



Test of FAITH

Science and Christianity Unpacked
Youth Leader's Guide

www.testoffaith.com/youth

Test of FAITH

Science and Christianity Unpacked Youth Leader's Guide

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Using the Youth Leader's Guide and Youth Sessions

This Youth Leader's Guide is designed to accompany the Test of FAITH youth sessions, which are available from the Test of FAITH website (www.testoffaith.com). There are two groups of sessions: the first is for 11-14s, or those young people who have a more active learning style, and the second is for 14-18s and includes options for going deeper into the science.

Test of FAITH sessions for 11-14 year olds		
Session title	Aim of session	Use Youth Leader's Guide section
Understanding God's World	An introductory session to explore the issues around science and faith	Science, Faith and the Universe Life, the Universe and Everything
Science We See	A chance to explore what is meant by God's big universe and how it came to be	Science, Faith and the Universe Life, the Universe and Everything
In the Beginning	Introducing the creation of humankind, and the challenge of taking care of God's creation	In the Beginning Issues in Genesis Stewardship: Doing the Right Thing
Who Am I?	An exploration of what makes people special	Thinking about Human Identity

Test of FAITH sessions for 14-18 year olds		
Session title	Aim of session	Use Youth Leader's Guide section
And/Or/With	Linking science and faith	Science, Faith and the Universe Life, the Universe and Everything
How Did We Get Here?	An exploration of the issues and discussions around creation and evolution	In the Beginning Issues in Genesis
Would You Adam and Eve It?	Looking into the serving and preserving role God gave Adam and Eve, and what that means for us	In the Beginning Issues in Genesis Stewardship: Doing the Right Thing
Who Am I?	An exploration of what makes people special	Thinking about Human Identity
Who Am I? Extra	A short session exploring the implications of human embryo research, cloning and genetic enhancement	Thinking about Human Identity

Using the *Test of FAITH* DVD

To make best use of the Test of FAITH material, you need to obtain a *Test of FAITH* DVD (available from Paternoster, ISBN: TOFDVD, £8.99). This high quality resource features interviews with scientists and theologians which complement the sessions. The DVD will allow the young people to hear directly from Christians who are involved at the top of their professions, and whose faith inspires their scientific pursuits.

DVD section	DVD chapters	Topics covered	Used in 11-14's session no.	Used in 14-18's session no.
Part 1: Beyond Reason?	1-5	Introduction to science and faith.		1
Part 2: An Accident in the Making?	1-5	How did we get here? Looking at Genesis, creation and evolution. The environment.		2,3
Part 3: Is There Anybody There?	1-4	Human identity, genetics and cloning.		4,5
Bonus Interviews		Supplementary clips where the scientists featured in the sections above expand on their ideas.		1,3,5
Short Videos (These are clips from the main documentary.)		Snapshots of the topics covered. Useful where groups have a limited attention span.	1,2,3,4	
Reflections		A collection of the visual images used in the film, with music. To be used for worship or prayer.		1,3

Also available is the *Test of FAITH Leader's Guide* (Paternoster, 2009, £15.99, 124 pages). Extracts from this book are included below; however, this excellent guide does have a range of extra resources and briefing sheets which would supplement the topics being covered in these sessions well.

Introduction: What's all the fuss about?



An increasing number of books, resources and guides on science and faith have found their way onto the Christian market in recent months and years. Many of these texts are responsive polemics, explaining and defending one position against attack from another. Despite the differing positions, each speaks with an authority that draws on science and faith in various quantities to justify its view. For the Christian youth worker or minister, it is sometimes hard to know whose text is authoritative, what questions should be asked and how you would know if adequate answers had been given. For those wanting to tackle subjects emerging from the current science and faith debate with their young people, it can be intimidating to know what to do, where to turn, what answers would be required and which ridiculed.

Work with young people is a unique paradox in church life. Good youth work practice insists that the leader is there to facilitate, not to impose answers but to empower, inspire and equip young people to reach their own conclusions. However, in order to achieve this releasing role, the leader needs to assume control, know something of where the group should go next, what issues will be met along the way, and how they can be overcome. To be good at empowering young people, youth leaders need to have travelled some way along the journey themselves. They need to be able to anticipate what is ahead, what obstacles might be encountered, and what resources could be used to overcome them.

In tackling questions around science and faith with young people, it is important that young people know where they can go to get answers, so that they can make their own informed decisions. So, the youth worker needs to understand a little of the debate, some of the questions that will be asked, and how they could be answered. They need to know how, together with the young people they lead, they can address the scientific and faith hurdles that will be encountered along the journey towards understanding. Then, informed and equipped, they can set out on a journey of exploration together.

This booklet is designed to meet that need: to equip the youth worker not necessarily with lots of answers to apologetic questions, but rather with an appreciation of the debate, the range of questions being asked, and the way in which answers can be explored. It is written to accompany the youth group materials made available through the Faraday Institute's Test of FAITH project and available to download from www.testoffaith.com. (You can also find details of the DVD and [adult] *Leader's Guide* on this site.) It is split into six sections that cover the science and faith relationship, the Big Bang, issues relating to creation and evolution, the environment and, finally, human identity. These sections match the issues being covered in the youth work sessions available from the Test of FAITH website and are vital reading to support anyone who is seeking to guide their young people through these topics.

Questions around science and faith will continue to emerge, and given their educational stage of life young people will need ways in which those questions can be tackled. As youth workers, we need to be willing to step out and address subjects that might not come naturally to us so that the young people we lead can undertake their very own test of faith.

Richard James

Director, Oxygen (Kingston YFC)

1. Image used with permission from asbojesus.wordpress.com

Science, Faith and the Universe

TAGS: SCIENCE, FAITH, DIALOGUE, RELATIONSHIP, WORLDVIEW, CULTURE

“Most people, I believe, think that you need a god to explain the existence of the world, and especially the existence of life. They are wrong, but our education system is such that many people don't know it.

Richard Dawkins, former Professor of the Public Understanding of Science, Oxford University

It is often easy to jump straight into the topic of science and faith with issue-based discussions, such as ‘Has evolution disproved the Bible?’ or, ‘Should we conduct research using stem cells?’. As youth workers, we often have young people who want to attack the issues with concrete examples that reinforce assumed positions. From such assumed positions come bold and infamous statements such as the one in the quote above. Most of these provocative statements revolve around the idea that science has ‘disproved God’ or that most scientists are atheists. In countering this attack, Christians can leap blindly to a defence with arguments that are easily de-constructible, evidentially flawed and based on platform polemics. Without knowing it, such people have reduced the topic to conflict: one where science is on the attack and faith on the defence. At the end of this sort of verbal sparring Christians and atheists retire to their own corners, each mumbling about the other's lack of understanding.

In undertaking any relational work with young people, youth workers undergo a subcultural relocation. They remove themselves from their own position, put themselves alongside the young people, and try to walk in their shoes. This relocation is required when we come to consider the issue of science and faith. It is all too easy to work through a list of apologetic questions, presuming answers and adopting defences. Yet before any engagement with specifics is possible, it is necessary to relocate ourselves; to step back and examine the relationship between science and faith. Does one hold authority over the other? Which do you align yourself with when you find yourself in conflict? Can faith tell us anything about science, or does science try to dictate what we believe? Is there a middle ground, or is that just liberal compromise?

