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Creation and Evolution

DENIS R. ALEXANDER

Creation in Christian theology refers to the belief that God is the ultimate creative source, power and will of all that exists. The Christian understanding of creation relates to ontology, to the question of existence. Why does anything exist and for what purpose?

Evolution in its contemporary biological sense refers to the differential reproductive fitness of living organisms such that those better adapted to their environments leave more offspring. Evolution seeks to answer the question "How?" How has God brought into being all the living diversity that characterizes planet earth?

Traditional Christian theology has seen little problem in incorporating evolution within its understanding of the created order. At the same time, some Christians see evolution as problematic, either because they believe it contradicts the early chapters of Genesis, or because they do not think this is how God should have brought biological diversity into being. To understand such responses, a brief historical overview will be provided, followed by a discussion of the various ways in which Christian faith has engaged with evolution.

The Historical Background

Evolution as natural history began with Jean-Baptiste Lamarck (1744–1829), who became Professor of Lower Animals at the newly founded Natural History Museum in Paris in 1800. