CHRISTIANS AND EVOLUTION

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Christian Scholars Change Their Mind

Edited by **Professor R. J. Berry**

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Foreword

Bible-believing Christians are possibly more divided about evolution than over any other subject. How ought we to interpret Genesis 1–3? Were there men and women before Adam? Did virtually all life perish in a global flood? How should we regard scientific understanding – the age of the earth, the fossil record, the implications of molecular genetics? Did Charles Darwin make reasoned faith impossible? Many have written on these things, making the case for one or another answer. This book is not concerned to argue any particular point of view. It simply sets out the testimonies of a group of assorted Christians and how they have reconciled their faith with scientific understanding. For some it involved a long and painful struggle; for others the pieces of the jigsaw fell more easily into place. Some issues occur again and again, but underlying every contribution is a recognition that accepting the authority of the Bible requires also an interpretation of its meaning; and the confidence that, with the Spirit's help, a determined search for an informed faith in the twenty-first century need not be in vain; biblical authority and current evolutionary science are not – and should not be – inevitably opposed. There will be some who will be uncomfortable with the testimonies herein, but it would be reckless and pastorally dangerous to ignore them. Hopefully there will be those who will be helped in their own spiritual journey and growth into maturity.

However, we have to recognize that questions about evolution have wider pastoral and evangelistic implications. One of the

main reasons that teenagers feel disconnected from their church is a tension they feel between Christianity and science, and an impression (rightly or wrongly) that churches do not understand scientific issues. Probably the most acute of these issues is that of origins and the evolution-creation debate. It is no help to a questioner merely to point to Bible texts and insist on their truth.[1] We must be able to interpret and expound the Bible in ways which are consistent not only with itself but also with God's "other book", his Book of Works – which is creation, the study-book of science.

R. J. Berry

[1] Petteri Nieminem, Anne-Mari Mustonen and Esko Ryökäs (2014). Theological implications of Young Earth Creationism and Intelligent Design: emerging tendencies of scientism and agnosticism. *Theoology and Science*, 13: 260–84.

INTRODUCTION

In the Beginning God

R. J. (Sam) Berry was Professor of Genetics at University College London 1978–2000. He is a former president of the Linnean Society, the society to which Darwin's announcement of evolution by natural selection was made in 1858 and where the then president announced that "the year that has passed has not been marked by any of those discoveries which at once revolutionize the science on which they bear". He has also served as president of Christians in Science, an organization whose aim is "to develop and promote biblical Christian views on the nature, scope and limitations of science, and on the changing interactions between science and faith". He is the author of *God and Evolution* (Regent, 2001) and *God and the Biologist* (Apollos, 1996), and editor of *The Lion Handbook of Science and Christianity* (2012).

This book is the stories of eighteen people – all of them Christians and all but two of them scientists – who have wrestled to resolve their personal conflicts over evolutionary science and Christian faith. The contributors have been intentionally chosen to reflect a variety of backgrounds and Christian experience. The issue of how God works in the world which He created is not something peculiar to any one group. It is something that every Christian who takes the Bible seriously has to face. The testimonies

here are presented in the hope that the difficulties – and often misunderstandings – described will help those facing their own tensions and having to make their own decisions over evolution. The book concludes with a review of academic studies of people who have faced problems about faith and evolution from a professional educationalist, and an epilogue from a distinguished theologian.

As far as I am concerned, I only met the evolution-creation debate two or three years after I became a Christian in my teens. Following my conversion, I was happy to accept that God had made the world and its contents, and I never bothered to think how this related to the actual creation in which we live. I was brought up short at university by a friend announcing he could never become a Christian, because "it would mean not believing in evolution". I was flabbergasted. What did a set of scientific ideas have to do with eternal life? I can't remember our subsequent discussion, but I know it prompted me to find out what the Bible said on the subject and to see how this debate had arisen.

It is said that the only doctrine upon which all Christians agree is that God is the creator of everything. I don't know whether this is true, but there is no doubt whatsoever that Christians are very divided about *how* God created. These divisions are the subject of this book: Christians from a range of backgrounds and experiences describe how they have faced up to understanding God's creating work, and for some of them, the pain they went through in arriving at their final conclusion. It is not irrelevant that most of them are scientists, trained in evaluating evidence and exploring different explanations of phenomena.

How cause and effect (or creator and creation) relate to each other is an old problem, but advances in science have made us

increasingly aware and interested in mechanisms of all sorts. Four centuries before Christ, Aristotle identified the possibility of four different causes for an event. Notwithstanding, the biblical writers say very little about causes. They thought of the world as being as it always has been, "established immovably" (Psalm 96:10), with the sun moving daily from east to west under a solid sky (Psalm 19:6). God was in heaven "up there". The idea that the earth was a sphere rather than a flat disc was understood by Greek astronomers from at least the third century BC and was accepted by most scholars in the Christian era, but the notion that the earth goes round the sun and that the sun is only a minor star in an immense universe came much later. Copernicus proposed the idea of a moving earth in 1543, but it took another century before Galileo's telescope gave experimental backing to the concept.

The Bible does not even tell us when creation began. The traditional date is that it was relatively recent, perhaps 6–10,000 years ago. The date most people remember is 4004 BC, proposed by Archbishop Ussher in 1650 on the basis of the genealogies in Genesis and Luke, but there are many other calculations giving similar answers. However, questions about such dates became more acute towards the end of the eighteenth century. The fossils of marine organisms high in mountains indicated that the earth must have gone through major changes in its past. The recognition of different rock strata stretching over large distances with their own characteristic fossil faunas implied a long time span. The identification of geological discontinuities built on this, indicating that there had been changes in rock formations. Before the development of radioactive decay techniques, there was no way of knowing the actual dates when these events took place, but by the beginning of the nineteenth century there was general agreement

about a long period of "deep time" – and acceptance of this by Bible scholars.[1] In 1890, Princeton professor William Green

> *conclude[d] that the Scriptures furnish no data for a chronological computation prior to the life of Abraham; and that the Mosaic records do not fix and were not intended to fix the precise date either of the Flood or of the creation of the world.*

Francis Schaeffer has written similarly, "Prior to the time of Abraham, there is no possible way to date the history of what we find in Scripture."[2]

Assuming that we take the Bible seriously and in some way as God's revelation to us, how are we to interpret the creation stories in the light of this "deep time"? There are some (Young Earth Creationists) who insist that "deep time" does not exist. They maintain we must read the accounts of creation in the first two chapters of Genesis as literal history and that creation did in fact take place a few thousand years ago. Any geological changes must therefore be recent, mainly as a result of Noah's flood. Probably most people disagree with this interpretation and accept that the earth has indeed had a long history. Many Christians consent to this, but believe that God directly intervened on occasions during this time to produce our present world and its organisms (Old Earth Creationists). Then there are those who accept that evolutionary change has happened in both the geological and biological past as described by science, but insist that it has been overseen and ultimately under the sovereignty of God (Theistic Evolutionists, or

[1] Cherry Lewis and Simon Knell (eds), *The Age of the Earth: From 4004 BC to AD 2002*, London: Geological Society of London, 2001.

