuning so compelling for many scientists is not that some aspects of the universe happen just to be a certain way. It is that the basic laws of the universe (expressed through constants), if they were even slightly different, would have meant that such conditions would never have existed. Fine-tuning is impressive because life is possible anywhere in the universe.

The sheer number of constants that allow our existence, the inexpressibly fine 'margin for error' (really a margin for disaster from our point of view) points, for many scientists, believers and unbelievers alike, to the universe almost 'expecting' our arrival.

Consider these 'margins'\*. If gravity was changed enough to make you one

billionth of a gram heavier or lighter, there would be no stars, no planets, no human beings. If protons were not 1836.1526 times more massive than electrons, many of the chemical compounds essential to DNA would be so unlikely to form that life would be impossible. If the ratio of nuclear strong force to gravitational force had been different by less than one quadrillionth ( $1/10^{16}$ ), there would be no stars. And the margin of disaster (quite literally) is even smaller when it comes to stars of the 'right' size (for life) forming.

#### Atheist rebuttals

Some of the 'new atheists', of course, have argued that fine-tuning does not point to the existence of God, some going so far as to say that it provides an alternative theory. Without such fine-tuning, they say, we would not be here to notice. While true, that does not remove the need to ask why, in the same way a person who escaped a 50-gun firing squad might ask how they escaped. The fact we are alive, that we are here at all, is surprising and unlikely. It is not a proof of God, but a pointer that poses important questions.



### QUANTUM PHYSICS: EVERYTHING YOU KNOW IS WRONG

You can't be in two places at once. A cricket ball can't behave like a piece of music. One has to choose between the facts of science and the mystery, uncertainty and seeming irrationality of 'the spiritual'. Until relatively recently, that seemed true. Newton's physical laws and the science that built on them gave educated people a warm, fuzzy feeling of confidence in the rational and predictable behaviour of the world. The universe was a vast, predictable, clockwork machine of observable fact with little need or place for anything beyond the observable. But quantum physics changed all of that.

\*See *God's undertaker: Has science buried God?*, *The Lion handbook of science & Christianity* (reviewed on page 16), <http://biologos.org/questions/fine-tuning> and <http://bit.ly/l8mBW3>

What is light? That was one of the questions physicists in the early 20<sup>th</sup> century were asking when they discovered something troubling for the 'common-sense' view of the universe. Light sometimes behaves as if it were a stream of particles and sometimes as if it were a wave in a medium. For one phenomenon to behave as particles and waves makes as much sense as a cricket ball sometimes behaving like a piece of music.

### The 'impossible' becomes possible

Electrons are similarly puzzling. They also have a particle/wave nature and in some experiments, a single electron has been shown to pass through two slits in a screen at the same time. The most basic logic of common-sense tells us that one thing cannot have two contradictory natures or be in two places at the same time. But at the quantum level, they do.

In quantum research, uncertainty over measurement is not failure but fundamental. Our very observations alter reality, 'collapsing' multiple probabilities into single realities. The smug certainty that the world behaves in a 'normal' way because 'science says it does', starts to look a little simplistic.

### Instantly 'communicating' particles

Stranger still, when two identical particles that have been created by the decay of a 'parent' particle are measured, they seem to 'communicate'. That is to say: if you measure the property of one, its 'twin' will possess the same property (or collapse into having the same property), even after having changed in some way, even if the two are separated by great distances. This remains true even after significant amounts of time. How is this instant communication possible, with no physical link between them?

One of quantum theory's key architects, Niels Bohr, famously encapsulated the significance:

"Those who are not shocked when they first come across quantum theory cannot possibly have understood it."

With the advent of quantum thinking, scientific certainty about how the world works and what is and is not possible seems a little more fluid than before. Whether this has any relevance to miracles, God's interventions in the random world and the emphasis we place on physical objective observations is a matter of debate among philosophers of science. The fact there is room for such debate should excite and encourage us.

3

## PARADIGM SHIFTS: CHALLENGING ARROGANCE

"There is nothing new to be discovered in physics now," Lord William Thompson Kelvin said in 1900. "All that remains is more and more precise measurement." Thirteen years later, Niels Bohr constructed a theory of atomic structure based on quantum theory. That was seven years after Albert Einstein had published his paper on special relativity. Both quantum and special relativity fundamentally changed the way science understood the laws of physics.

The hubris of that one pronouncement had been preceded by hundreds of years of certainty that, while the primitive scientists of the past had been scrabbling around in the dark with inefficient tools, contemporary scientists had finally uncovered the truth about the universe. None of them could have anticipated Thomas Kuhn's work on paradigm shifts.



### Uninterested in questioning

The structure of scientific revolutions, published in 1962, popularised the term 'paradigm shift' and revolutionised discourse about scientific progress, even among those who disputed its validity. Kuhn basically argued that significant scientific progress is made through revolutions and 'paradigm shifts', between which more incremental discoveries are made. These shifts take place when an accepted paradigm (not so much a scientific theory as the scientific culture and assumptions that underlie theories) experiences a 'crisis'.

Crises arise when the dominant paradigm experiences too many anomalies – data that cannot be accurately explained by what is considered 'normal' science. This science is often depicted as constantly and rigorously questioning its own basic assumptions and thus progressing constantly. Kuhn disputes this. For him, those working within a paradigm consider it so basic that not only would they be uninterested in questioning its basic tenets, but that anomalies would be treated as failures in measurement or mildly interesting glitches to be ironed out later.