How to relate Science and Faith

There are a number of helpful ways to understand the relationship between science and faith. These are models and are by definition limited categorizations, but are designed to enable discussion and expand understanding. Whilst all of the scientists involved in the Test of FAITH project would probably opt for the complementary position² they would do so with caution, knowing the limitations of applying a single model systematically to all situations. An examination of the four models now follows:

Science and Faith are in conflict



The first position is that science and faith ask the same questions but obtain different answers, and therefore are in conflict with each other. Much of the current science-based atheist literature published adopts this position and in so doing uses a conversational trick to force the reader to choose between the two issues – are you into science or into faith? Richard Dawkins, a strident supporter of this position, states, ‘I see God as a competing explanation for facts about the universe and life.’³

Dawkins is not alone: a 2005 study of sixth formers found that 29 per cent agreed with the statement, ‘Science is in conflict with religion’.⁴ For many of these polemic atheists, there is a need to dispatch religion to history and focus on the ‘enlightened’ pursuit of scientific truth. The same attitude can be heard in reverse by those who rate faith above science. Both sets of people assume that you cannot be a ‘true’ believer and a scientist, and that scientific investigations of subjects such as prayer or miracles are intended as a direct attack on faith itself.

“You clearly can be a scientist and have religious beliefs. But I don't think that you can be a real scientist in the deepest sense of the word because they are such alien categories of knowledge.

Peter Atkins, Professor of Chemistry, Oxford University

Key to understanding the conflict position is the realization that much of the conflict tends to occur when expansionist attitudes are adopted. That is, when science or faith purports to answer questions relating to the other.⁵ It is not a surprise to learn that this is a position usually assumed by a minority of the science and faith community.

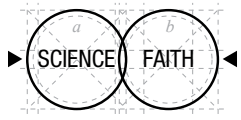
2. See John Polkinghorne's kettle illustration in the *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 101.

3. Richard Dawkins, *River out of Eden*, (HarperCollins, 1995), p. 224.

4. Faraday Paper No. 3, p. 2, available from www.faraday-institute.org

5. For example, Galileo's conflict with the historic church, or the government's backing of stem cell research against the wishes of Christians.

Science and Faith are complementary⁶



“The work of a scientist involved in [the Human Genome Project], particularly a scientist who has the joy of also being a Christian, is a work of discovery which can also be a form of worship.

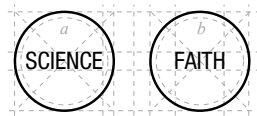
Dr Francis Collins, former Director of the Human Genome Project

This second position maintains that science and faith are addressing the same reality from different perspectives, providing answers that are not in rivalry but are complementary. One of the best examples is in exploring how someone might express human identity. Scientific investigation would result in answers to do with genetics, biochemistry, social science, or anthropology. Theology would come up with a different set of answers, such as what it means to be made in the image of God, what our relationship to God might be, and how we live that out. For the believer, science is just one of the ways we have of answering questions about the world, but our faith answers the most important questions. At this stage it is important to note that whilst science and faith are seen as complementary, they are not perceived as equal. What God has revealed about himself demands dramatic changes in our lives, and is unchanging. In contrast, scientific knowledge has very few demands on our lifestyle and core beliefs, and is a constantly changing body of knowledge.

This position seeks to do justice to both science and faith, whilst seeking to maintain their distinctiveness. It is different to the fusion position (below), which encourages people to either invest scientific theories with religious implications or incorporate religious ideas inappropriately into a scientific context.

The danger with the complementary model is that it might encourage people to slip into the non-overlapping model (see below), segregating the investigations and understandings of science and faith. Also the model could prove hard to apply when the evidence or desire for investigation appeared in conflict with a faith position.

Science and Faith don't overlap, they ask different questions



In the third position science and religion are seen as separate compartments, addressing quite different kinds of questions. Given they are different disciplines there can be no conflict between them as they deal with different things. Put simply, it is like asking the question, ‘Is there a conflict between the physical aspect of a cliff face and the idea of love?’

This model was propagated by the late Stephen Jay Gould, a palaeontologist and popularizer of science, and is also known as ‘Non-Overlapping Magisteria’ (NOMA). Gould suggested that science asks questions of facts whereas religion addresses questions of values, ethics and purpose. This is outworked through different disciplines: science uses maths and logic, and religion uses theology and philosophy.

“I believe, with all my heart, in a respectful, even loving concordat between our magisteri ... if religion can no longer dictate the nature of factual conclusions properly under the magisterium of science, then scientists cannot claim higher insight into moral truth from any superior knowledge of the world’s empirical constitution.”⁷

The frailties of this model are numerous; crucially many scientists, both contemporary and through history, have been inspired to their scientific pursuit by their religious faith. For them, the investigation of reality informed the nature of belief.⁸ In this way, science and faith are both human activities and, as such, unable to be separated within the individual brain, which is unable to compartmentalize.

Science and Faith are the same (the fusion model)

In the fourth position, the fusion model, the assumption is that you can get knowledge about one discipline from the other. This model is the direct opposite of Gould’s NOMA model (above).



Proponents of fusion models talk about the importance of taking both disciplines seriously enough to allow one to flow over and influence the other. Fusion models go beyond simply finding God in creation and into ‘... proposing the actual content of science informs the content of religious belief and vice versa’.⁹ Given its soft definition, this is a position that is often adopted without realization. For young people who maybe lack an appreciation of worldview, this reductionist approach can appear tempting, but can also prove destructive as it discourages inter-disciplinary dialogue, or exploration of conflicting questions. For example, can I prove faith ‘works’, or paradoxically, do I simply accept science where I can and ignore it when it provides any evidence that challenges my faith?

6. Also known as the complementarity model.

7. www.stephenjaygould.org/library/gould_noma.html

8. Faraday Paper No. 3, p. 3.

9. Faraday Paper No. 3, p. 3.

The main critique of this model is that to build faith on the contemporary understanding of science is to position it in a particular time and place: today's trendy science is the stuff of tomorrow's leftovers. Likewise, to build understanding of scientific investigations on religious foundations is to limit its investigations, to narrow its focus and to take away its empirical expertise.¹⁰

How to read the Bible

Having examined four ways in which science and faith relate, we can apply them directly to a reading of the Bible. For example, if we look at Psalm 139:13–16 we read:

“For you created my inmost being; you knit me together in my mother's womb.

“I praise you because I am fearfully and wonderfully made; your works are wonderful, I know that full well.

“My frame was not hidden from you when I was made in the secret place. When I was woven together in the depths of the earth, your eyes saw my unformed body.

“All the days ordained for me were written in your book before one of them came to be.

Science and Faith are in conflict

Reading these verses very literally (in the English) would lead us to believe that what is written tells us how humans develop before birth, in conflict with what has been revealed about pregnancy through modern science. While this might seem an extreme suggestion, it is the same principle that led people in the Middle Ages to interpret certain passages in the Bible (Ps. 93:1; Ps. 19:1–6) to mean that the sun moved around the earth.

Science and Faith are complementary

Reading Psalm 139 in a complementary way suggests that the writer is talking about his special relationship with God. God is personally and intimately involved in the lives of his subjects. In this passage, we see this intimacy in the interest God takes even at the very beginning of the writer's life. This is one way to view pregnancy, but it is not in conflict with the biological description – they can both be true.

Science and Faith don't overlap

Using the third model, we can approach Psalm 139 in a purely mystical and metaphorical way. In many respects the interpretation of this specific passage is similar to that of the complementary model, except that the psalm is not giving us any factual knowledge about the way reality really is – the feeling comes from the psalm, and the facts come from the science.

Science and Faith are the same

In this final model, science and faith are the same. This means that the various statements about pregnancy made in this passage are viewed as veiled scientific statements which agree with what we have found through science. For example 'All the days ordained for me/were written in your book/before one of them came to be' could be seen as a reference to some sort of genetic determinism.