[2] Francis Schaeffer, *Genesis in Space and Time*, Leicester: IVP, 1972, p. 124.

Evolutionary Creationists). Finally, there are some who deny that the beautiful and detailed adaptations that we find in the natural world can arise from known scientific mechanisms and require a "designer" to intervene occasionally as required (Intelligent Design theorists). This four-fold grouping is not exact. Each group contains individuals with different nuances or emphases and there are no fixed boundaries between the groups; indeed Intelligent Design adherents have largely replaced Old Earth Creationists over the last few decades. However, the four positions need to be examined from two very different challenges: biblical interpretation and understanding God's workings in His world.

How should we interpret Genesis 1–11? Is it legitimate to take these chapters as conveying truth but not literal history like the Battle of Hastings or the emancipation of slaves? In the *Word Biblical Commentary* on Genesis, Gordon Wenham calls Genesis 1–11 "paradigmatic and protohistorical".[3] What about the "days" in Genesis 1? Are they literal 24-hour periods or can they have some other significance? Many have treated them as indicators of the passage of time – perhaps even geological eras. Another interpretation has been that the "waste" or "chaos" mentioned in Genesis 1:2 describes the beginning of the present dispensation following the demolition of previous creations (such as almost happened prior to Noah's flood: Genesis 6:7). This means that the Genesis "days" need not be understood as primary creation events. This "day-gap" (or "ruin-restoration") theory used to be widely accepted by evangelicals because they learned it from the notes in Schofield's Reference Bible. A very different proposal is that the "days" indicate days of "revelation" to whoever

[3] Gordon J. Wenham, *Word Biblical Commentary*, Nashville, TN: Thomas Nelson, 1987.

received them from God (traditionally Moses).[4] Arguably most compelling is to recognize that the creation account has a literary shape – the six days represent two triads – days one to three are days of separation (or shapelessness) and are followed by three days of adorning (or filling): the light of day one is matched by the luminaries of day four; the creation of the expanse of the sky and the separation of the waters (day two) corresponds to their occupation by winged animals and fish in day five; and the appearance of the dry land and vegetation (day three) corresponds to the appearance of the land animals, including humankind (day six).

However, by concentrating on days one to six, we tend to neglect day seven – the day of rest, a concept of high significance in the culture and practice of the ancient Israelites (Exodus 16:23–29; 20:8–10; 23:10–12; 31:12–17; Leviticus 23:3; 25:1–22; Nehemiah 9:14; 10:31; Isaiah 58:13; Mark 2:27; Hebrews 4:9 etc.). Calvin comments on the seventh day, "After the world was created, man was placed in it as in a theatre, that he, beholding the wonderful works of God, might reverently adore their Author." Old Testament scholar John Walton suggests that the whole creation narrative would imply God and His dwelling-place to its first readers – and that the whole of creation would have no sense if God was not in His Temple, which is why day seven is crucial to the whole.[5]

This interpretation from Walton should recall us to one of the first principles of biblical interpretation: to ask what the text would have meant to its original readers. We need to be very

[4] Peter Wiseman, *Creation Revealed in Seven Days,* London: Marshall, Morgan & Scott, 1948.

[5] John Walton, *The Lost World of Genesis One: Ancient Cosmology and the Origins Debate,* Downers Grove, IL: IVP Academic, 2009.

clear: the Bible cannot be written as if it is a twenty-first century textbook. It must be in language that can be understood by people of all generations; this recognition is crucial wherever there is a potential overlap or conflict with science. It is often said that the Bible uses "phenomenological" language. We do the same. We speak of the sun rising or setting, whereas the physical reality is that the visibility of the sun is the result of the rotation of the earth and nothing to do with the movement of the sun itself. In the IVF *New Bible Commentary*, Ernest Kevan wrote:

> *The biblical record of creation is to be regarded as a picturesque narrative, affording a graphic representation of those things which could not be understood with the formal precision of science. It is in this pictorial style that the divine wisdom in the inspiration of the writing is so signally exhibited. Only a record presented in this way could have met the needs of all time.*

In the second edition of the same commentary, Meredith Kline argued similarly: "The prologue's (Genesis 1:1–2:3) literary character limits its use for constructing scientific models, for its language is that of simple observation and a poetic quality, reflected in the strophic structure, permeates the style." To quote Francis Schaeffer again:

> *We must remember the purpose of the Bible: it is God's message to fallen men ... The Bible is not a scientific textbook if by that one means that its purpose is to give us exhaustive truth or that scientific fact is its central theme and purpose. Therefore, we must be careful when we say we know the flow of history: we must not claim, on the one*

> *hand, that science is unnecessary or meaningless, nor, on the other hand, that the extensions we make from Scripture are absolutely accurate or that these extensions have the same validity as the statements of Scripture itself.*[6]

John Bimson summarizes the meaning of Genesis 2 and 3:

> *The narrative refers to a real event within history. But it does so with great literary freedom in language that is culturally encoded, symbolic and metaphorical. Put simply, it speaks of a real disruption at the start of the human story, but does not require us to believe this involved two people, a piece of fruit and a talking snake.*[7]

In the light of these caveats about interpretation and particularly the need to avoid treating the creation stories as if they were science in the modern sense, why do debates about creation and evolution raise so many problems? Is it completely out of the question that God used scientifically investigable evolutionary mechanisms to work out His purposes? The Bible repeatedly records God's use of natural processes. He provides food and habitats for the animals (Job 39:6–8, 27, 28; Psalm 104:10–14, 17–18; 147:9; Matthew 6:26) – even for carnivores, such as lions (Psalm 104:21); He controls the weather (Psalm 147:16–18; Matthew 8:26–27; Acts 14:17). We are rarely told anything about the methods God uses, but even in His miracle-working He is sometimes recorded as using natural forces, as when He "drove the sea back with a strong east wind", so allowing the

[6] *Op. cit.*, pp. 35–36.

[7] "Doctrines of the Fall and Sin after Darwin", in Michael Northcott and R. J. Berry (eds), *Theology After Darwin*, Milton Keynes: Paternoster, 2009, pp. 106–122, p. 109.

fleeing Israelites to escape their pursuers (Exodus 14:21, NIV). It is sometimes objected that evolution by natural selection is wasteful and cruel and therefore inappropriate for a loving God, but this is not a compelling argument; it is not for us to judge the methods that God uses for His purposes.

1859 and all that

What about Charles Darwin himself? Was he a devil incarnate? What did his actual contributions amount to? It is important to distinguish between the *fact* that evolutionary change has occurred and the *mechanism(s)* by which it comes about. The *fact* of evolution was freely discussed before the *Origin of Species* appeared in 1859. Darwin lists in the *Origin* thirty-four authors who had proposed evolution in one way or another before him. One of his achievements was to present an enormous amount of evidence that it had in fact happened. There was little dissension at the time about this *fact*. Darwin's originality was to propose (together with Alfred Russel Wallace) natural selection as the mechanism by which adaptation to the environment could take place and hence evolutionary change occur.