When a revolution or paradigm shift happens, it has as much to do with the groups supporting or opposing the old and new paradigms as the validity or usefulness of the paradigms. As Kuhn himself pointed out when referring to one of the most famous paradigm shifts in science, from a Ptolemaic view of the universe (often called the Copernican Revolution): "Copernicus' more elaborate proposal was neither simpler nor more accurate than Ptolemy's system. Available observational tests... provided no basis of a choice between them." One paradigm replaced another based on something other than pure science.

### Caution against arrogance

A paradigm shift doesn't return science to 'square one', but changes the way data is interpreted, shifts emphases and priorities. The effect is similar to that of looking at an optical illusion that could depict two very different pictures at the same time. The same lines are understood in totally incommensurate ways. What had been held as unquestioned truth can be dismissed as superstition or ignorance.

As a consequence, scientists 200 years from now might look on some of our assumptions about, say, physics with condescending pity because we do not have the technology or theoretical concepts to understand the universe as fully as they will.

Such a postmodern perspective on science has unsurprisingly been criticised by many in the scientific community and should not lead to relativism regarding science's ability to accurately predict and map matter and its behaviour. Rather, it should serve as a caution against arrogance, an argument against taking too seriously anyone who declares our understanding of the meaning that lies behind the material world nonsense based on the assumption that "science has proven that is impossible". In science, as in faith, considering any statement the 'final word' on a subject is, perhaps, foolhardy.

### Keep learning

We can't all be scientists or philosophers. But we can at least speak the same language, understand some of the objections and make our outreach relevant to the culture in which we live. If ignoring Hollywood, popular music and contemporary culture weakens our witness, then it would be a fatal error to ignore science.



---

# EXTRACT: PROOFS FOR GOD?

*FRANCIS S COLLINS AND KARL W GIBERSON EXAMINE HOW  
USEFUL POPULAR ARGUMENTS FOR GOD'S EXISTENCE ARE TODAY*

**G**K Chesterton, with his usual succinct insight, made this exact point: "Atheism is indeed the most daring of all dogmas... For it is the assertion of a universal negative."

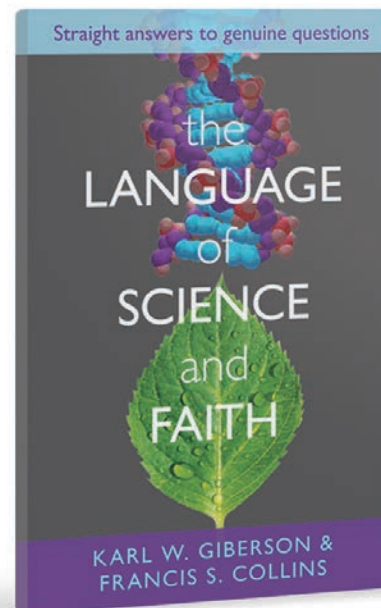
Popular arguments for the existence of God, many of which predate Christianity, take a variety of forms, some of which interact in interesting ways with the scientific view of the world:

- **The cosmological argument** – dating all the way back to Aristotle in the fourth century BC – argues that there must be a first cause (God) to start the global chain of causality.
- **The teleological argument** or argument from design argues that the universe has a high degree of complex order that could only have been created by God. Versions of this argument, which was championed by William Paley shortly before Darwin, are promoted enthusiastically today by the intelligent design movement.
- **The ontological argument** is based on a clever but obscure argument about a "being greater than which none can be conceived." It starts simply with a concept of God. Anselm of Canterbury in the eleventh century and contemporary philosopher Alvin Plantinga formulate this argument to show that if it is logically possible for God (a necessary being) to exist, then God exists. Most people don't find this argument convincing.
- **Arguments that non-physical** qualities observed in the universe are genuinely real and not illusory, such as morality, beauty, love or religious experience, are arguments against the possibility that everything can be explained in a purely materialistic way and thus argue for a reality beyond the physical.
- **The transcendental argument** suggests that logic, science, ethics and other things we take seriously do not make sense in the absence of God, and that atheistic arguments must ultimately refute themselves if pressed with rigorous consistency, since they are not based on a logic outside themselves.

Each of these arguments supports a certain type of belief in a certain type of creator; some of them invoke the characteristics of the natural world, while others are based more on pure logic. The ontological argument has no connection of any sort with the scientific view of the world. None of the arguments are conclusive, but they can at least be juxtaposed against arguments that God does not exist, like the problem of evil, or the absences of certain types of observational evidence for God.

[...]Arguments for God's existence often seem like little more than logical dominos, which just keep punting the question rather than answering it, like an annoying child repeating 'why?' over and over again, as if the answers are not going anywhere. Certainly we must not make the naïve assumption that simply saying "God created it" explains anything in the absence of some reason why the existence of God is not itself a problem to be solved.

[We suggest that] the grand project of proving or disproving the existence of God in any final sense is a project from the past, an exercise for a generation with more confidence in human reason than most of us have today. Nevertheless, the futility of absolute proof does not mean that reasons for or against belief in God cannot be meaningfully discussed and even embraced as evidence.