Conclusion

The four models outlined are at the heart of reframing science and faith's engagement with each other. Having studied and explored the issues, all of the scientists interviewed in the Test of FAITH material would probably opt for the complementary position. However, as youth workers we mustn't let our young people assume someone else's position by default, but rather encourage them to grapple with the issues and subsequent questions themselves. This process will see them better informed and prepared to move forward with their faith in a scientific age.

10. Faraday Paper No. 3.

Life, the Universe and everything

TAGS: ANTHROPIC PRINCIPLE, GOD OF THE GAPS, MULTIVERSE

Having examined the ways in which science and faith can be related, we now turn to some key areas in which this can be applied. In the age of the Large Hadron Collider, we start with questions relating to the origins of the universe. Where did it all come from, and how did the universe begin?

Hubble's illumination

In the 1920s, Edwin Hubble discovered that the universe is expanding and that the more distant galaxies are moving away faster than the closer ones. This crucial discovery, less than 100 years old, has transformed cosmology and allowed scientists to appreciate that the universe began in one giant explosion¹¹ over 13 billion years ago. As it expanded it cooled down, clumps of matter condensed together and galaxies, stars and planets were formed. This theory, now widely accepted, is the theory of the Big Bang (A briefing sheet on the Big Bang is provided with the Youth Session notes to cover this with the young people.).

“The Universe started with a Big Bang – but we don't fully understand how or why it developed the way it did. The Large Hadron Collider will let us see how matter behaved a tiny fraction of a second after the Big Bang.

Taken from the Hadron Collider website¹²

Since the development of the Big Bang theory, scientists have sought to fill in the gaps in their knowledge: for example what came before the Big Bang, what led to it, and what was its cause? These gaps fascinate and drive scientific investigation, exploration and investment.

God of the gaps

Although now widely accepted, the Big Bang is a theory with a crucial 'gap' in scientific knowledge. Nothing is known about what happened right at the start of the Big Bang. Science has been unable to provide evidence for what led to this moment and what happened immediately afterwards (the Large Hadron Collider might give evidence for what happened from about a trillionth of a second onwards).

Sometimes Christians are prone to put God as the reason when science has been unable to provide an answer. This practice, known as 'God of the Gaps', is an argument which says that when we can't explain something in nature scientifically, it is proof that God exists. A good example of 'God of the Gaps' is given by David Wilkinson,¹³ who as a student believed that God was needed to light the 'blue touch paper' (the fuse) at the beginning of the Big Bang. But since the physicist Stephen Hawking and others have come up with possible theories for what happened before the Big Bang, the 'blue touch paper' argument isn't a great one any more. If Wilkinson's belief in God and his involvement in creation had been centred on this 'gap', then Stephen Hawking's theory would have undermined his entire belief system.

The danger of seeing God in the gaps is that the scientific gaps of today are the scientific discoveries of tomorrow. Should we make God the cause behind the gap and rest our proof for his existence in that space, then when we are able to explain this gap scientifically we inevitably end up not needing, and hence disproving, God.

If 'God of the Gaps' is a flawed model on which we can mistakenly base an argument for the existence of God, how can we relate to scientific discoveries as Christians in a better way?

The fine-tuning or Anthropic Principle

The anthropic principle is the idea that the universe has been finely tuned to allow the existence of life. There are many different factors in the universe that have to be exactly right – otherwise we would not be here. These details have amazed scientists of all religions and none, because there is currently no good scientific explanation for why they should all be 'set' at such precise values.

Supporting this view, scientist turned priest John Polkinghorne suggests the universe is seen, even amongst some non-believing scientists, as a 'put-up job': that is, the conditions and constants which allow creation to develop and grow cannot have been a happy accident; rather, there is a 'super intellect' behind it all.¹⁴

11. Astronomers are able to measure age using several methods; among them is the use of the Hubble Telescope through which astronomers can see light that has travelled for about 13.3 billion years, from the very first stars. The universe must be older than this for the light to reach us today.

12. www.lhc.ac.uk

13. *Test of FAITH DVD Part 1* (Time code: 11 minutes 18.).

14. Denis Alexander and Robert S. White, *Beyond Belief: Science, Faith and Ethical Challenges* (Oxford: Lion Publishing, 2004), p. 71.

“Our universe is very particular, very special in its character. There’s a sense in which the universe was pregnant with life, essentially from the Big Bang onwards, because the very ... physical fabric of the world, the laws of nature that science assumes ... had to take a very precise, very finely tuned form for carbon-based life to be possible.¹⁵

For example, ‘Carbon is an essential element for life. The “strong nuclear force” holds the particles that make carbon together. If the strong nuclear force were any weaker, carbon would never form. If it were any stronger, all the carbon would turn into oxygen. As it is, this balance is tuned exactly so that both elements are present.’¹⁶ But it is not just at a microscopic level that conditions are right; as we step back and examine the grander properties of the universe, we see conditions that are perfectly in balance. For example, ‘the number of dimensions in our universe is right for life. We know now that you can only have planets with stable orbits if you have three dimensions in space. Any more than three and things would become very unstable, and we could not survive.’¹⁷

“The laws of nature have certain constants, and it’s not clear why those constants have the values that they do. But it is clear that you can change those constants a little bit, and you would have a universe that’s no longer fertile for life, you’d basically have a sterile universe.

Dr Ard Louis¹⁸

All these factors come together under the theory known as the anthropic principle and act as a hint, but not as conclusive proof, for the existence of God.¹⁹ What the anthropic principle suggests is that God is a powerful God, a mind who creates the perfect conditions for the possibility of existence.

Multiverse: Not one existence but many

The chief opponents of the anthropic principle have come up with a new theory, arguing that not just one but many universes exist. They say that if the constants at the Big Bang took on different initial conditions in each of the many universes, then we might well expect to get a universe like ours as part of this collection²⁰ (called a multiverse).

At present the multiverse is a theory (or rather a collection of theories, as there are several different forms of multiverse theory) with no evidence behind it. It is also subject to a number of problems. The main one is that these universes are completely unobservable, and as the scientific pursuit is one based on observation and measurement, then multiverse theory fails (at present) to be scientific.

The idea of a multiverse is one that divides opinions amongst scientist-believers. For example, John Polkinghorne doesn’t think other universes are there, whereas David Wilkinson thinks they might be.²¹ However, even if evidence for a multiverse was to be found, this does not negate the idea of a divine power because we have a big, generous God who is free to create as he likes and is still sovereign over all that he has made, multiverses included.

For the youth worker, multiverse theory is interesting for debate, and intriguing for young people to explore, not least through science fiction films and their incumbent utopian dreams, yet in reality it has limited impact. Nowhere in the Bible does God claim that ours is an exclusive cosmos, or even that the earth is an exclusive creation. What we do know is that our universe has extremely finely tuned conditions that have enabled its inception and continued existence.

Conclusion

There are a range of opinions on the origins of the cosmos. Using the models outlined in chapter one, we can see how faith in relationship with science can engage intellectually with these theories. And whilst God’s existence cannot be proved from theory there are enough clues, as demonstrated through the anthropic principle, to suggest that there is a divine power behind it all, bringing together the perfect conditions to make existence possible. For this we need to rejoice and be inspired.

Meanwhile for scientists, questions around the origins of the universe continue to intrigue and inspire. The revelations of science in the years and decades to come are set to reveal an increasing understanding of what happened around the time of the Big Bang. Rather than be scared by these revelations, Christians should seek to embrace and understand them in the light of God’s divine providence.