Like any new idea, this suggestion had a mixed reception, but most readers of the *Origin* seem to have reacted positively. Charles Kingsley, Regius Professor of Modern History at Cambridge, wrote "God's greatness, goodness and perpetual care I never understood as I have since I became a convert to Mr Darwin's views". The Bishop of Carlisle, preaching at Darwin's funeral in Westminster Abbey, proclaimed:

> *It would have been unfortunate if anything had occurred to give weight and currency to the foolish notion which some*

> *have diligently propagated, but for which Mr Darwin is not responsible, that there is an necessary conflict between a knowledge of Nature and a belief in God.*

Darwin wrote to his friend, the Harvard botanist Asa Gray:

> *I cannot be contented to view this wonderful universe and especially the nature of man, and to conclude that everything is the result of brute force. Not that this notion at all satisfies me. I feel most deeply that the whole subject is too profound for the human intellect … I can see no reason, why a man, or other animal, may not have been aboriginally produced by other laws; and that all these laws may have been expressly designed by an omniscient Creator, who foresaw every future event and consequence. But the more I think the more bewildered I become.*

Near the end of his life, he commented: "It seems to me absurd to doubt that a man may be an ardent Theist and an evolutionist. In my most extreme fluctuations I have never been an atheist in the sense of denying the existence of a God." One of his last letters was to William Graham, Professor of Political Economy in Belfast, in which he declared "my inward conviction [is] that the Universe is not the result of chance".

The infamous debate between the Bishop of Oxford and Thomas Huxley at the 1860 meeting of the British Association for the Advancement of Science was not really about evolution *versus* creation or even science *versus* religion. On the bishop's side it was about the danger of legitimizing change in an age when he believed it was having deleterious social and theological effects; Huxley's agenda was the secularization of society, trying

to establish the legitimacy of science against what he regarded as the improper influence of church leaders. The two were really talking across each other rather than against the other. Certainly the debate is routinely misrepresented; as far as the audience on the day was concerned, many scored it as an entertaining draw. It was reported that the bishop (Samuel Wilberforce) went away happy that he had given Huxley a bloody nose, while Joseph Hooker (who spoke after Huxley) told Darwin that Huxley had been largely inaudible.[8] Despite this, the common understanding – and lasting tragedy – has been a legacy of inevitable conflict between science and faith, encouraged by Huxley himself, fuelled by two much-read (and much criticized) manifestos by John William Draper (*History of the Conflict between Religion and Science*, 1875) and Andrew Dickson White (*A History of the Warfare of Science with Theology in Christendom*, 1886), and regularly regurgitated by the media.

Darwin's ideas were apparently accepted more readily by conservative theologians than by liberals, probably because of their stronger doctrine of providence.[9] Ironically, in view of later history, many of the authors of the "Fundamentals", a series of booklets produced between 1910 and 1915 to expound the "fundamental beliefs" of Protestant theology as defined by the General Assembly of the American Presbyterian Church, were sympathetic to evolution. One of the contributors (G. F. Wright) wrote: "If only the evolutionists would incorporate into their system the sweetness of the Calvinisitic doctrine of

[8] John Hedley Brooke, "The Wilberforce-Huxley Debate. Why Did It Happen?", *Science & Christian Belief*, 13 (2001), pp. 127–141.

[9] David Livingstone, *Darwin's Forgotten Defenders: The Encounter Between Evangelical Theology and Evolutionary Thought* , Grand Rapids, MI: Eerdmans, 1987.

Divine Sovereignty, the church would make no objection to their speculations." Princeton theologian B. B. Warfield, a passionate advocate of the inerrancy of the Bible, argued that evolution could provide a tenable "theory of the method of divine providence in the creation of mankind".

Historian Owen Chadwick judged that "the compatibility of evolution and Christian doctrine was increasingly acknowledged 'among more educated Christians' between 1860 and 1885; after 1876, acceptance of evolution was both permissible and respectable." A generation after the *Origin* appeared, it was said there were only two "working naturalists of repute" in North America who were not evolutionists. In 1889 Oxford theologian Aubrey Moore made the somewhat startling claim that Darwin did the work of a friend under the guise of a foe by making it impossible to accept the image of an occasionally interfering absentee landlord. For Moore, Darwinism

> *is infinitely more Christian than the theory of "special creation" for it implies the immanence of God in nature, and the omnipresence of His creative power … Deism, even when it struggled to be orthodox, constantly spoke of God as we might speak of an absentee landlord, who cares nothing for his property so long as he gets his rent. Yet nothing more opposed to the language of the Bible and the Fathers can hardly be imagined.*

Reasons for dissension

In the light of this history, it seems odd at first sight that evolution remains so contentious for Christians. Why is this so? There are at least six reasons.

1. A technical problem that troubled Darwin himself was that natural selection depends on the availability of variation between individuals, and variation seems to be lost in every generation, because offspring tend to be intermediate between their parents. This was a misunderstanding and was resolved by the discovery of particulate inheritance – that inherited elements (genes) are transmitted unchanged between generations. The appearance of blending arises because the expression of every gene is modified by other genes. This was the essence of Gregor Mendel's work, published in 1865 but only realized as significant when it was "rediscovered" in 1900. But in solving one problem, it raised another for the Darwinians: the genes studied by the early geneticists (or Mendelians, as they were called) were almost all deleterious to their carriers, had large effects, and were inherited as recessives – all properties which seemed counter to the progressive gradualism expected under Darwinism. A rift appeared between the biometricians studying the evidence of evolution in living or fossil populations and the geneticists who were unquestionably exploring the physical basis of heredity.

This impasse persisted and widened through the first decades of the twentieth century. There were no real doubts that large-scale evolution had occurred, but it did not seem to have been driven by natural selection. Vernon Kellogg spoke of "the death-bed of Darwinism" in his introduction to a book written for the Jubilee of the *Origin.* Into this apparent void, an extravagance of other evolutionary theories poured: Berg's nomogenesis, Willis's age and area, Smut's holism, Driesch's entelechy, Osborn's aristogenesis and orthogenesis. Their common feature was some form of inner progressionist urge or *élan vital.* Three standard and still-read histories of biology (by Nordenskiöld in 1928,

Rádl in 1930, and Singer in 1931) were written during this time, perpetuating the idea that evolutionary theory is an illogical mess and that Darwinism is completely eclipsed.