---

**Francis S Collins**

*Former head of the Human Genome Project in the USA and*

**Karl W Giberson**

*Professor of physics at Eastern Nazarene College.*

*They are founder and vice president of the Biologos Foundation, respectively.*

This extract is taken from *The Language of Science and Faith* by Karl W Giberson and Francis S Collins (2011, SPCK, pp 125-127). You can find more works like this at [SPCKpublishing.co.uk](http://SPCKpublishing.co.uk) and you can find out more about the Biologos Foundation at [Biologos.org](http://Biologos.org)

---

By Rev Dr Ernest Lucas:

Vice-Principal and Tutor in biblical studies at Bristol Baptist College, former biochemical researcher, with doctorates in both chemistry and Old Testament studies.

---

# CHRISTIANS & EVOLUTION

---

## 5 QUESTIONS ANSWERED

*DEATH BEFORE THE FALL, DISPUTES WITH GENESIS AND HUMAN UNIQUENESS COMPARED WITH APES: COMMON CHRISTIAN QUESTIONS ABOUT EVOLUTION NEED NOT TROUBLE US TOO MUCH.*

### 1 Isn't evolution only a theory?

While in everyday language 'theory' means something uncertain and unproven that is not what 'theory' means in science. In science it means, 'a hypothesis that has been confirmed or established by observation or experiment, and is propounded or accepted as accounting for the known facts' (OED). The scientific evidence for evolution is now very strong, especially from the newer areas of molecular biology and genetics. Evidence of this is set out strongly in recent books by J A Coyne and D J Fairbanks (see recommended reading: page 15).

### 2 Doesn't evolution contradict Genesis 1-3?

It is crucial that we interpret Genesis 1-3 correctly. John Calvin, in 1554, recognised that these chapters should not be read for scientific information, "Nothing is here treated of but the visible form of the world. He who would learn astronomy and other recondite arts, let him go elsewhere." In verses 6-8 the KJ/AV says that God created a 'firmament' and called it 'heaven'. The translators recognised that the Hebrew word *raqia* used here means something solid, indeed it implies something made of beaten-out metal. This is how the Hebrews thought of the sky, as is shown by Job 37: 18, where it is said to be made of 'cast bronze'.

God gave the Hebrews a creation story based on the way they saw the world (see J H Walton's book on page 15), not to

convey 'scientific' information but to give them a true theological understanding of God's purpose in creating the world, the nature of that world and of human beings. There is a very long Christian and Jewish tradition of understanding these chapters in that way. Sometimes the story deliberately counters other creation stories (see Ernest Lucas' book on page 15).

### 3 Does evolution undermine human uniqueness?

Biblically, human uniqueness rests in our creation in the 'image' of God (Gen 1: 27). Evolution is about a purely material process which God may have used to bring into being the species scientists call *Homo sapiens*. The definition of *Homo sapiens* is based on observable physical characteristics. 'God is spirit' (John 4: 24) and so, presumably, is the 'image' of God in humans. It is not observable in terms of physical characteristics.

We do not understand how the non-material aspects of our being (such as 'mind') are related to the material (such as 'brain'), though it is clear that there is an important link (brain injury can affect people's mental and spiritual life). So, we are in no position to say when and how *Homo sapiens* became what John Stott called *Homo divinus*: creatures bearing God's image, which is what the Bible means by 'human beings'. Evolution has nothing to say for or against such a development.

### 4 What about the 'Fall' and Adam and Eve?

Uncertainty about the relationship between *Homo sapiens* and *Homo divinus* leaves open a number of possible ways of relating the story in Genesis 2 and 3 to the process of evolution (see D Alexander's book on page 15). My own speculation is that first self-consciousness, and then God-consciousness, appeared as what some scientists call 'emergent properties' as the central nervous system became increasingly complex.

Once God-consciousness was possible, God took the initiative to establish a relationship with humans, and humans were faced with the choice of how they were going to live in relationship with their creator. This may have involved an initial pair of humans. Calvin's concept of Adam and Eve as 'federal heads' of the human race may be helpful. Just as our solidarity in Christ, our new 'federal head', and his salvation is something spiritual imparted by God, so human solidarity in Adam and his sin might be something spiritual imparted by God after Adam and Eve's disobedience.

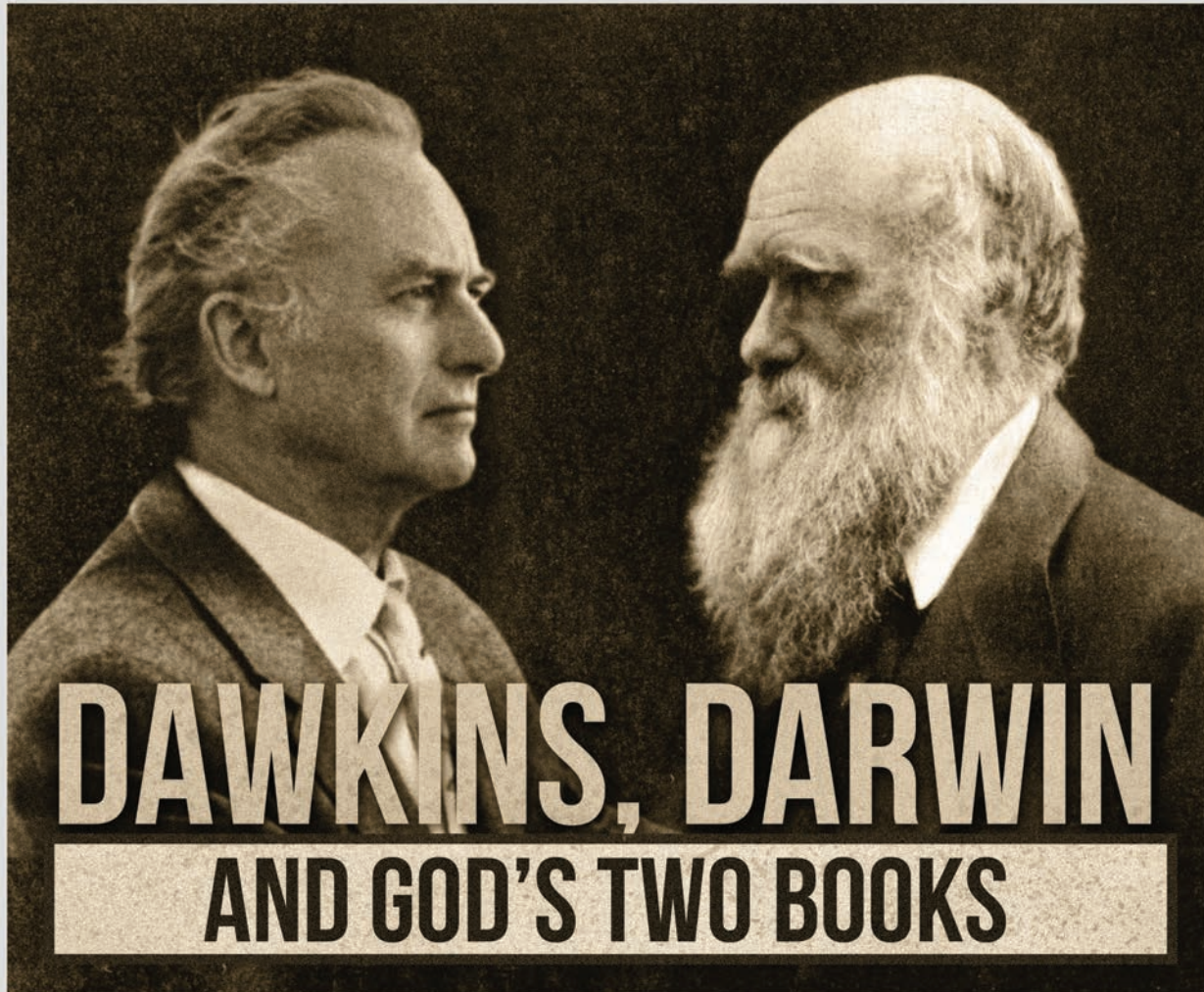
### 5 What about death before the Fall?

In 1839 William Buckland concluded a careful study of all relevant biblical passages by saying, "Though most clearly inflicted on man [death] is by no inspired writer spoken of as a penal dispensation to any other living creature excepting Adam and his posterity." So, animal death before the fall is no problem biblically. Despite the threat in Genesis 2: 17, Adam did not die the moment he sinned. This indicates that biblically the most important thing about death after the Fall is alienation from God, not the end of physical existence.

---

By Professor R J Berry:

Former professor of genetics at University College London, president of Christians in Science and editor of the *Lion* handbook of science and Christianity.



---

DARWIN'S OWN  
ATTITUDE TO  
RELIGION IS VERY  
DIFFERENT FROM  
HIS WOULD-BE  
MODERN DISCIPLES'

---

Darwin's *Origin of Species* had a mixed but not wholly unfavourable reception. In 1883 Frederick Temple, Bishop of Exeter (and future Archbishop of Canterbury) declared: "The doctrine of Evolution restores to the science of Nature the unity which we should expect in the creation of God".

Perhaps surprisingly in terms of later history, conservatives accepted Darwin's ideas more readily than liberals, seemingly because they had a stronger Doctrine of Providence. We forget this heritage nowadays when we dispute about evolution. Has anything changed over the last century and half? Certainly, the scientific evidence for evolution has grown enormously. Data from molecular biology has allowed genealogies and relationships to be constructed much more certainly than older inferences, which could only be based on similarities of structure and

function. The number of known fossils and the accuracy of their dating has grown vastly.

**'Blind' faith?**

The main problem for modern-day Christians is: does evolution leave any room for God? The 'new atheists' (Dawkins, Hitchens, Dennett, Harris and the ilk) trumpet that our scientific knowledge means that we should think of our biological past as little more than an inexorable machine churning out and improving individuals and species no differently than making ever better wheelbarrows. They claim that 'reason' excludes the need for anything beyond known scientific mechanisms, that "faith is nothing but blind trust, in the absence of evidence, even in the teeth of evidence". They even dislike the United States National Academy of Science's definition,

that “science is a way of knowing about the natural world. It is limited to explaining the natural world through natural causes. Science can say nothing about the supernatural. Whether God exists or not is a question about which science is neutral.”

Non-extremists are likely to agree with W H Griffith-Thomas, an Anglican theologian of a former generation, who defined faith as something that “affects the whole of man’s nature. It commences with the conviction of the mind based on adequate evidence; it continues to the conviction of the heart or emotions based on conviction, and it is crowned in the consent of the will, by means of which the conviction and confidence are expressed in conduct.”

