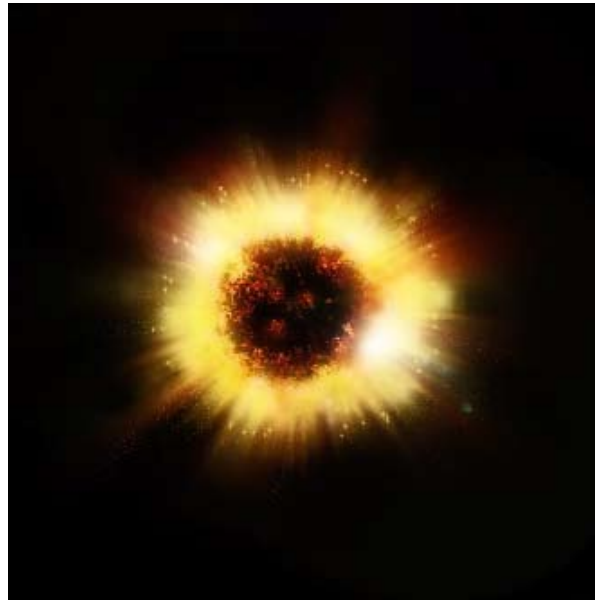


God and the Big Bang

and the science -
faith debate

by Michael Poole

One of the most dramatic ideas of modern science is the 'Big Bang.'



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be said that God went to an awful lot of trouble to create us!

The sense of human smallness was around long before modern astronomy. Psalm 8 in the Bible says, *'When I consider your heavens... the moon and the stars... what is man that you are mindful of him, the son of man that you care for him?'* This psalm also shows why we are significant—we are important to God, who created us to enjoy a relationship with him.

Many people think of the Big Bang as a cosmic explosion at a point in time in empty black space. But this is not a proper understanding of the Big Bang. Scientists believe that the Big Bang was actually the beginning of space and of time itself (space-time).

The idea that time is part of the creation is very difficult to grasp. But it is similar to the view that St Augustine held, back in the 4th century! Realising that the Bible teaches that God transcends time, he said that creation was *'with time'*, not *'in time'*. So the Bible's opening words, *'In the beginning'*, better express the idea than the traditional, *'Once upon a time'*.

Insignificant specks?

But where does the Big Bang and the immense size of the universe leave us as human beings? Some say, *'If the universe is so big, and so old, aren't humans just insignificant specks in the vastness of space?'* So goes one view of our place in space-time. But the size and age of the universe can be looked upon as telling a very different story...

On current scientific thinking, the elements we are made of were cooked up in giant nuclear furnaces—stars—bigger than our sun. Because gravity is a weak

force, these stars took thousands of millions of years to form and to make these elements. Then the stars exploded, scattering the atoms into space. (Objects near the edge of the universe are still moving away at nearly the speed of light today, so if that has been happening ever since the Big Bang, it's easy to see why the universe is now so enormous).

Some of the scattered atoms eventually became human flesh and bone— *our bodies are the ashes of long-dead stars*. So it seems that if the universe were not ancient and vast, the atoms of our bodies would not have been made, which rather stands the argument for insignificance on its head. It could



The Goldilocks effect

But however the universe began, it appears to be 'fine-tuned' for our existence. If certain physical properties were minutely different, even by about one part in 10 to the power of 60, we would not be here. This is about the accuracy needed to hit a square-inch target the other side of the observable universe, about fourteen billion light years away!

'Another source of conviction in the existence of God...follows from the...impossibility of conceiving this immense and wonderful universe, including man with his capacity for looking far backwards and far into futurity, as the result of blind chance or necessity.'

Charles Darwin

The physical constants and laws of nature, like Baby Bear's bed and porridge, are 'just right' for us. This doesn't provide a knock-down argument for the existence of God, but it is fully consistent with a universe planned by God.

Allies or enemies?

Some people think of science as conflicting with Christianity. But is this true?