The irrelevance of this frenzy of evolutionary speculating was exposed in the 1920s by a series of theoretical analyses by R. A. Fisher and J. B. S. Haldane in Britain and Sewall Wright in the United States, supported by studies of inherited variation in natural populations by E. B. Ford in Britain and Theodosius Dobzhansky in the USA. Their conclusions, together with results from many other sources, were brought together by Julian Huxley in a summarizing volume, *Evolution: The Modern Synthesis*[10] which showed how Mendelian genetics and the insights of Darwin were completely reconcilable. As is proper for any scientific consensus, this neo-Darwinian synthesis has been challenged on various occasions (particularly by discoveries in molecular genetics in the 1960s and 1970s), but remains scientifically robust.

Unfortunately – but perhaps not unreasonably – the scientific doubts of the early 1900s were taken as permanent defects by Christians who saw Darwinism as removing the creator God from His world, an assumption which enabled Richard Dawkins to write that "although atheism might have been tenable before Darwin, Darwin made it possible to be an intellectually fulfilled atheist". This is probably the reason for the recent popularity (particularly among evangelicals) of "Intelligent Design" as a way of smuggling God back into His world.

2. Theologians had a different problem. It concerned the fact rather than the mechanism of evolution. The problem

[10] Julian Huxley, *Evolution: The Modern Synthesis*, London: George Allen & Unwin, 1942.

was the Fall. Ironically it was highlighted by an atheist, Robert Blatchford, writing in 1903:

> *Accepting evolution, how can one believe in a Fall? When did man fall? Was it before he ceased to be a monkey, or after? Was it when he was a tree man, or later? Was it in the Stone Age, or the Bronze Age, or the Age of Iron? And if there never was a Fall, why should there be any atonement?*

Taking his cue from Blatchford, the energetic and self-publicizing Adventist George McCready Price proclaimed, "No Adam, no Fall; no Fall, no Atonement; no Atonement, no Savior", using this clarion call to build on the version of extreme literalism espoused by the first generation of Seventh-day Adventists.

Price's legacy fuelled (and continues to fuel) anti-evolutionism among conservatives. By the end of the 1920s, three American states (Tennessee, Mississippi, and Arkansas) had passed laws banning the teaching of evolution in government-funded schools. In Dayton, Tennessee, John Scopes was convicted in 1925 in the notorious "Monkey Trial". The negative publicity from this proved a disaster for anti-evolutionists,[11] and organized "creationism" in the US lapsed into relative quiescence for several decades. This uneasy peace was shattered in 1961 with the publication of *The Genesis Flood*, a highly influential book written by John Whitcomb, a Bible teacher, and Henry Morris, a hydraulic engineer.[12] It rapidly became a key text for Young Earth Creationism. The authors rejected the established findings

[11] Edward Larson, *Summer for the Gods,* Cambridge, MA: Harvard University Press, 1998.

[12] John C. Whitcomb and Henry M. Morris, *The Genesis Flood*, Grand Rapids, MI: Baker, 1961.

of geology, palaeontology, and archaeology on the grounds that the world has been so ravaged by a worldwide flood that (they claimed) orthodox stratigraphy cannot be applied. They argued that Genesis tells of a canopy of water which surrounded the early earth and protected its surface from cosmic rays, accounting for the long lives of the patriarchs, and then provided the waters for Noah's flood. Such Young Earth Creationism continues to attract a large number of adherents; Bibles are still produced with the date "4004 BC" heading the references at the beginning of Genesis.

3. Another problem was the seeming randomness of evolution. The idea that evolution might be driven by some sort of purpose was influentially espoused by several distinguished scientists – the zoologist Ray Lankester and the physiologist J. S. Haldane, the psychologists Lloyd Morgan, William McDougall, and E. S. Russell, physicists such as Oliver Lodge, and the cosmologists A. S. Eddington and James Jeans; as well as by popularizers such as Arthur Thomson and politicians such as Arthur Balfour. Not surprisingly with such apparently informed authorities, these ideas were seized upon by churchmen, prominent among them being Charles Gore, and somewhat later W. R. Inge, Hensley Henson, R. J. Campbell, Frederick Tennant, Charles Raven and E. W. Barnes in Britain, and Shailer Mathews and Harry Fosdick in the US. This optimistic progressionism flourished for a time but then died through the perceived ineffectiveness of the theology rather than conscious rejection:

> *The Modernists saw themselves marginalized not by the new science, of which many remained unaware, but by*

> *changing values within the churches, which brought back a sense of human sinfulness and alienation from God incompatible with the idea of progress.*[13]

One can have some sympathy with the theologians. It took the scientists a long time to reach an evolutionary synthesis and deal with the apparent purposelessness of evolution,[14] but this does not excuse uncritical use of inadequate science.

4. There is no doubt that evolutionary processes can be described without invoking any metaphysical agent. This is the message trumpeted by Richard Dawkins and other so-called "new atheists". It certainly makes many Christians uncomfortable and leads to them trying to find room for God somewhere in the evolutionary mechanism, most commonly in somehow directing the nature of mutational events. But behind this is a bigger worry: is God necessary? Is evolution wholly naturalistic? Has the demise of Paley's watchmaker meant that God is irrelevant in and therefore excluded from the evolutionary process? This problem is compounded by some Christian apologists defining "naturalism" (the assumption that the laws of nature determine natural events) in an unnecessarily limited way – as implying the non-existence of any supernatural agent. This is a wholly arbitrary restriction. It has been answered powerfully on philosophical grounds by Elliott Sober.[15]

The concern about naturalism seems to be the reason for the popularity of "Intelligent Design" (ID). Although vehemently

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[13] Peter Bowler, *Monkey Trials and Gorilla Sermons*, Cambridge, MA: Harvard University Press, 2007, p. 187.

[14] Simon Conway Morris, *Life's Solution: Inevitable Humans in a Lonely Universe,* Cambridge: Cambridge University Press, 2003.

[15] Elliott Sober, *Did Darwin Write the Origin Backwards?*, New York: Prometheus Books, 2011.

denied by its proponents, ID is really a "God-in-the-gaps" argument – invoking divine action to explain gaps in scientific understanding. The problem is that any advance in knowledge which reduces the size of such gaps means less room for God. ID first came to general awareness in the book *Darwin on Trial*,[16] written by a Californian lawyer, Phillip Johnson, explicitly reacting against the naturalism of Richard Dawkins and some rather sophisticated criticisms of conventional evolutionary theory by palaeontologist Colin Patterson and biochemist Michael Denton. The main complaint of Johnson and his followers was not evolution as such, but the assumption that belief in evolution leads inevitably and inexorably to atheism. A scientific case for ID has been claimed by Michael Behe on the grounds that some biological mechanisms and processes are "irreducibly complex" and incapable of evolution by natural selection.[17] Behe's examples have received short shrift from reviewers; they are in fact standard God-in-the-gaps proposals, never mind reviving the classical argument of God as a Divine Watchmaker, periodically adjusting the functioning of His work.