15. John Polkinghorne, *Test of FAITH DVD Part 1* (Time code: 17 minutes 42.).

16. See Briefing Sheet 1 in the *Test of FAITH Leader’s Guide* (Paternoster, 2009), p. 101.

17. See Briefing Sheet 1 in the *Test of FAITH Leader’s Guide* (Paternoster, 2009), p. 101.

18. Ard Louis, *Test of FAITH DVD* (Time code: 17 minutes 18.).

19. Alistair Mcgrath, *Test of FAITH DVD* (Time code: 18 minutes 6.).

20. Rodney Holder, ‘Is the Universe Designed? Faraday Paper No. 10, available from www.faraday-institute.org

21. For more on multiverse, see the *Test of FAITH DVD part 1* (Time codes: 18min. 54 to 25min. 48).

Taking it further

Articles to download²²

John Polkinghorne, 'The Anthropic Principle and the Science and Religion Debate':

www.st-edmunds.cam.ac.uk/faraday/resources/Faraday%20Papers/Faraday%20Paper%204%20Polkinghorne_EN.pdf

Rodney Holder, 'Is the Universe Designed?':

www.st-edmunds.cam.ac.uk/faraday/resources/Faraday%20Papers/Faraday%20Paper%2010%20Holder_EN.pdf

Michael Poole, 'God and the Big Bang':

www.cis.org.uk/assets/files/articles/Poole_bang.pdf

Rodney Holder, 'God, the Multiverse, and Everything':

www.cis.org.uk/assets/files/Resources/Articles/Article-Archive/rodney_holder_multiverse.pdf

Books

Denis Alexander and Robert S. White, *Beyond Belief: Science, Faith and Ethical Challenges* (Lion, 2004; US: *Science, Faith, and Ethics: Grid or Gridlock?* [Hendrickson, 2006]). Beyond Belief introduces the issues – including ethics, the environment and evolution.

Kirsten Birkett, *Unnatural Enemies* (Matthias Media, 1997). This introduction to the relationship between science and faith is written for people with no Christian background.

Francis Collins, *The Language of God: A Scientist Presents Evidence for Belief* (UK: Simon & Schuster, 2006; USA: Free Press, 2006). This is a very easy introduction and includes much of the former director of the Human Genome Project's personal journey from atheism to Christianity. Covers evolution, ethics and the general relationship between science and faith.

David Wilkinson, *God, Time and Stephen Hawking* (Monarch, 2001). This is an easy and thought-provoking introduction to science and theology.

John Polkinghorne, *Quarks, Chaos and Christianity* (UK: SPCK, 2005; USA: Crossroad, 2005). This is John Polkinghorne's most introductory level book. Much of it focuses on physics and astronomy.

22. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 27.

In the Beginning

TAGS: CREATION, EVOLUTION AND UNDERSTANDING GENESIS

This chapter aims to equip the youth leader with a basic scientific, biblical and theological understanding of the various positions held on the relationship between creation and evolution. In doing so, it aims to personally equip the youth leader so that when they come to run the linked session, they are able to do so with confidence, direction and a set of achievable aims.

The relationship between creation and evolution is at the heart of the whole science and faith discourse, and a great example of how the science and faith relationship has been subverted by those who have sought to divide the disciplines over recent years.²³ For the non-scientist, this is an area where it is hard to know where to turn; each view seems to be able to call on different experts who justify a particular position. Whilst some self-appointed experts are easy to spot, others retain at least a cloak of intellectual respectability and it is tempting to surrender to their opinion.

The Christian idea that God created the universe is one of the key messages of Christianity. From this doctrine comes every other theme and hope expressed throughout the Bible. However, if we understand that the universe was created by God, and that we are his image-bearers in the midst of the created order, then how do we understand the recent explorations and discoveries of science?

The youth leader running a session considering the relationship between creation and evolution therefore needs to take a courageous, but necessary, leap of faith. To launch into a session knowing that the young people may know more than you, that the questions they will raise may cause you to rethink what you do or don't know, will lead some to avoid the subject altogether. This would at best be a significantly missed opportunity, and at worst show disrespect to the young people who need the tools with which they themselves can consider the issues at hand. Another difficult factor in leading a session on this subject is the fact that people of faith hold different opinions. Within the Test of FAITH project, many of the scientists would hold to a theistic view of evolution (see below); however, the material is designed to encourage debate and dialogue and help young people reach their own conclusions.

What are the various positions on creation and evolution?

There are a range of positions on how the earth came into being, and how Genesis should be interpreted. The four most popular are:

1. Evolution without God: There are a range of understandings of what an actual process of evolution without God would entail, but for 37 per cent²⁴ of the UK population, belief in evolution without the need for any divine power is the way in which the world came into being.
2. Young Earth Creationism (YEC): The belief that Genesis should be interpreted as a literal, historical and scientific account. Those who adopt a YEC position then interpret the Bible as saying that the earth must be around 6 to 10,000 years old and that the days of Genesis 1 are six twenty-four hour solar days.
3. Intelligent Design (ID): Is not necessarily a Christian view, but has been adopted by some Christians; however, it makes no claims about God or the Bible. In ID, the theory is that some parts of living things are too complex to have evolved, coupled with the idea that the information contained in DNA cannot have arisen by a process describable in purely material terms, so providing evidence for design. A classic example of the application of ID is William Paley's watchmaker analogy.²⁵
4. Theistic Evolution (TE): Theistic Evolutionists accept the Bible as authoritative, but read it not as a science textbook that says how things happened, but one that explains why and what the reason behind life is.

Up until thirty years ago many people, including many scientist-believers, thought the debate had died off in the nineteenth century. This proved to be false, and in recent years the creation and evolution debate has not only been resurrected but has been transformed into an intentional conflict by both ultra-Darwinists and some Christians.

23. Thomas Huxley was a British biologist in the 1800s. With eight of his friends, he formed a dinner group called the 'X-Club'. Huxley and the X-Club promoted the idea that Christianity and science had always been in conflict, because they wanted to establish a new professional scientific community free of clerical influence. Despite 300 years of cooperation between religion and science, they created a myth of conflict that people still believe. Today, some scientists still use this myth to argue against religion.

24. Nick Spencer and Denis Alexander, *Rescuing Darwin: God and Evolution in Britain Today* (published by Theos and the Faraday Institute 2009), p. 52.

25. Paley's watchmaker analogy is what is known as a teleological argument for the existence of God. The argument revolves around irreducible complexity – that is, some organizations are so complex that their design implies a designer. However, the analogy is challenged by the 'dys-teleological' argument (the argument from poor design) which flips Paley's idea, stating if creation contains many defects then design is not a plausible theory for the origin of our existence (a good God would not have created a broken universe). The other major critiques of ID include the fact that the principle of 'what is the chance of this happening' is easily undermined when scientific knowledge of why things happen increases.

So what does the Bible Say?

Genesis 1 is the prologue to the Bible. It sets the scene, introduces the themes, tells stories and sets the tone for all that is to follow. There is not space here to undertake an in-depth study of the first few chapters of Genesis.²⁶ However, it is important to suggest some understandings²⁷ on what is the key text used to interpret both creation and evolution. The Bible itself hints that any hermeneutical journey of theological exploration and application is not an easy one. 2 Timothy 2:15 and 2 Peter 3:16 show how important it is to appreciate the complexity of scripture, as well as the importance that those who seek to interpret it do so wisely and considerately.²⁸

Whilst scientific pursuit doesn't dictate what Christians should believe, it does allow an exploration of the natural, created universe that can illuminate the text and reveal God's purpose and message. This means for the believer it is important to first read the text before exploring the science, and then seeing how the two relate.