### Doubting Dawkins

Dawkins argues that the “God hypothesis” can be shown to be false since: “if [God] existed and chose to reveal it, he could clinch [his existence] noisily and unequivocally.” The key is the reservation “if he chose to reveal it”: for those with faith in the Griffith-Thomas sense, the Christian God has explicitly and unequivocally revealed himself in his living and written Word. To do more, would be to make us mere automata. But Dawkins goes further. He maintains that religion is actively evil, and has been responsible for unhappiness and suffering down the ages. We can ignore this criticism. It is certainly true that religions (or actions carried out under the banner of religion) have caused (and do cause) persecution and exploitation, and



Photo © Pigeonpie19

assumed. In 1788 James Hutton, the ‘father of modern geology’, declared that the world was almost infinitely old. This was not speculation, but his inference from observations of the real world. It forced Bible expositors to look again at Genesis; it proved an Achilles heel for traditional natural theology.

### Darwin: friend of Christianity

A creator could presumably design an organism perfectly adapted to a particular environment, but such perfection would disappear if the environment was not constant. Adjusting to changes in climate, to the physical structure of the earth’s surface or to predators and competitors is possible only if organisms can adapt. In early post-Darwinian days, an Oxford theologian, Aubrey Moore, suggested that

view of the world is infinitely deepened and enriched when we not only recognise it as the work of God but are able to trace the relation of part to part.”

We can extend these ideas to human nature. The Bible defines humans as those “in God’s image”. But God’s image is not physical or genetical. It is about relationship. C F D Moule sees it primarily as implying responsibility (Ecclesiastes 17: 1-4). At some point in time, God transformed an evolving ape into one who was truly “made in his image”; there is no reason why this should have affected his bones or chromosomes. John Stott described this as a change from *Homo sapiens* (a wholly biological entity) to *Homo divinus*.

### God’s ‘two books’

Near the end of his life, Darwin wrote to his friend Brodie Innes, the former vicar of Downe, “I hardly see how religion and science can be kept separate”, and to the sceptic John Fordyce, “It seems to me absurd to doubt that a man may be an ardent theist and an evolutionist”. He prefaced the *Origin* with a quote from Francis Bacon: “Let no man think or maintain that he can search too far or be too well studied in the book of God’s words or in the book of God’s works; rather let all endeavour an endless proficiency in both.” In other words, God wrote two books. They were written in very different languages, but have the same author. If we read only one, we cannot avoid bias. The tragedy of debates about evolution, whether sparked by the ‘new atheists’ or old-fashioned ‘Creationists’ is more than arguments about science; it is that they detract from the biblical doctrine of creation – our calling to care for the whole of God’s work (Col 1: 13-20).

---

## “ RELIGIONS HAVE CAUSED PERSECUTION AND EXPLOITATION, BUT THE ‘NEW ATHEIST’ CLAIMS ARE HIGHLY SELECTIVE ”

---

some religions (including some Christian groups) discourage critical thinking, but the ‘new atheist’ claims are highly selective and ignore the damage by avowedly atheist regimes like the French revolutionaries of 1794 or various hues of Marxism.

What can we say positively? Dawkins is often accused of historical and philosophical naivety. He likes to set up straw men. Often his idea of God seems to be Paley’s ‘great watchmaker’, a concept challenged even before Darwin’s day as the young science of geology showed the earth was much older than a few thousand years and astronomers found the universe was much bigger than traditionally

Darwin had done the work of a friend under the guise of a foe.

For Moore, Darwinism is: “...infinitely more Christian than the theory of ‘special creation’ [which presumes man cannot discover how the world or parts of it were created by God] for it implies the immanence of God in nature, and the omnipresence of his creative power... For Christians the *facts of nature* are the *acts of God*. Religion relates these facts to God as their author, science relates them to one another as integral parts of a visible order. Religion does not tell us of their interrelations, science cannot speak of their relation to God. Yet the religious



Original artwork: 'God creating the birds and the fish' by Marin de Vos

Katherine Mannion

Researcher for BMS World Mission.

PERMISSION BEYOND BRACKETS:

# GENESIS ONE INTERPRETED

## A 1<sup>ST</sup> CENTURY RABBI AND A 20<sup>TH</sup> CENTURY THEOLOGIAN ON THE SCRIPTURAL CREATION STORY

The first letter in the Hebrew Bible is ב (Bet) from בְּרֵאשִׁית (B'Resheit), literally meaning 'in the beginning'. One *midrash* (interpretation) on Genesis was formulated by the first century rabbi Yonah. In answer to the question of why the Torah started with ב, he said that the letter was shaped like a bracket. Reading from right to left, it is closed behind, above and beneath, so that "we have no permission to discuss what is above or below, in front or in back, only onwards from the moment of creation".

Was this first century rabbi right in his understanding? Or should we investigate the processes, influences and matter involved in such a significant 'event' in our human existence? With the scientific

knowledge we have today, the edges of the bracket have been pushed back, and readers of the opening chapters of Genesis now have to balance their understanding of science and theology. The French theologian Henri Blocher (see further reading, page 15) summarises four possible approaches to Gen 1: 1 to 2: 3.