ID has a much wider acceptance in Christian circles than it warrants. The reason for this probably lies in its seductiveness in apparently finding a place for a "hands-on" God, one who is an artificer as well as a creator and redeemer. This is an understandable and laudable ambition, but it portrays a God who is far too small; one who cannot really be understood as sustainer as well as creator (Psalm 104:28–30; Colossians 1:17; Hebrews 1:10–12). We need to recognize that…

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[16] Phillip Johnson, *Darwin on Trial*, Leicester: IVP, 1991.

[17] Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution*, New York: Free Press, 1996; *The Edge of Evolution*, Free Press, 2007.

> *The God in whom the Bible invites belief is no "Cosmic Mechanic". Rather is he the Cosmic Artist, the creative Upholder, without whose constant activity there would be not even chaos, but just nothing ... To invoke "natural processes" is not to escape from divine activity, but only to make hypotheses about its regularity.*[18]

5. The understanding of evolution in (particularly) North America is further complicated by sociological assumptions under the guise of science. Darwin's contemporary, Herbert Spencer, sought to synthesize biology, physics, philosophy, and sociology into a single entity, which he called "Social Darwinism". This argued that "progress" was inevitable; that whatever existed was "natural" – the rich were rich and the poor were poor because of "natural law". It was an explanation that fitted nicely with Karl Marx's belief that the proletariat would "naturally" come to deserved power one day, and also with a need for eugenics to counteract allegedly inexorable processes of genetic deterioration. Paradoxically Spencer's arguments were also welcomed by industrial leaders, typified by John D. Rockefeller's perception that…

> *The growth of a large business is merely survival of the fittest ... [Forcing small companies out of business] is not an evil tendency in business. It is merely the working-out of a law of nature and a law of God.*

This "Social Darwinism" horrified the poor – they were now disinherited by God as well as by the often rapacious economic system. It accorded with the assumption that anyone who wants

[18] Donald MacKay, *Science and Christian Faith Today*, London: Falcon, 1960.

to succeed, can succeed; but it disadvantaged the yeoman farmer or the struggling employee. It became associated with the idea of inevitable success to those who strived righteously, and was promoted by preachers who emphasized human endeavour leading to success as distinct from the scriptural doctrine of failure needing grace. To those who rejected this sub-Christian set of beliefs, it followed naturally that evolution could not be countenanced. Perhaps acceptance of evolution itself was a sin. Anti-evolutionism became – and remains – linked to conservative theology and thought. Pollsters strengthen this polarization by asking if people believe in evolution or the Bible, implying the necessity of choice between two alternatives.

6. Finally there is a widespread misunderstanding about the possibilities and limits to science. It is not true that science can answer any possible question. Nobel Prize winner Peter Medawar has strongly argued for the need to recognize "that science should not be expected to provide solutions to problems such as the purpose of life or the existence of God". He professes no doubts that "there is no limit upon the power of science to answer questions of the kind that science *can* answer", *but* that science has

> *limits is shown by the existence of questions that science cannot answer and that no conceivable advances of science would empower it to answer ... it is not possible to derive from the axioms and postulates of Euclid a theorem to do with how to cook an omelette or bake a cake.*[19]

Medawar's argument is particularly convincing, because he is not trying to defend a religious position. He records his personal regret concerning "my disbelief in God and religious answers

[19] Peter Medawar, *The Limits of Science*, Oxford: Oxford University Press, 1984.

generally, for I believe it would give satisfaction and comfort to many in need of it if it were possible to discover good scientific and philosophic reasons to believe in God." Notwithstanding, he entirely accepted that "metaphysical (i.e. abstract or supernatural) questions are not nonsense nor bunk; it can be and has been a source of scientific inspiration and of fruitful scientific ideas."

Onwards to maturity with science and Bible

What then is the relationship between scientific knowledge (including evolutionary processes) and divine activity? The most satisfactory solution seems to be that they can be regarded as "complementary", a concept used by the physicist Niels Bohr to account for the paradoxical fact that light behaves as both a wave and a stream of particles. He wrote, "It must be realized that the attitudes termed mechanistic and finalistic are not contradictory points of view, but rather represent a *complementary* relationship which is connected with our position as observers of nature." The words on this page have a purpose in communicating (hopefully) certain ideas, but they can also be described in terms of chemical pigments on a contrasting background: two different but non-competing explanations of the same physical object. Donald MacKay is probably the person who has most explored the theological implications of complementarity. He wrote:

> *What we call physical laws are expressions of created events that we study as the physical world. Physically they express the nature of the entities "held in being" in the pattern. Theologically they express the stability of the great Artist's creative will. Explanations in terms of scientific laws and in terms of divine activity are thus not rival answers to the same*

> *question; yet they are not talking about different things. They are (or at any rate purport to be)* complementary accounts *of different aspects of the same happening, which in its full nature cannot be explained by either alone ... To invoke "natural processes" is not to escape from divine activity, but only to make hypotheses about its regularity ... (For example, we cannot settle the validity of our ideas in geometry by discussing the embryological origin of the brain!).*[20]

This approach enables us to describe and analyze an event in as quantitative and rigorous a way as possible, but also to acknowledge God's hand in and control of it. An enormous benefit of the complementarity model is that it allows a traditional and robust understanding of God's providence. It permits a God who is outside time as well as space. To picture God outside time is not to imagine Him inactive or uninvolved, but as seeing creation – its complete span of space and time – as a whole. In the context of evolution, it is entirely logical to believe in God as creator and sustainer and simultaneously accept a conventional scientific account.

A good scientific theory is one which explains more than the data that brought it into being and which suggests further ideas. The same applies to faith. This was beautifully expressed by C. S. Lewis, who wrote "I believe in Christianity as I believe the sun has risen, not only because I see it, but because by it I see everything else." There is of course much more to the Christian faith than intellectual coherence, but it is one of the joys and excitements of being a Christian. The testimonies recorded in this book describe the struggles of a mixed group of Christians to make sense of creation. A key test is congruence:

[20] *Op. cit.,* p. 10.

do evolutionary ideas help or hinder understanding? Darwin's work brought coherence to many more facts than those set out in the *Origin of Species*. Evolutionary concepts can be regarded as like the string holding together the pearls in a necklace. For the Christian, the awe and respect which creation inspires in us is surely increased by the study of the natural world, and through this the ability, in Johannes Kepler's words, "to think God's thoughts after Him".

Understanding and caring for creation

Christ on the cross reconciled *all things* to Himself, *all things*, whether on earth or heaven (Colossians 1:20). "Creation" and "evolution" are not mutually exclusive concepts. As a wise Christian once said, "When I meet my Maker, He is unlikely to ask me how He made the world; but He is very likely to ask me how I treated it." Our calling is to care for God's creation (Genesis 2:15; Psalm 115:16), not to indulge in interminable myths and genealogies (1 Timothy 1:4). We all have to make up our own minds how best to do this. There is a longstanding tradition that God wrote two books – a book of Words (the Bible) and a book of Works (creation). They have the same author but are written in very different languages. It is a mistake which almost certainly will lead to error if we read only one of them.