Some messages in the text

Primary to the Genesis text are the messages about God's relationship with humankind. These widely accepted themes underlie the Christian faith and are paramount in the reading of the creation narrative. They include:

1. Genesis 1: Creation was by one God 'ex nihilo' – from nothing.
2. Genesis 1 and 2: The earth God created was good, relationally harmonious and structured.²⁹ However, there was a disruption of that relationship, something that is represented in the Fall of Adam.
3. Genesis 1:26–30: Created in God's image. Humankind is created in God's image; yet, as we know, that doesn't have to mean that God is an oxygen-breathing, two-armed and two-legged mammal. In this passage we are created in God's image in 'knowledge, righteousness and holiness'; in other words, we are created rational, relational, spiritual beings. With this image comes the mandate to be responsible for the well-being of creation, by virtue of our relationship with God.
4. Genesis 1:31: At the end of the creation narrative we see how God was pleased with what he had created. When he had finished he rested, and said that it was 'very good'.
5. Genesis 1 and 2: God is actively involved in, and also separate from, his creation. He was implicit in its creation, but he is distinct from it. Creation is something that God has a relationship with, something he loves and cares for.

These are just some of the key messages that the primary texts in Genesis reveal. Genesis 1 uses the created order to demonstrate God's identity – God is for creation (he is not against it); relationships – God is with creation; and purposes – God has plans for creation, and creation is for God.

The message behind the text

Whilst the message of Genesis is important, understanding the context from which it emerged also helps illuminate its deeper message. Ernest Lucas suggests that Genesis is a book that needs to be understood as a theological polemic, a statement of where the Israelites stood against the ideas prevalent in the religions of the people among whom they lived. Included in the implicit messages are:

- The Genesis text was written in the midst of a polytheistic society: a society that believed in many gods. In contrast, Genesis teaches monotheism: that there is only one God. Where Genesis talks about the sun and moon being lights, it does so in a way that would have stood in contrast to the prevailing religious ideas that saw the sun and moon as gods themselves.
- Secondly, both explicit and implicit within Genesis is the idea that human beings were created (by whatever process) for a special relationship with God. In contrast, the Mesopotamian creation story of the time talks about humans being made of clay mixed with the blood of a god. These humans were then slaves to the gods; created to allow them to avoid doing any work.
- Thirdly, as we dig a little deeper we see a whole other level of metaphorical meanings. Since the early Christian writers onwards, patterns have been discerned in the way in which Genesis lays out the creation narrative. This poetic and figurative display of the text gives even more clues as to the passage's purposes (see figure 1).

26. Ernest Lucas, *Can We Believe Genesis Today?* (IVP, 2001) is an excellent book on this subject.

27. It is important not to be caught in the trap of saying the Bible doesn't need interpreting. As Christians, we are all engaged on a journey of theological exploration and application. Often without appreciating we are doing it, we all choose which parts of the Bible we will take literally, and which we will interpret symbolically and figuratively. A good example is how we apply Mark 9:43–47.

28. Lucas, *Can We Believe Genesis Today?* p. 51 (2001 edition) suggests four simple ways to help interpret what the Bible is saying.

29. Lucas, *Can We Believe Genesis Today?*, p. 172 (2001 edition).

	SHAPELESS	EMPTY	
SEPARATION	Day 1 The separation of light and dark	Day 4 The creation of the lights to rule the day and the night	CREATION
	Day 2 The separation of the waters to form the sea and the sky	Day 5 The creation of the birds and fish to fill the sky and sea	
	Day 3 The separation of the sea from the dry land and the creation of plants	Day 6 The creation of the animals and humans to fill the land and eat the plants	
	Day 7 The heavens and the earth were finished and God rested		

Figure 1: The structure of Genesis 1:1 – 2:3³⁰

There are numerous other symbolic parallels in Genesis 1: ‘God said’ occurs ten times (three times concerning humans, seven times concerning other things); God issues ten creative commands (three times ‘Let there be’, seven times ‘Let ...’), and ‘God saw that it was good’ occurs seven times; three times it is said that God created men and women. This poetic prose style of writing suggests that the composers of the text were revealing deeper mysteries: ones that took the ideas and themes of their day and turned them on their head. Such intentional repetition and word symmetry only serves to enhance the idea that the Genesis passage is far more detailed than is often first thought.³¹

These are just some of the intricate ideas, metaphors and images that are being revealed by Genesis. Far more could be said and far more given in support of these; however, what has been achieved is a revelation of the fact that this is a text that is beautifully complex and deeply personal.

Conclusion

As we dig below the Genesis text, deeper metaphors are quickly revealed. Actions are perfectly balanced against each other, whilst days run in beautiful parallels. We soon see how the metaphors and meanings discovered hint at a God in perfect harmony, a God who is intimately involved, yet distinct from creation. A God who wants us to know that everything that happens is finely balanced and tuned to be possible, and not just a random set of reactions.

30. Lucas, *Can We Believe Genesis Today?*, p. 96 (2001 edition).

31. Lucas, *Can We Believe Genesis Today?*, pp. 96-97 (2001 edition).

Issues in Genesis

TAGS: DAYS OF CREATION, ADAM AND EVE, THE FALL

When we appreciate that the Genesis text is complex, nuanced and beautifully balanced, full of metaphors and messages, we see how the text can be understood both practically and symbolically. We are then in a position to see how our interpretation of Genesis may relate to the discoveries of modern science.

Suggesting that Genesis is both practical and symbolic language is not to say it is necessarily unhistorical, because real historical events are often described in this way. Revelation uses powerful 'apocalyptic' language which is hermeneutically translated by biblical scholars and theologians as they seek to extract meanings from complex images. As it is with Revelation, so it is with Genesis. Here we find unusual images: a pile of clay becoming a man, a speaking serpent and a tree of life. These are powerful symbols that need to be translated in order to fully understand the meaning.

What are the days of creation?³² When we meet the days of creation we could be reading about a specific twenty-four hour period, or we could be talking about a more general block of time. For example, when we use the word 'days' in English, we already use it in a range of contexts. For instance, we may say, 'in my day' or, 'my working day' or even, 'in those days'. The Hebrew word *yom* has the same meaning as 'day' in English, but in Hebrew there isn't another word for an extended but fixed period of time (whereas in English we use epoch, era and age). So the Hebrew uses the word in a range of contexts (Gen. 2:4; Exod. 16:30; Deut. 28:32; Joel 1:15; 2 Pet. 3:8). Similarly when Genesis uses 'morning and evening' we could be talking about a twenty-four hour period or, as there is no sun and moon until day four, there may be an alternative, more complex, meaning to these words. A deeper examination of the text allows us to explore interesting points such as: when the creation narrative ends, why doesn't the last day end (Gen. 2:2,3)? Is there a hint at a deeper point here? How does this relate to theology outlined in Hebrews (4:1-3) as well as the teaching of Jesus (John 5:17)?

Genesis is not the only Bible book to use figurative and symbolic language. Stories and metaphors are used throughout the Bible to explain real events, for example:

2 Samuel 12:1-7a: the prophet Nathan tells King David a story about a lamb to get him to think about his adultery with Bathsheba.

Genesis 37:2-11; 44:14: Joseph's symbolic dream of what will happen in the future.

Hosea 11:1-4: God tells the story of the exodus by comparing Israel to a small child God is raising.

Who were Adam and Eve? Some would see Adam and Eve as the first two created people, brought into being and given breath by God. Those approaching the text through a theistic evolution lens would suggest that God used the process of evolution to bring about a physical body that would be appropriate for his spiritual nature. If Adam and Eve were historical figures who actually lived, this could then date Adam and Eve to the Neolithic era, some 50,000 years ago.³³ However, integral to the understanding of Adam and Eve is the understanding of the passages that follow: passages that have commonly become known as 'the Fall'.