The 'conflict thesis' is a relatively recent idea, from the 19th century. For most of its history—certainly the first 300 years—modern science and Christianity were regarded as going hand-in-hand. Professor Geoffrey Cantor, a contemporary historian of science, points out that ideas of conflict *'are not adequate as general claims about how science and religion have been interrelated in history... Much historical research has invalidated the conflict thesis.'*

But today the idea of conflict is still deeply entrenched in the folklore of society. So why has it persisted for so long? Professor John Brooke, another historian of science, suggests a reason: *'To assert that the findings of science have gradually eroded or disproved the cherished dogmas of the Church is one of the ways by which a secular society justifies its unbelief.'* Dr Denis Alexander, Director of the Faraday Institute for Science and Religion, and Senior Afiiliated Scientist at the Babraham Institute, Cambridge, says, *'The question may now be—can science survive without Christianity? There are strong grounds for believing that science and Christianity are mutual allies.'*



'Physical laws came into being because there is a Creator who made them.'

Sir Ghillean Prance, Scientific Director
Eden Project, Cornwall.

'Science is dealing with things that are given... awe, wonder and humility before the facts are essential if man is to be in harmony with both his environment and his Creator.'

Sir John Houghton, Former Director General,
Meteorological Office

Are scientists atheistic?

The media love confrontation—it's good for viewing figures and sales. A few vocal scientists, given a disproportionate amount of air time and column inches, often give the impression that scientists are a bunch of atheists. But there is no evidence that they are any more unbelieving than the rest of society.

Many of the greatest scientists in history believed in God: Newton, Boyle, Faraday, Pasteur, Kepler, Copernicus, Galileo, to name but a few. Today there are plenty of scientists who are committed Christians. One UK organisation alone, Christians in Science (www.cis.org.uk), has a membership of some 700 scientists, including university staff, scientists in industry and science teachers. Other such organisations also exist. But that is not 'news', so they receive little publicity.

Science and proof

You can't prove scientifically that God exists!

No—but that is hardly surprising. Science is the study of the natural world—of nature. Questions about God are questions as to whether there is anything **other than** nature (God), to which nature owes its existence. It's no use going to science, the study of nature, to find out whether there is anything other than nature! Science just can't answer questions like this.

Is science the ultimate test for truth?

In the early 20th century, some scientists and philosophers thought so. But, curiously, science itself turned out to be the first victim of this way of thinking.

This is because, in order to get started, science has to make certain assumptions that cannot be proved scientifically. They are:

Rationality—that our thinking processes are basically reliable.

(This assumption is needed in every area of life—even to discuss rationality!)

Orderliness—that there is an order to be discovered in nature—otherwise why do science at all?

Intelligibility—that our minds are able to discover this order.

Uniformity—that doing exactly the same experiment twice gives the same results. The scientific enterprise would be impossible without the assumption that there is a general uniformity in nature.

These basic beliefs, necessary for science, can't be proved scientifically, so any idea that science is the final court of appeal for everything we believe shoots itself in the foot!



Explanations

Can science explain everything?

There are different types of explanation...

1. Interpretive—what something is, e.g. a thermometer is a device for measuring temperature.
2. Descriptive—what it is made of: a sensor, microchip and battery.
3. Reason-giving (scientific)—temperature changes in the sensor change its electrical properties and these can be measured.
4. Reason-giving (motives)—its creator's motives and purposes in making a device useful for medicine, cooking, science etc.

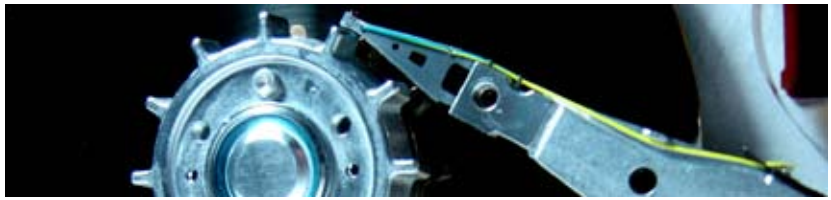
These four types of explanation are compatible with each other. No-one would deny the existence of the creator of a thermometer, or his purpose, just because we have a complete scientific explanation of it. Yet some popular books about origins, like Stephen Hawking's *A Brief History of Time* and Richard Dawkins' *The Blind Watchmaker*, question whether there is any need for God at all, simply because we have scientific explanations.

If all that was meant by 'having no need of God' was, 'Can we have a complete *scientific* account of origins without mentioning God?', then the answer is clearly 'yes'. There is no need to talk about God in a scientific explanation of the birth of the universe, any more than one would need to talk about Henry Ford in a car repair manual. But that does not rule out the existence of either! Having one type of explanation doesn't exclude others.