Denying evolution is theologically unnecessary and intellectual nonsense. Worse, it is also pastorally and evangelistically counterproductive. Sixteen centuries ago, Augustine of Hippo railed against such an attitude:

> *It is a disgraceful and dangerous thing for an infidel to hear a Christian, presumably giving the meaning of Holy*

> *Scripture, talking nonsense on these topics [the natural world] ... To defend their utterly foolish and obviously untrue statements, they will try to call upon Holy Scripture for proof and even recite from memory many passages which they think support their position, although they understand neither what they say nor the things about which they make assertions.*

Those brought up as Christians are likely to have begun with "stories" about God and His work, stories about a garden, a talking serpent, a flood, a fantastic tower; it is spiritually dangerous to remain unweaned, unable to understand and reinterpret the stories of our infancy (1 Corinthians 13:11; Hebrews 5:12 – 6:8). Let us be transformed by the renewal of our minds. Then – perhaps only then – will we be able to discern the will of God, and to know what is good, acceptable, and perfect (Romans 12:2).

Note

Besides the many works published by either "creationists" or "evolutionists" to justify their own position, there have been a number of attempts to mediate between the two. Writers in the later nineteenth century such as Frederick Temple (*The Relations Between Religion and Science,* Macmillan, 1885) or Aubrey Moore (*Science and the Faith*, Kegan Paul, 1892) were more concerned to explore compatibilities than differences. In more recent times, one of the first to attempt mediation was Bernard Ramm (*The Christian View of Science and Scripture*, Eerdmans, 1954) who argued that God might have used evolution for His purposes. *The Genesis Flood* was produced in part as a reaction against Ramm's

work. Dutch zoologist Jan Lever argued similarly but more strongly than Ramm in the same period (*Creation and Evolution*, International Publications, 1958 [Original Dutch edition 1956]). The American Scientific Affiliation followed up Ramm's book in 1959 (*Evolution and Christian Thought*, edited by Russell Mixter, published by Paternoster). IVP published a multi-author book on *Creation and Evolution* (edited by Derek Burke, 1985) in a series "When Christians Disagree", with the two "sides" stating their case and commenting on the other.

A suggested list of recent books is given at the end of this volume for any who want to read further.

CHAPTER 1

He's Still Working on Me

Nick Higgs is a postdoctoral fellow at the Marine Institute of Plymouth University. He was born in the Bahamas but came to Britain for his schooling, going on to read Marine Biology at the University of Southampton, and then to study for a PhD at the University of Leeds in collaboration with the Natural History Museum in London. His research is on the ecology of chemosynthetic ecosystems.

He's still working on me,
To make me what I ought to be.
It took him just a week to make the moon and stars,
The sun and the earth and Jupiter and Mars.
How loving and patient He must be,
He's still working on me.

Joel Hemphill

I begin with a confession. This story is not about a radical change of heart or mind. At no point in my life could I honestly say that I did not accept the truth of evolution; rather it is about how I came to accept evolutionary theory despite growing up around people who were hostile to the very idea of evolution. I suspect that quite a few people experience exactly the same set of circumstances as I did, and I hope that my story may resonate with them.

Childhood perceptions

My childhood was spent on a tiny tropical island, one of the 700 or so which make up the Bahamas. "My" island was inhabited by around 1,500 other people that made up a close-knit fishing community. Christianity was intricately woven into its fabric. Virtually everyone on the island was a professing Christian, or at least believed in the Christian God – atheists were an alien curiosity. Depending on your particular inclination, you had a choice of Brethren, Southern Baptist or Methodist churches. My parents were active members of the last, and I have many happy memories growing up as part of a loving church family. This church environment, and to some extent that of the other churches on the island, shaped my early attitudes to faith, the Bible, and the world around me.

The Bahamas was a British colony until 1973 (my father was a British citizen) and undertones of British Methodism permeated the church culture. That said, the geographical proximity of the southern United States exerted a strong influence, and determined the flavour of the Christianity with which I grew up. All three denominations were pretty conservative in their teaching (the Methodist church perhaps the least of the three) with a wholly literalist understanding of the Bible and a strong emphasis on personal salvation. The Sunday school curriculum and teaching materials were imported wholesale from the American Bible belt. Evolution would have been seen as irrelevant at best and atheistic or wicked at worst. I have no recollection of evolution ever being discussed in my early childhood years, and later events (described below) suggest that my memory is accurate.

One of the great blessings of growing up in this environment was the hearty singing tradition. I grew up with traditional hymns, and many of the words still spring to mind in different situations. When I was a child, one of my favourite Sunday school songs was "He's Still Working on Me". I have no idea why it appealed to me, but it has stayed with me through the years. In many ways it encapsulates the tensions that I later faced when thinking about how evolution related to my faith. The first lines emphasize God's ongoing work in personally transforming my life while the following lines recall God's "week" of creation.

As well as a strong Christian upbringing, my childhood home afforded a close relationship with the rest of God's creation. I spent my early years in the Bahamas immersed in nature, whether chasing lizards, or hunting giant hermit crabs in the bush or watching fish at our dock. Like most men in the community, my father was a fisherman and I spent a lot of time on boats and diving on reefs. I wanted to be a marine biologist for as long as I can remember. This passion was responsible for getting me where I am today. Firstly, it drove my pursuit of a career in the natural sciences, inevitably plunging me into the maelstrom surrounding evolution and the Christian faith. Secondly, it allowed me to fully appreciate evolution when I was introduced to it later on. It seems to me that the better one's grasp of actual organisms and natural systems the easier it is to comprehend why evolution is such an elegant and powerful theory.

At the age of eight, I had no doubt that God created the world, and this took six literal days. But around the age of ten or twelve I noticed that some things in the Bible didn't quite add up. I still have my Youth Explorer Bible with carefully

handwritten notes in the back pages highlighting discrepancies that I had noticed between the different Gospel accounts of Jesus' genealogy and also the events of Easter morning in the garden where Jesus was buried. It struck me that in each regard one Gospel must be historically accurate and one not; obviously there was either one angel or two. Perhaps the Bible was not an inerrant factual textbook? Then there was the time when my older brother was told that the Bible was not literally written by God, but by humans inspired by God: "Huh! Well I don't believe any of that," he replied. He was being flippant but I remember thinking that there was a point here: humans are fallible. In addition, what I was reading in English seemed to vary depending on which Bible I looked at: I'd certainly never heard of "the prophet Jeremy" before (Matthew 27:9, King James Version)! There seemed to be more uncertainty in the Bible than I had been led to believe.

Of course, I now know that there are numerous possible explanations for the apparent incongruities. At the time though, none of this caused me to give up on studying the Bible or doubt its authority as the Word of God, nor was I disturbed enough to question an adult about these vagaries. Instead, I mulled these ideas over in my mind. I gradually began to understand that the Bible was a complex compendium of documents, each with a historical context. At some point I realized that when it "took him just a week to make the moon and the stars", it did not need to be taken literally to be meaningful. After all, the persons who wrote the text of Genesis could not have actually witnessed the creation that they describe.