What was the Fall? Romans 5:12-21 says that a single act brought sin into the world, but it doesn't explain how this act was conferred to all humankind. 1 Corinthians 15:45-48 says that Adam was the first man and that all humans share his nature, but once again there is nothing in the text to suggest how this nature was passed on. Were Adam and Eve the first in the line of those who were to find life in the forthcoming Saviour, or were they the first people who sinned? Genesis 2 and 3 tell us that God had warned Adam that disobedience would lead to death on the 'day this happened', but we know that neither Adam nor Eve immediately died – rather, they were banished from God's presence. Some theistic evolutionists would say that they died spiritually and immediately suffered the consequences of being 'dead in their sins' when they lost their relationship with God. Exclusion from the Garden is a powerful symbol of alienation from God. Others would say that at this point they lost the gift of immortality. In contrast, faith in Christ represents new creation, a new life and spiritual rebirth (not a physical one, as Jesus told Nicodemus in John 3). It is easy to see that the biblical evidence leaves questions that can be taken both scientifically and theologically.

Conclusion

A lot of time is spent trying to figure out which is right: creation or evolution. Yet to get too caught up in the debate is somewhat misleading, forcing the reader away from the powerful messages that it reveals. The process by which we think God created the world will continue to develop and emerge, as will the science and theological understanding that inform it. But for young people seeking understanding and meaning in a world of science and reason, the central messages of Genesis – that people are created in God's image, that God is separate from, yet involved in, his creation, and that he delights in it – are the most important.

32. *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 53.

33. Lucas, *Can We Believe Genesis Today?*, p. 140 (2001 edition).

Taking it further

Articles to download³⁴

Bob White, 'The Age of the Earth'

www.st-edmunds.cam.ac.uk/faraday/resources/Faraday%20Papers/Faraday%20Paper%208%20White_EN.pdf

Ernest Lucas, 'Interpreting Genesis in the 21st Century'

www.st-edmunds.cam.ac.uk/faraday/resources/Faraday%20Papers/Faraday%20Paper%2011%20Lucas_EN.pdf

Graeme Finlay, 'Homo divinus: The Ape that Bears God's Image'

www.scienceandchristianbelief.org/articles/finlay.pdf

Websites

The American Scientific Affiliation's 'Creation and Evolution' page (different views from a Christian perspective)

www.asa3.org/ASA/topics/Evolution/index.html

Answers in Genesis (Young Earth Creationism)

www.answersingenesis.org

The Discovery Institute (Intelligent Design)

www.discovery.org

Books

Deborah B. Haarsma and Loren D. Haarsma, *Origins: A Reformed Look at Creation, Design and Evolution* (Faith Alive Christian Resources, 2007). This is a very approachable introduction to the area of science and faith, and creation. It examines the origins of the universe and living things. Further material is available on www.faihaliveresources/origins, including questions that can be used by a small reading group. The book covers a range of views.

Norman Geisler (ed.), *The Genesis Debate: Three Views on the Days of Creation* (Crux Press, 2001). Three pairs of authors present different views on the days of creation: the twenty-four hour view, the day-age views, and the framework view, and respond to each other's writing.

Paul Nelson, Robert C. Newman and Howard J. Van Till, *Three Views on Creation and Evolution* (ed. John Mark Reynolds and J.P. Moreland; Zondervan, 1999). Proponents of Young Earth Creationism, Old Earth Creationism and Theistic Evolution each present their different views, explain why the controversy is important, and describe the interplay between their understandings of science and theology. Various scholars critique each view.

David Wilkinson, *The Message of Creation* (Bible Speaks Today; IVP, 2002). This is a very thorough look at the themes of creation throughout the Bible, beginning with Genesis 1–3. The following sections deal with: the songs of creation that praise our Creator God; Jesus' relationship to creation; the lessons the writers of the Bible teach using creation; and the new creation.

Ernest Lucas, *Can We Believe Genesis Today?* (IVP, 2005). This book explains how scholars have interpreted Genesis 1–11, historically and in the light of modern science. Lucas looks at various interpretations, noting the problems with each and giving sources for further reading. He highlights his own view, that mainstream science and the Bible are compatible.

Denis Alexander, *Creation or Evolution: Do We Have to Choose?* (Monarch, 2008). This is an in-depth look at all the questions concerning creation and evolution, from the perspective of Theistic Evolution.

Darrel Falk, *Coming to Peace with Science* (IVP [USA], 2004). A sympathetic look through the various theological arguments on all sides of the debate; it comes to the conclusion that Christianity is compatible with evolutionary biology.

34. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 69.

Stewardship: Doing the Right Thing

TAGS: STEWARDSHIP, GENESIS, CREATION, SERVING

No matter what your interpretation of the key texts in Genesis, the fact that God is creator and sustainer of all is an important principle. Care for the environment is not just an optional extra to the good news of the gospel, but is an integral part of it. God's people following God's initial command is good news for the whole of creation; something that it is longing and yearning for.

Yet it is clear from the world around us that caring for the earth is far from being everyday practice. Even if some environmental issues, such as the need for recycling or the melting of the ice caps, are widely publicized, often the need to respond to them is given only lip service. Against this depressing backdrop it would be easy to despair, or give up, or even worse, to rant and rave and therefore alienate people over environmental issues. But the problems of the environment are not unsolvable. There is real hope that we can make positive choices and help reduce the effects of environmental damage, and take better care of God's world.

Crucially many of the issues we face are interconnected:³⁵

- **Water:** Provision of clean water for a growing population, and problems caused by drought or floods.
- **Climate change (or global warming):** A small increase in the overall temperature of the earth's atmosphere has a huge effect on the world's climate.
- **Population:** The population of the world has almost doubled in the last forty years. How will everyone have enough food and water? (World population in 2005: 6,514,751, and in 1965: 3,342,771 – an increase of x1.95.)
- **Soil degradation:** Overgrazing and deforestation mean that soil is washed from exposed land.
- **Destruction of the places where living things usually grow (habitat loss), and a reduction in the number and variety of living things growing in the world (reduced biodiversity).**

The average temperature on earth has risen over the last century. There is strong evidence that most of this rise has been caused by an increase in the greenhouse gases that are emitted in ever-increasing quantities, especially carbon dioxide. Scientists predict that during the twenty-first century the average temperature will rise by 2–6°C. That doesn't sound like very much, but the difference in average temperature between the middle of an ice age and a warm period is only about 5–6°C. The predicted temperature rise could have a huge impact.³⁶

All of these changes in the climate will affect the ability of humans, plants and animals to survive. The worst impacts will be felt in developing countries. Crop yields will increase in colder countries in the short term, but flooding, storms, and other damaging effects in warm countries will far outweigh these advantages. Eventually, as temperatures increase further, crop yields will decrease worldwide. If we cut down our production of greenhouse gases now, the harmful effects will be greatly reduced. It has been argued that developed countries, which have benefited from burning huge amounts of fossil fuels, should make the biggest efforts to cut down – and so allow developing countries to continue to develop.

So why should we do anything?

As Christians, new creations, we are called to be living examples of how God wants things to be. Genesis 2:15 can be translated as an instruction to humanity to 'serve' and 'preserve' creation. That means, as followers of God, we are called to serve and preserve creation so that it can glorify God.