Scientific explanations

Although scientific explanations tell us how something came about, or how it works, they cannot go further. They can't tell us whether there was a creator or a plan.

Professionals often concentrate



solely on one type of explanation. For instance, a pathologist's scientific explanation of the cause of death of a murdered woman might be the effect of cyanide on the human body. But this doesn't identify who killed her, and it in no way invalidates another explanation for her death—that her husband wanted to get rid of her.

Ultimate purposes are not part of science, but that does not mean they are any less important—indeed, people frequently ask, 'Is there any meaning to life?'

Does science push out God?

Imagine someone trying to fit Baird, one of the creators of television, into gaps in someone's understanding of TV, saying, 'You don't understand how that part of the TV works; that's Baird, see!'

Yet some writers who attack Christianity do something similar. They say that science has filled in so many gaps in our knowledge that God has been pushed out of the picture. But the idea that only the gaps in scientific knowledge indicate God's handiwork (called the 'God-of-the-gaps') is muddled.

The problem arises through confusing two different types of explanation—an explanation of the actions of an agent (Baird or God) in creating something, with a scientific explanation of the workings of the

created object (a TV set or the universe).

Consequently, those who believe in God but unfortunately swallow the 'God-of-the-gaps' idea, are likely to feel that scientific discoveries are a threat to their faith because they close the gaps and squeeze God out. Being aware of this, those who don't believe in God sometimes show additional enthusiasm for science because they imagine it displaces God.

But the 'God-of-the-gaps' is not the God of the Bible. There, God is presented as involved in what we already understand, just as much as in the parts we don't yet grasp. Professor C A Coulson, who coined the phrase 'God-of-the-gaps', wrote as a Christian when he pointed out, '*When we come to the scientifically unknown, our correct policy is not to rejoice because we have found God; it is to become better scientists.*'

'Nothing-buttery'

Claims like, 'Human beings are nothing but a lot of chemicals with computers on top', imply that scientific explanations of human beings are the only valid ones. Such are the claims of *reductionism*—the belief that by reducing explanations of people to the chemicals that make them up, everything has been said and the spiritual side of human beings has been debunked.

Give-away words are 'nothing but', 'just', 'only' and 'simply', which is why reductionism has been dubbed 'nothing-buttery'. On the one hand, such a view overlooks the extra characteristics which emerge because of the way all the parts work in combination. For instance, when the two gases hydrogen and oxygen combine to form water

'When we come to the scientifically unknown, our correct policy is not to rejoice because we have found God; it is to become better scientists.'

Professor C A Coulson

(H₂O), a new property, 'wetness', emerges which was not there before. On the other, it overlooks the fact that science is limited to a study of the physical world, and so can give no grounds for saying there is nothing in the universe that is not physical. It cannot therefore deny God or a spiritual dimension to human beings. That would be like concluding, 'There are no fish in the sea smaller than 2 cm in size' after fishing with a net of 2 cm mesh.

Is religion explained away?

Some people naively think that by naming something, or explaining it in scientific terms, it has been explained away. Take the phrase, 'Christianity is all psychological.' It suggests that labelling Christianity as 'psychological', or having a

psychological explanation of it, has explained it away and therefore disproved it.

Psychology is the study of behaviour, and religious experience is part of human behaviour. As such it is open to psychological study. But no threat is posed by psychological explanations of Christian experience. The two types of explanation, psychological and spiritual, operate at different levels. They are different but compatible approaches. Explaining at one level is not explaining away, any more than explaining Marxism explains away Karl Marx. Different types of explanation can each be valid, as we notice in everyday life: a car breakdown might be explained as due to (i) a faulty part, (ii) old age, (iii) bad maintenance.



It is also significant that psychological and sociological explanations typically try to explain the *origins* of belief without examining their claim to be *true*. Their concern is with the *causes* of belief rather than with the *grounds* for judging *them to be true or false*. Ultimately the *issue of truth or falsity* is of central importance, not why we choose to believe things are true.

Miracles

Don't miracles 'break' scientific laws?