Encountering evolution

At the age of twelve, my life took a different turn. I entered a boarding school in England. The school was located in rural Suffolk, and was surrounded by extensive parkland and woods where we were allowed to play and get our fill of the outdoors. I am thankful for this "right to roam", which maintained my connection with the natural world, albeit in a very different set of habitats from those of my earlier years. The school had been founded by the Methodist Church, which meant a certain amount of continuity in my Christian upbringing. However, few students were practising Christians. The school was a very different environment for me from both the religious and the social point of view. I had to learn how to talk and think about my faith from a new perspective.

My first encounter with evolution must have come during my GCSE year, when we had a few biology lessons on ecology and evolution. I cannot recall them, but I do remember my sixth form biology teacher instructing anyone who wanted to know more about evolution to read Richard Dawkins' book *The Selfish Gene*. The summer following my AS-level exams, I read with fascination and marvel about the intricacies of evolution in that well-crafted book. I was completely ignorant of Dawkins's views on faith, and I am grateful that I was able to read it without prejudice. I wonder if the same would be possible today, given his high-profile atheism. I am also grateful that my teacher (a devout Quaker) did not hesitate to recommend the book.

It is worth pointing out that at this stage, I had no indication that science and faith might be at odds with each other. I had a solid (albeit immature) grasp of the Christian faith, and I was beginning to understand evolution and other aspects of science

in earnest, yet there was no conflict in my mind. I suspect this was because the two strands of my thinking were developing in parallel to each other and failing to intersect.

My first introduction to the science-religion dialogue was a rather obscure one. During my A-level course in philosophy and ethics I had to write an essay and prepare a poster on a significant thinker, chosen from a select list. I opted for the Jesuit priest Pierre Teilhard de Chardin (1881–1955), included for his attempts to synthesize evolution and Christianity. The concept intrigued me – I had not considered the two together. Writing the essay and reading about Teilhard's work forced me to realize that my science and my faith were not two distinct phenomena but were actually closely linked. Both must be taken together. This monism, that the physical and spiritual aspects of nature are not distinct phenomena, was at the heart of Teilhard's writings. I was no expert on his philosophy, but I read enough of Teilhard's works to make a lasting first impression that helped me to understand how science, and evolution in particular, impacted my Christian faith.

There was another aspect of Teilhard that appealed to me: his frequent altercations with church authorities. At this time my adolescent liberalism was bringing me into strong disagreements with authority figures in my churches over issues such as female leadership; I felt a sense of solidarity with anyone who "pushed the envelope". Teilhard's thoughts were deemed too radical by the Roman Catholic Church of his time, which led to frequent bans on teaching and publishing his work. This culminated in a 1962 *monitum* (warning) by the papal office on his work "to protect the minds, particularly of the youth, against the dangers presented by the works of Fr. Teilhard de Chardin and of his followers".

Was this not the same charge levelled at Socrates? Teilhard was as much a hero of free thought to me as Socrates. I admired his self-conviction while at the same time maintaining the humility to submit to his superiors. These episodes in Teilhard's life also alerted me to the fact that contemporary Christians might possibly have problems with a worldview that held Christianity and evolution together.

Testing the faith

Anti-evolution attitudes became increasingly obvious to me on my visits back home. Although much of my education was taking place in England, my holidays were spent in the Bahamas; indeed, most of my reading was done working on a fishing boat over the summer. On one occasion a fellow fisherman chastised me for reading Carl Zimmer's excellent book, *Evolution: The Triumph of an Idea*,[1] which he dismissed as "foolishness". I was not quite ready for confrontation and justified myself on the ground that whether I agreed with it or not I had to at least know about it for my undergraduate course in marine biology. I was more candid with some of my friends, who were shocked and perplexed in equal measure. During a discussion about evolution, the age of the earth, and how it all related to the Bible, one friend said to me, "I've always wanted to meet someone who believes in all that stuff." She went on to question me fiercely, seemingly incredulous as to whether I could actually believe that humans had evolved from a common ancestor with the other great apes. Another friend – my closest friend – thought that my acceptance of scientific orthodoxy was a bit wacky but could see my point and respected my "opinion". He later told me that one of the Sunday

[1] Carl Zimmer, *Evolution: The Triumph of an Idea*, London: Harper, 2001.

school teachers had considered asking me to teach a class on the topic of evolution, since she knew I was studying science and assumed that I could deliver a defence of literal creationism. She changed her mind, though, when my friend informed her that I was an evolutionist. Perhaps I was a potential danger to the minds of the youth!

It was not only Christians in the Bahamas that seemed hostile towards evolution. A significant contingent of students in the Christian Union at my university in the UK were suspicious of evolution and its perceived atheistic undertones. It was one thing for folk back home to be sceptical, where evolution was fairly irrelevant to daily life, but I was astounded that people studying at degree level (some of them in science) could flatly reject a fundamental tenet of biology. I recall an evening in the pub with men from my local non-denominational church questioning me – "You don't go along with this evolution idea, do you?" – knowing that I was a science student. I tried to see their point of view. I borrowed a "creationist" book, *What is Creation Science?*[2], from the church library in the Bahamas. Rather than providing a coherent alternative explanation to evolution, it just tried to pick holes using spin and unappealing rhetoric. I was so appalled that I did not return it.

At the same time my science course-mates assumed that all Christians were obtuse anti-evolutionists who were intellectually vacuous. I knew that this was a gross misrepresentation, but I could not deny that *some* Christians did resemble their caricatures. I began to strongly resent any association with "creationists", to the degree that I thought I might give up labelling myself a Christian altogether. It came with so much unwanted baggage. Of course,

[2] Henry Morris and Gary Parker, *What is Creation Science?*, San Diego, CA: Master Books, 1987.

we must all be prepared to accept persecution and ridicule for our faith, but I felt that I was taking flack for beliefs that were not my own. For many of my friends, the anti-intellectualism that they associated with Christianity was a complete barrier to the gospel. I could not talk to them about my faith without the issue coming up. How could I claim to be proclaiming the ultimate truth, while associating myself with Christians who were rejecting the most basic elements of common knowledge?

I found myself contemplating a life outside the church. It seemed that I was being forced to choose between my calling as a scientist and my Christian fellowship. I certainly had no intention of betraying my scientific integrity and could not see the point of being part of a body that could be so wilfully ignorant. I was also frustrated by Christian leaders who seemed to tolerate anti-evolution sentiments in an effort to keep the peace or because they felt ill-equipped. My personal belief in God was unshaken though and I intended to continue as a believer, but was uncertain as to how I could work out my faith. I knew that it was entirely possible to be a Christian without attending church, but I did feel the need for fellowship. Luckily, I found some solace attending a Quaker meeting house from time to time, where the congregants were refreshingly open-minded.