The good news is that what we do, we do not do on our own. Christ will make all things new. He will restore all creation to him (Rev. 21) and we, too, will have new bodies. In the meantime, we are to use our energy and God-given creativity to work towards that future in the present. But for some, the idea of a new creation actually abdicates responsibility in the present: why bother doing things now if God is going to make all things new in the end anyway? That would be like trying to fix a broken car when you are going to dump it and buy a new one!

Tackling this misunderstanding, Dave Bookless, Founder and UK Director of the Christian conservation group A Rocha, looks at the word that the Bible uses to describe the new world.³⁷ What he discovers is that this word, 'Kainos', in the Greek is closer in meaning to the English idea of 'renewing' rather than 'replacing'. This means that the author of Revelation is suggesting the 'new earth' is not a replacement (in this case he would have used the alternative word for 'new', 'neos') but rather a renewed earth: a restoration of what was intended.

So the earth we know is not to be replaced, but rather the 'second' or 'new' earth will be it in its renewed form. Just as when Jesus rose again he was the same but in a resurrected form, so this earth, too, will continue, but in a resurrected condition. This also means that the renewal of this creation – rather than being a countdown to replacement – is an integral part of following

35. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 72.

36. JRI briefing paper by Sir John Houghton, 'Global Warming, Climate Change and Sustainability: Challenge to Scientists, Policy-makers and Christians' (2007) www.jri.org.uk

37. Dave Bookless, *Planetwise* (IVP, 2008).

Jesus Christ. Bishop Tom Wright, a world expert on these passages, shares this view. In *Surprised by Hope*³⁸ he shows how the 'new earth' doesn't mean that God will wipe the slate clean and start again, but that it will be renewed. Reinforcing this view, Wright shows how the desire for the coming together of heaven and earth is in the prayer echoed by Christians over the last 2,000 years: 'Your kingdom come. Your will be done, on earth as it is in heaven' (Matt. 6:10, NRSV).

In the meantime, as we look forward to God's renewal we are called to live as God's image. We are to go back to the original instruction that God gave us: to take care of creation. In the words of *The Message* version of the Bible, we are instructed to, 'Be responsible for fish in the sea and birds in the air, for every living thing that moves on the face of the Earth' (Gen. 1:26).

What are the answers?³⁹

So if renewal and not replacement is how we are to view the future, we need to better understand the scientific complications that confront such renewal. We need to make sense of the questions that are asked almost daily. As youth workers, how do we answer the young people who are confronted with these issues?

What follows is a selection of standard questions that might be asked, and the answers given by climate scientists – including Sir John Houghton, the eminent climate scientist and Christian believer:

Q1: The earth's climate always varies. Aren't we just in a natural period of warming?

A: The earth's climate varies due to many different factors, including cycles of ice ages caused by changes in the distance between the earth and the sun, volcanic eruptions and changes in the sun itself. However, none of these factors is enough to explain the rapid changes in the last 100 years.

Q2: There isn't enough carbon dioxide in the atmosphere to cause any significant change, is there?

A: Although there isn't a big volume of carbon dioxide (CO₂) in the atmosphere, it can have a significant effect. It has a direct effect because it traps heat very strongly. It also has an indirect effect because, as the earth warms up, water evaporates more quickly from lakes and the sea. This increases the amount of water vapour in the atmosphere, which causes an even stronger greenhouse effect.

Q3: Isn't the increase in carbon dioxide in the atmosphere the result of climate change, rather than the cause?

A: As the oceans and soil warm up they do release carbon dioxide into the atmosphere. Scientists can find the origin of carbon dioxide in the atmosphere through chemical analysis. Most of the increase in CO₂ levels comes from burning fossil fuels.

Q4: I thought that the observations of weather balloons and satellites were inaccurate?

A: In the early 1990s there were errors both in the way that data was collected and in the way it was analyzed. These errors have been corrected, and now the data from weather balloons and satellites agrees with data collected by other methods.

Q5: Aren't computer models of the climate inaccurate?

A: Although the climate is very complex, scientists have been able to create increasingly accurate models of the way it works. These computer models have been used to simulate changes in the climate over the course of the last century, and their simulations have matched what actually happened. Using these models, scientists can give general predictions about the course of the climate in the future on a global scale, based on different predictions about human behaviour.

Q6: Isn't climate change caused by the sun becoming more active?

A: The sun's activity does play a role in shaping climate. However, that alone is not enough to explain the recent warming. Also, there has been very little change in the sun's activity over the last three decades, so this cannot account for the observed warming.

Q7: Surely it's not a big deal. Aren't climate scientists exaggerating?

A: The earth's ecosystems are very finely balanced. Even a change of 2–3°C would be greater than has been seen for 10,000 years, and many species would find it very difficult to adapt. The people most affected will be those in developing countries and the poor, creating greater inequalities in access to food, clean water, and medical treatment.

Conclusion

It is clear that living carefully and responsibly in God's world is at the heart of the Christian story, and a key part of what it means to follow Christ. Whether we are working with individual people, the environment or the social environment, we are called to serve and preserve. God's first call to us was to engage with the world; our challenge is to respond. We lead young people who are primed to inspire, to create new ideas and to bring new hope. We need to find ways to release their serving and preserving potential, to restore hope and to usher in not a replacement, but a renewed earth.

38. Tom Wright, *Surprised by Hope* (SPCK, 2007).

39. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 110 where it was adapted with permission from 'Climate Change Controversies: A Simple Guide', The Royal Society (2007) royalsociety.org

Taking it further

Websites⁴⁰

A carbon footprint calculator and carbon offset scheme
www.climatestewards.net

Resources from a Christian conservation group
en.arocha.org/home

A Rocha's lifestyle challenge
www.livinglightly24-1.org.uk

Resources and articles
www.jri.org.uk

Articles and courses
www.ausable.org

The UK 'Ecocongregation' scheme
www.ecocongregation.org

Environment resources from the American Scientific Affiliation
www.asa3.org/aSa/topics/environment/index.html

Evangelical Environment Network (US)
www.creationcare.org

Articles to download

John Houghton, 'Why Care for the Environment?'
www.st-edmunds.cam.ac.uk/faraday/resources/Faraday%20Papers/Faraday%20Paper%205%20Houghton_EN.pdf

John Houghton, 'Global Warming, Climate Change and Sustainability'
www.jri.org.uk/brief/Briefing_14_3rd_edition.pdf

'Climate Change Controversies: A Simple Guide' from The Royal Society, 2007
<http://royalsociety.org/Climate-change-controversies>

Robert White, 'A Burning Issue: Christian Care for the Environment'
www.jubilee-centre.org/document.php?id=53

40. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 78.

Books

Hilary Marlow, *The Earth Is the Lord's: A Biblical Response to Environmental Issues* (Grove Books, 2008). Looking at a range of texts and themes in the Old and New Testaments, this study shows how the whole of the non-human created order is included in the biblical vision of God's restoration. It includes questions for reflection, and points to resources for practical action.

Colin A. Russell, *Saving Planet Earth: A Christian Response* (Authentic, 2008). This is a very introductory level book, rich in facts about the environment, theological reflection on the Bible, and practical suggestions. It addresses some questions which might be more specific to the evangelical wing of the church.

Dave Bookless, *Planetwise: Dare to Care for God's World* (IVP, 2008). This is an introductory level book setting out what the Bible says about why and how Christians should care for God's earth. It is full of practical illustrations and suggestions as well as biblical material. It also includes follow-up questions and resources.

Martin J. and Margot R. Hodson, *Cherishing the Earth: How to Care for God's Creation* (Monarch, 2008). This is a stimulating and inspiring Christian response to environmental issues from a scientist and a theologian. It includes chapters on the science of global warming and on its effect on the world's poor and challenges our attitudes and lifestyles.