Scientific laws are shorthand descriptions of how nature normally behaves. They don't *force* nature to behave that way. Unlike the judicial use of 'law', scientific laws don't legislate that something *must* happen, only that on the basis of previous experience, we can *expect* it to happen. So it's misleading to talk about scientific laws being 'obeyed' or 'broken'. Scientific laws can be looked upon as reflecting the orderly and regular ways God works—the 'customs of God'. But if God wishes to act differently for a particular purpose, and perform a miracle, that's up to him. He's free to do things differently.



Doesn't nature behave uniformly?

The uniformity of nature is simply an *assumption* about the normal pattern of events. It can't be treated as a hard and fast rule meaning things could never be otherwise. One could only know that nature was absolutely uniform if one knew for sure that no events like miracles had ever occurred, nor ever would. So to try to use the uniformity of nature to show miracles cannot occur is to argue in a circle! Or, to put it another way... Nature has only been studied for a minute part of its history. So, in order to do science, one has to suppose that nature, when unobserved, behaves the same way as it does when observed. But that *assumes* the uniformity of nature, rather than *proves* it!

Do miracles matter?

A miracle is...

- Something out of the ordinary that catches the attention.
- Intended by God as a sign of his love and/or power.

Miracles are not optional extras to Christianity. Indeed, Christianity is founded upon the beliefs that God became man (incarnation) and that he has power over death, shown in the resurrection of Jesus Christ.

Jesus said, 'I lay down my life—only to take it up again. No-one takes it from me, but I lay it down of my own accord. I have authority to lay it down and authority to take it up again'
(John 10:17-18).



Origins

Creation

The word means 'bringing-into-being', and here it refers to 'bringing-into-being-by-God', *however* it happens. 'Creation' stresses that God is the instigator of the universe and of life, but does not lay down the processes involved.

Creation v. Evolution—a phoney war?

The *process* of evolution is not a logical alternative to the *act* of creation by God, despite what a few popularisers of science say in the media. The *act* of creating a new type of car is not denied by saying the *process* of automation was involved. Evolution is only incompatible with the idea of separate creative acts, an idea known as Special Creation. Charles Darwin, a self-confessed agnostic, said: *'In my most extreme fluctuations I have never been an Atheist in the sense of denying the existence of a God.'*

Evolution as a religion

Some people have tried to make a religion out of evolution, hoping for a 'secular substitute for God'. Such attempts belong to the belief-system of 'evolutionism', rather than to the biological theory of evolution. But evolutionism has infiltrated the popular mind and become closely identified with the biological theory itself. However, attempts at extracting philosophical ideas, such as moral progress, from evolutionary theory cannot be justified. Biology tells us what IS, not what OUGHT to be.

'In my most extreme fluctuations I have never been an atheist in the sense of denying the existence of a God.'

Charles Darwin

Equally, the presence of chance processes in evolution does not dispense with divine plan and purpose. 'Chance' in science is to do with unpredictability. It does not mean 'unplanned' or 'purposeless' as it does in everyday speech. Plans and ultimate purposes fall outside the remit of science.



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Where Christians differ

Some scientists who are Christians understand the early chapters of Genesis as teaching a young earth and separate acts of creation of all the different kinds of creatures. Others, with equal respect for the authority of the Biblical record, see no necessary conflict between the Biblical text and an ancient universe, the evolution of stars, chemicals and living things. Both groups believe their views are consistent with the scientific evidence available. Despite their differences, both assert that the world is God's creation.

Watch your language!

Darwin prefaced his 'Origin of Species' with this quote from Francis Bacon: *'Let no man... think or maintain, that a man can search too far or be too well studied in the book of God's word, or in the book of God's works.'* Bacon was referring to God as the author of...

- The Book of Scripture—the Book of God's Words
- The Book of Nature—the Book of God's Works.

Galileo said that *'two truths cannot contradict each other'*. But the Bible is written in a variety of different literary forms, so it is important to distinguish between

history, parable, poetry, letters, proverbs, allegory and so forth. As in science, figures of speech are used to get the concepts across. Things that can't be seen, or new ideas that are difficult to grasp, are compared with familiar things to help us understand. Both science and religion do this. For example: 'atoms are like little solar systems'; 'electricity going through a wire is like water flowing in a pipe'; 'God is like a good father' and 'God's Spirit is like the wind'.