### Reconstruction / gap theory

The six days mentioned are not days of creation, but rather days of reconstruction after God destroyed the earth in the time between Gen 1: 1 and 1: 2. Supporters of this theory link the fall of Satan to this gap period, as the 'darkness' and the 'sea' mentioned in Gen 1: 2 are used as symbols of evil elsewhere in the Bible. This interpretation allows for the geological and fossil evidence of an old earth. However, Blocher highlights that existing Hebrew expressions for *remaking* or *repairing* were not used in this text.

### Concordist interpretation

The word *yôm* (day) does not only mean a 24-hour period, but can signify an indefinite period of time. This approach easily accepts the geological evidence of an old earth. Also, the seventh day did not conclude with the formula 'there was

evening and there was morning' indicating that it is still continuing. Blocher's critique includes mention that the creation order (light → sky → land and plants → sun, moon and stars → fish and birds → animals and humans → rest) is not ecologically possible; ie birds (day 5) could not precede animals like insects (day 6).

### Literal interpretation

The 'days' of creation are literal 24-hour days. The belief in a young earth does not conflict with the fossil record which is attributed to the flood in Gen 7. This approach seems to be strongly supported by Ex 20: 11 and 31: 17 ('For in six days the LORD made the heavens and the earth...'), but Blocher argues that these verses act as commandments to observe the sabbath, and other such sabbath commandments (eg: Deut 5: 12-15) do not refer to creation.

### Literary interpretation

The creation story is itself a work of literary creation, not to be taken literally. The author meditates on the finished work of creation, stresses the input of system and order and also provides a theology of the Sabbath. This is backed by the author's use of literary devices (for instance repeating key phrases eg "And it was so") and the author's seeming lack of concern for listing the exact chronological order of creation.

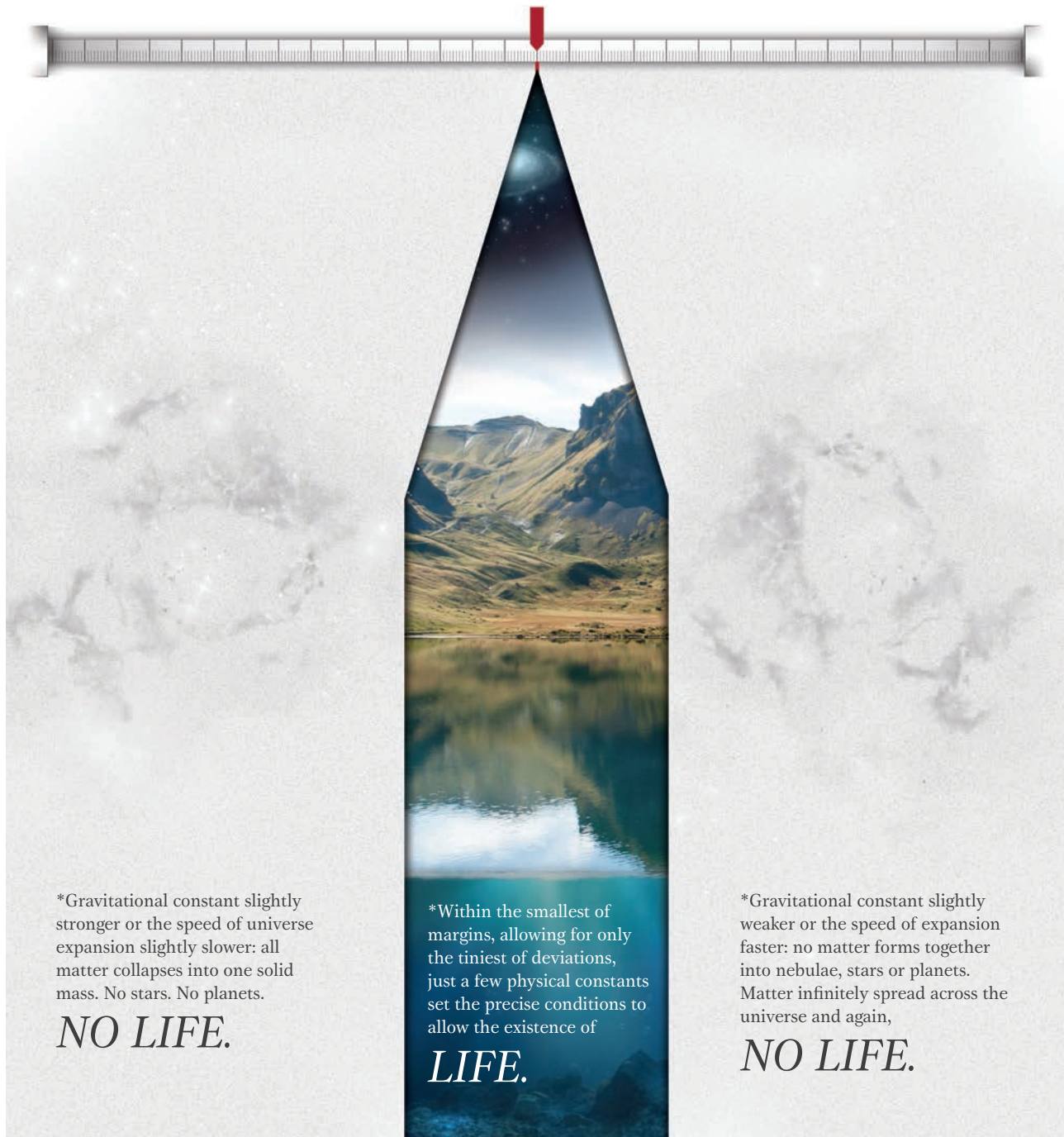
We may never develop telescopes or formulae to map the edges of space or the beginning of time, and we may never have a perfect theology of creation. But, when we believe in Genesis 1, however we interpret the point and process of creation, we cannot but wonder at the power and person of God the creator.