Nick Spencer and Robert White, *Christianity, Climate Change and Sustainable Living* (SPCK, 2007). Spencer and White look at the science behind climate change, and the biblical imperative behind Christian engagement with environmental issues. They diagnose modern cultural problems leading to climate change, and include practical suggestions for ways to integrate care for creation at different levels of life.

Thinking about Human Identity

TAGS: SPIRITUALITY, NEUROLOGY, ETHICS



It's not just the data ... it's the interpretation of the data.

41

'Just who am I?' is a question we all grapple with. Whether it is in philosophical debate, or in life-forming decisions, we are each involved in a process of human development.

In pursuit of a greater understanding of 'who we are', scientists throughout the ages have used different scientific disciplines to reduce the question to a particular line of enquiry. Chemists have studied the chemical composition, biologists have studied our bodies, and neurologists have studied the brain. Each of these has advanced human understanding in wonderful ways, allowing us not only to understand who we are, but also how to heal ourselves, how to improve our development, and how to live increasingly healthy lives.

Yet splitting up the question and reducing it to a particular discipline can easily lead us into the trap of defining something by what can be proved scientifically. For example, advances in the study of the brain have led some people to claim that: a) what we do and who we are is determined purely by our biological make-up; and b) spiritual experiences are just a by-product of the 'God Spot', a section of the brain preprogrammed by the evolutionary process to provide us with a necessary religious experience.

For young people seeking to understand, reductionism is a tempting, yet dangerous, path. A reduced answer is one that can be proved; it is easily quantifiable and therefore reassuring to stand behind. Looking for a more considered answer to the question of who we are or why we believe in God is far more difficult and offers a lot more uncertainty. The solution will be far more complex than a preprogrammed pattern of neurological responses. Yet it is this second approach that allows us to fully appreciate the world that God has created. Understanding the brain and its development is vital, yet the answers that such investigation provides cannot define us.

The God Spot

There has been a lot of press attention given over recently to the brain's 'God Spot'.

Research has shown that certain parts of the brain's temporal lobe are triggered during activities such as prayer and meditation, and that parts of the frontal lobe are active during religious experiences. This has led some to speculate that the brain is hardwired to have a faith, and others to suggest that this is an evolutionary hangover.

Responses on the *Test of FAITH* DVD, Part 3:

Dr David Wilkinson says: 'If someone wanted to come along and link me up to electrodes while I was praying or while I was in worship and found that my brain patterns were slightly different, then that wouldn't be a great surprise to me. I think spiritual experience is real and therefore there should be a way of looking at that in terms of the physicality of the brain. But just to look at those brain patterns and to say that that is all that spiritual experience is seems to me to be mistaken.'

Alistair Coles says: 'To do science, people will reduce a complicated human behaviour to something that can be tested and measured. So, the complicated behaviour of religious experience, to something that can be measured in an image on a particular scan. That's methodological reductionism to make it easier to do science. So spiritual experience is associated with a neural correlate, but that does not mean that religious experience is nothing but a neural correlate, there may well be more to it that isn't accommodated by this scientific method.'

41. Taken with permission from <http://asbojesus.wordpress.com>

Freewill: 'I' am not my biology

Some atheist scientists say that the decisions we make are completely determined by our nature and nurture – that our future is determined by our past. This claim is not strongly supported by evidence at the moment. However, we should not locate our argument for freewill in gaps in the evidence for determinism. Rather, we can combat it by focusing on the heart of the gospel: that God sets us free from slavery to the world.

Fundamental to the Christian message is that 'all have sinned and fall short of the glory of God' (Rom. 3:23), but the heart of the Christian gospel is that God does not leave us in slavery to sin, but saves us through the work of Christ and sets us free to do the good works that please him. We no longer have to be bound by our upbringing, our biology, any other 'determinism' or power of the 'kingdom of earth'. We can choose to be set free by citizenship in the 'kingdom of heaven', and to use our upbringing, our biology, and every other association we have as created beings, for the good which God desires.

True freedom is found in Christ, and the gospel should make us aware of those things that limit our freedom. For the youth worker, the challenge is to allow the young person to recognize and appreciate who they are biologically, culturally and neurologically, yet to encourage them not to be defined and bound by this. Rather, they are to be free to become the kind of people God made them to be: 'It is for freedom that Christ has set us free' (Gal. 5:1), and, 'You, my brothers, were called to be free. But do not use your freedom to indulge the sinful nature; rather, serve one another in love' (Gal. 5:13).

Conclusion

As a young person explores the roles and responsibilities of life, they will make decisions that affect what sort of person they will become, and they will inevitably be drawn into taking responsibility for those decisions. How they choose to live will have real consequences for them in the future, but living in partnership with the Holy Spirit of freedom will enable them to choose what is right.⁴²

In this way, for the one who asks questions and seeks to explore and understand God's world, there is a chance in Test of FAITH to grow in wonder and awe at a God who loves his creation and the people he made in his image.

It is at this point that the Test of FAITH programme comes full circle, arriving back at the engagement between science and faith. At heart, the relationship between the two is not a conflict between competing worldviews, but rather gives an opportunity for deeper understanding of, and value for, humankind.

42. Gal. 5:16

Taking it further

Articles to download⁴³

John Bryant, 'Don't My Genes Determine My Behaviour?'
www.eauk.org/resources/idea/bigquestion/archive/2005/bq9.cfm

Denis Alexander, 'Cloning Humans – Distorting the Image of God?'
www.jubilee-centre.org/document.php?id=32&topicID=0

Websites

Ethics resources from the American Scientific Affiliation
www.asa3.org/ASA/topics/ethics/default.html

The Christian Medical Fellowship (UK)
www.cmf.org.uk

BioCentre (formerly The Centre for Bioethics and Public Policy) (UK)
www.bioethics.ac.uk

Center for Bioethics and Human Dignity (USA)
www.cbhd.org

Books

John Bryant and John Searle, *Life in Our Hands: A Christian Perspective on Genetics and Cloning* (IVP, 2004). With an eye to the practical application of new technologies, Bryant and Searle lay out the ethical dilemmas facing biological scientists, and explore the theological implications. They outline the ethical position that they have reached on each issue, but not before showing the various positions that Christians take, and emphasizing how difficult it can be to decide in matters which affect life and death.

Tony Watkins (ed.), *Playing God: Talking about Ethics in Medicine and Technology* (Authentic/Damaris Publications, 2006). *Playing God* tackles ethical issues in a different way, following the Damaris route of using films and books – including a television medical drama, Jodie Picoult's *My Sister's Keeper*, the writings of Isaac Asimov, Margaret Atwood's *Oryx and Crake*, and the ethics of Peter Singer – to discuss the topics. This is an easy but thought-provoking read and could be the basis for a group study.

Pete Moore, *Babel's Shadow: Genetic Technologies in a Fracturing Society* (Lion, 2000). Written by a biologist who is an experienced science writer and ethics lecturer, this book covers the broad issues involved in decisions concerning genetics and its medical applications. Although written before the completion of the Human Genome Project, the principles here still apply. This book is an excellent and very readable introduction to the topic.

John Wyatt, *Matters of Life and Death: Today's Healthcare Dilemmas in the Light of Christian Faith* (IVP, 1998). In writing this book, John Wyatt draws on his experience as Professor of Neonatal Paediatrics and Consultant Neonatal Paediatrician at University College London. This is a very thorough introduction to the issues, and draws on a lot of biblical material. It covers reproductive technology, foetal screening, genetics, abortion, neonatal care and euthanasia.

43. Taken with permission from *Test of FAITH Leader's Guide* (Paternoster, 2009), p. 90.