'...the intention of the Holy Ghost is to teach us how one goes to heaven, not how heaven goes.'

Galileo

But 'every comparison has a limp', and so it becomes silly when people try to press all the details. Sometimes people do it deliberately to try to make Christianity look ridiculous. Also, Galileo warned of the difficulties of trying to read current science, which changes, into Bible texts. This is what some well-meaning people in his day were trying to do with astronomy, but Galileo pointed out that *'the intention of the Holy Ghost is to teach us how one goes to heaven, not how heaven goes.'*



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Both the Book of Scripture and the Book of Nature need reading carefully, with an attitude always open to fresh understanding. Our own prejudices and preconceptions, creationist or evolutionary, can powerfully affect our understanding.

And finally...

The value of science

The rise of modern science, starting some 400 years ago, took place within a Christian culture. Many key scientists were ordained ministers. A very positive attitude to science and faith was often in evidence. The astronomer Kepler spoke of *'thinking God's thoughts after him'*. Isaac Newton hoped that his famous 'Principia' would *'persuade thinking men to believe in a deity'*. Examples could be multiplied.

Moreover, the Bible itself seemed to provide encouragement to do science, for...

1. God had commanded humans to manage the earth responsibly (Genesis 1). It seemed they needed to understand how it worked in order to do that.
2. God could be glorified by acquiring knowledge that would both help to relieve pain and suffering and reveal his wisdom and power.
3. The Bible removed one hindrance to experimental science—the ancient philosophy of 'pantheism'. Pantheists regarded experimentation on creation as sacrilege because God and nature were the same thing. The Bible taught that God was distinct from his creation.

Science is of course practised by fallible human beings, and so isn't perfect. But it is still a worthwhile activity that can be done to the glory of God.

'For God so loved the world that he gave his one and only Son, that whoever believes on him should not perish but have eternal life'
(John 3:16).

Science and the future

When we think about how we are destroying our planet, we may wonder how long it can sustain such abuse. When we see a giant meteor crash into the planet Jupiter, it's

easy to get worried about how long humanity will survive. Science can only make speculative predictions about the future, based on current knowledge. It does not offer security about our future.

The Bible maintains that the universe is not a cosmic accident, but is part of a plan. John 1:3 says about Jesus, *'Through him all things were made'*. The world has intrinsic worth because God created it. Hebrews 1:3 says that he is *'sustaining all things by his powerful word.'* In other words, God hasn't set the world off on a course of its own, and then left it all to fend for itself. He is not only the Creator, but the Sustainer. Furthermore, *'Creation itself will be liberated from its bondage to decay'* (Romans 8:21).



Photo courtesy of NASA

As for us, God loves us and wants us to enjoy the future with Him. His condition is that we receive His forgiveness, since Christ died for our sins. The Apostle John was given this vision of the future: *'Then I saw a new heaven and a new earth, for the first heaven and the first earth had passed away... And I heard a loud voice from the throne saying, "Now the dwelling of God is with men, and he will live with them... He will wipe every tear from their eyes. There will be no more death or mourning or crying or pain, for the old order of things has passed away"'* (Revelation 21:1-4).

Meet the author

Occasionally, for effect, authors write themselves into their own plays or novels as one of the characters. This creates surprise and bewilderment,

because the world of the characters and the author are so different—so too are their views of time.

When Christ became a man it was like the author of creation writing himself into his own drama. Some people were puzzled and offended by his claims. When Jesus said, *'Before Abraham was born, I am!'* (John 8:58) it was a powerful statement of his divinity. Not only was he saying that he existed before Abraham, who lived some 1800 years before Jesus was born, but he was applying God's sacred Hebrew name, meaning 'I am', to himself. The Jews knew what he was saying, because their outraged reaction was to try to stone him to death for blasphemy!

Probably the most famous verse of the Bible tells us why Jesus came to earth: *'For God so loved the world that he gave his one and only Son, that whoever believes on him should not perish but have eternal life'* (John 3:16). Such a declaration requires a response. It is possible to meet the Author of Life and begin a personal relationship with him, which will last beyond time: *'Jesus replied, "If anyone loves me, he will obey my teaching. My Father will love him, and we will come to him and make our home with him"'* (John 14:23).

Michael Poole is Visiting Research Fellow in Science & Religion at King's College, University of London.

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