# THE GOLDBLOCKS UNIVERSE

## *JUST RIGHT FOR LIFE*

If the laws of physics at the beginning of the universe had been even slightly different, life would not have been able to form, because galaxies, stars and planets would not have formed. We occupy

a narrow band of possible worlds, where physical constants and the nature of the universe seem to have been ordered to make life possible. On either side, oblivion. And yet, here we are. Truly blessed.



\*Gravitational constant slightly stronger or the speed of universe expansion slightly slower: all matter collapses into one solid mass. No stars. No planets.

***NO LIFE.***

\*Within the smallest of margins, allowing for only the tiniest of deviations, just a few physical constants set the precise conditions to allow the existence of

***LIFE.***

\*Gravitational constant slightly weaker or the speed of expansion faster: no matter forms together into nebulae, stars or planets. Matter infinitely spread across the universe and again,

***NO LIFE.***

## THERE IS NO SHORTAGE OF BOOKS, WEBSITES AND RESOURCES

dealing with the key questions surrounding science and religion. Here is a small, by no means exhaustive, selection of titles recommended by our contributors and researchers.



### BOOKS:

#### **Can we believe Genesis today?**

*Ernest Lucas*

An introduction to questions about science and Christianity, including 'young earth' claims and evolution that focuses on Genesis 1-11.

#### **The lost world of Genesis one**

*John H Walton*

Recommended by Tom Wright in a recent lecture, Old Testament scholar Walton provides a fascinating alternative interpretation of Genesis' creation narrative centring on God's temple: humanity.

#### **The language of God**

*Francis Collins*

Former head of the American section of the Human Genome Project, Collins' work is now a classic of serious science supporting belief. Part memoir of coming to faith, part ode to how God's creation points to him.

#### **50 physics ideas you really need to know**

*Joanne Baker*

Not a Christian book, but really fascinating reading for anyone wanting to keep abreast of the big ideas and important thought on matters scientific.

#### **God and Stephen Hawking**

*John Lennox*

While interviewing Professor Lennox for this issue of *Mission Catalyst*, this was the book among his own canon to which he referred most often. It exposes the flaws in Stephen Hawking's atheist assertions.

#### **The language of science and faith**

*Karl Giberson and Francis Collins*

A second entry from Francis Collins, this time with his BioLogos Foundation hat on. This is something of a manifesto for the BioLogos Foundation, which seeks to promote a non-conflicting relationship with science.

#### **Reason and reality**

*John Polkinghorne*

One of the greatest Christian thinkers in the scientific world, Polkinghorne penned this classic in 1991. Dense and philosophical, this argument for God's existence was praised by *New Scientist*.

#### **More:**

*Just six numbers: science forces that shape the universe* – Martin Rees; *Why evolution is true* – J A Coyne; *Relics of Eden* – D J Fairbanks; *Science and religion in quest of truth* – John Polkinghorne; *The Dawkins delusion* – Alister McGrath; *In the beginning: the opening chapters of Genesis* – Henri Blocher; *The Lion handbook of science & Christianity* – R J Berry (ed); *The mind of God* – Paul Davies; *Creation or evolution: do we have to choose?* – Denis Alexander; *God's undertaker: has science buried God?* – John Lennox; *The Goldilocks enigma* – Paul Davies.

### WEB:

Lion Hudson and SPCK Publishing have fantastic selections of Christian books dealing with faith and science:

**[www.spckpublishing.co.uk](http://www.spckpublishing.co.uk)**  
and **[www.lionhudson.com](http://www.lionhudson.com)**

Christians in Science has a site full of resources, upcoming events and links: **[www.cis.org.uk](http://www.cis.org.uk)**

The Faraday Institute for Science and Religion publishes papers, hosts conferences and is an essential stop on a science and faith journey: **<http://faraday-institute.org>**

The BioLogos Foundation is an international organisation of Evangelicals encouraging intelligent Christian understandings of real science, including evolutionary theory: **<http://biologos.org>**

Test of FAITH is a series of resources introducing issues of science and Christianity: **[www.testoffaith.com](http://www.testoffaith.com)**

RELEVANT READS FOR CHRISTIAN LEADERS, ASSESSED BY A BROAD RANGE OF REVIEWERS

**GOD'S UNDERTAKER:  
HAS SCIENCE  
BURIED GOD?**

By John C Lennox  
Lion Hudson, 2009, £7.99\*  
ISBN: 978-0-74595-371-7

Professor Lennox is someone the world's most notable Christian-baiters will go to great lengths to avoid debating. Dawkins in particular has chosen to avoid engaging in the kind of deep philosophical analysis of his own contentions, which Lennox so very carefully unpicks here. This book establishes these credentials further. Christianity's leading polymath knits philosophy, chemistry, maths and other eclectic sciences into one grand sweep, demolishing along the way some of the tropes of the 'new' atheism. This is smart, incisive writing – we should cherish John Lennox, to at least the same deep extent that those who would love to destroy our belief approach him with respect: which is hugely.