By chance I happened to live in a city with an active branch of Christians in Science (CiS), a network for those interested in the interaction between science and the Christian faith. Some members visited one of our Christian Union meetings to advertise their presence and I jumped at the chance to meet others that might be in my situation. CiS was a Godsend. I began to meet other scientists who were Christians, who took both aspects of their lives seriously. They organized lectures by eminent speakers

on various topics in the science and faith arena. All of this gave me a sense of affirmation and reassurance, that that showed me I was not foolish for wanting to maintain my Christian and scientific convictions together. I later attended a short course run by the Faraday Institute for Science and Religion in Cambridge, which opened up my mind to the vast body of research and writings in the science-faith arena. I suddenly felt more confident in my faith and could show people that there were rational Christians out there.

In my new-found zeal, I entered a student essay competition for the Christians in Science magazine. Rather like my previous foray with Teilhard de Chardin, the brief was to write about an inspirational figure in the history of science and faith. After some research, I ended up writing a rather flat bio-sketch of Asa Gray (1810–88), Professor of Botany at Harvard for thirty years from 1842. He was an excellent naturalist and one of the earliest supporters of Darwin in the years after the publication of the *Origin of Species*. In retrospect, I wish that I had chosen to write about another personal hero of mine: Philip Henry Gosse (1810–88). At the time I didn't know much about him, except that he was a marine biologist and unshakeable fundamentalist. My distaste for Christian fundamentalism caused me to overlook him for the essay, despite our shared marine interests. While at university I read two publications that changed my mind: the first was Stephen Jay Gould's essay "Adam's Navel"[3] and the second was a wonderful biography of Gosse by Ann Thwaite.[4] Gosse was a passionate zoologist, an effective science communicator, and a correspondent of Darwin. He introduced the concept of the

[3] Reprinted in Stephen Jay Gould, *The Flamingo's Smile*, New York: W. W. Norton, 1985.

[4] Ann Thwaite, *Glimpses of the Wonderful*, London: Faber, 2002.

aquarium to Victorian England. Despite his acquaintance and respect for Darwin, Gosse flatly rejected evolution.

Gosse's story is pertinent to my own, so a slight diversion is in order. He was a biblical literalist and had already spent much time trying to reconcile his science and faith before Darwin published his ideas of natural selection. Gosse subscribed to a Young Earth Creationist interpretation of the Bible, leaving him at odds with fellow scientists, who had shown that the earth was much, much older than the few thousand years that he believed it to be. Gosse reconciled this with a theory that the earth just *appeared* to be old. He hypothesized that when God created Adam he would have had a navel, even though he was not born of a woman, because it is a part of being human. Likewise, Gosse maintained that when God created the trees they would have necessarily had tree rings, and in the same way the hills would have different rock strata. His whole book *Omphalos: An Attempt to Untie the Geological Knot* was a litany of examples explaining that signs of antiquity in the natural world were a necessary artefact of a young creation. While seemingly brilliant, it did not catch on and most of the copies were pulped: his fellow scientists found it untestable and irrelevant, while fellow churchmen thought it made God out to be a deceiver. Gosse's sincere attempt to bring believers and scientists together (as embodied in his own life) was a failure.

Lessons learned

I still admire Gosse because of his steadfast belief that God's Word in the Bible and His work in creation could not be at odds, since God is the author of both. Any apparent conflict must be a misinterpretation of one or the other. The idea that the one God has written two books – a book of Words (the Bible) and a book of Works (creation) has helped many. The books are written

in very different languages but they have the same author; it is nonsensical to think that God would contradict Himself in His books. I suspect that many anti-evolutionists do not know the quotation from Francis Bacon's *Advancement of Learning* (1605) which Darwin placed at the beginning of the *Origin of Species*:

> *Let no man ... think or maintain that he can be too well studied in the book of God's words or in the book of God's works; rather let all men endeavour an endless proficience in both.*

It is a powerfully simple idea; it is the single most important reason why I never rejected evolution. Gosse's mistake was doggedly maintaining that his acceptance of the authority of Scripture was the same thing as his interpretation of it. For myself, I had known God as creator before I knew anything about evolution and science. I knew that no threat to God could ever come from the study of the natural world; He is behind it.

Nor did I ever see evolution as a challenge to the Bible. Evolution provides a way in which we can understand how the diversity of life came to exist, how God works in the world which He has created, in a way that we could not and should not expect to get from Scripture. Gosse refused to engage with the emerging scholarship of literary criticism in his time that was bringing new insights into how the Bible was constructed and has been passed down to us. This secular analysis of biblical texts (coinciding with Darwin's publications) was perceived as threatening by many Christians, and repelled a faction of ardent conservatives that has persisted to this day. I have no doubt whatsoever that a mature study of Scripture is a critical part of working out the Christian faith. The apostle Paul writes: "When I was a child, I spoke and

thought and reasoned as a child. But when I grew up, I put away childish things" (1 Corinthians 13:11, NLT). The tragedy is that too many devout Christians never really engage with Scripture and remain at the level of "Bible stories" and Sunday school songs. The early Christians were chastised for not developing their faith: "you ought to be teaching others. Instead, you need someone to teach you again the basic things about God's word. You are like babies who need milk and cannot eat solid food" (Hebrews 5:11–14; verse 12, NLT). If my view of Scripture had remained unchanged from my early childhood, I might well have felt threatened by evolution, but thankfully I had begun to mature long before coming across it. I can only attribute this to parents who encouraged me to read widely and think critically.

Gosse's story also helped reconcile me to the wider church. It is clear that most Christians who oppose evolution do so out of sincere faith. I share with them a desire to seek God's truth but differ in how we view the evidence. It is a lesson in humility. Even good scientists can be tempted into shoehorning science into their metaphysical assumptions if they are not careful. Just as siblings or parents can be embarrassing at times, yet we still love them, so I could not stop loving other Christians or cut them out of my life, just because they do not share my academic understanding. No one has a perfect faith. As the apostle Paul warns, "If you think you are wise by this world's standards, you need to become a fool to be truly wise" for "Now we see things imperfectly … but [when the time of perfection comes] we will see everything with perfect clarity" (1 Corinthians 3:18; 13:12, NLT).

So we must move beyond childish reasoning in our engagement with Scripture, but at the same time we must accept

the kingdom of God with the humility of little children (Matthew 18:2–4); "while knowledge makes us feel important, it is love that strengthens the church" (1 Corinthians 8:1, NLT). We must also take Jesus' subsequent warning in Matthew 18:6 seriously that "whoever causes the downfall of one of these little ones who believe in Me – it would be better for him if a heavy millstone were hung around his neck". In framing evolution, and science in general as a threat to Christianity, anti-evolutionists may be driving young believers away from faith, as my experience can testify. It is incumbent upon those with a strong faith that can encompass the full majesty of God's Word and God's works to support those for whom science might seem an attack on their faith. In recognizing this I am happy that "He's still working on me, To make me what I ought to be".