Mark Craig is BMS Director of Communications

**THE MIND OF GOD**

By Paul Davies  
Penguin, 1992, £9.99\*  
ISBN: 978-0-14015-815-1

This is no easy read but if you have an enquiring mind with leading physicist Paul Davies as a guide, *The Mind of God* is a real eye-opener. Drawing on mathematics and physics, quoting the likes of Einstein and Augustine, Davies takes us back to the mystery that is the beginning of the cosmos. His description of creation as a 'point of singularity', a key mathematical construct, is especially helpful in seeing that there are 'places' or 'events' where the normal rules do not apply. Davies also asks brave questions such as why is it that human beings have the ability to unearth the underlying laws on which the universe exists? His conclusions are controversial. The last sentence of his book is climactic: 'we are truly meant to be here'.

David Kerrigan is BMS General Director and Managing Editor of Mission Catalyst

**THE LION HANDBOOK  
OF SCIENCE &  
CHRISTIANITY**

Edited by R J Berry  
Lion Hudson, 2012, £22.00\*  
ISBN: 978-0-74595-346-5

Science books are not always aesthetically beautiful and few of the best among them can honestly be said to be written in an accessible style, which makes *The Lion handbook* so unusually brilliant for bucking that trend. With photographs, illustrations, summary boxes and diagrams aplenty, and an advisory board of top minds from France and Russia to Sri Lanka and China, this book is indispensable reading for anyone wanting an overview of the ideas and issues facing the Church and science at the point where they often encounter each other. Intelligent, historically aware, simply set out and pleasingly crank-free.

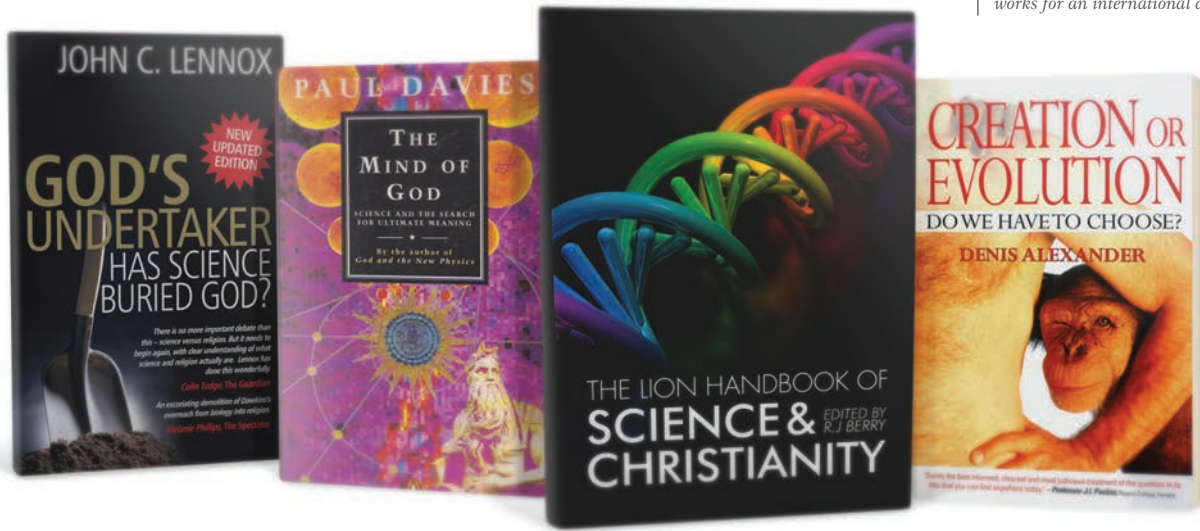
Jonathan Langley is Editor of Mission Catalyst

**CREATION OR  
EVOLUTION: DO WE  
HAVE TO CHOOSE?**

By Denis Alexander  
Lion Hudson/Monarch,  
2008, £9.99\*  
ISBN: 978-1-85424-746-9

"No, we do not," is the answer Denis Alexander gives to his title's question in this impressively comprehensive examination of the science behind evolution. Alexander goes to great lengths to make sure his readers are armed against ignorance and prejudice, both from Christian and atheist quarters. He explains the mechanics of genetics in detail. He examines the weakness of some creationist and intelligent design arguments against evolution. He gives reasons from the latest research why he believes evolution itself points to God. Alexander's apologetics are incredibly thorough and his reverence for God and love of science make this a truly informative, if far from light, read.

Dianna Richmond studied genetics and works for an international aid agency



\*DISCOUNTS ON SEVERAL OF THESE TITLES ARE AVAILABLE FROM ST ANDREW'S BOOKSHOP.  
CALL: 0845 270 2160 OR VISIT: WWW.STANDREWSBOOKSHOP.CO.UK (PRICES QUOTED INCLUDE DISCOUNT)



**BOOK GIVEAWAY!**

Win a copy of *Creation or evolution* by Denis Alexander or *God's undertaker* by John Lennox by answering a few questions at [surveymonkey.com/s/missioncatalystcomp](http://surveymonkey.com/s/missioncatalystcomp)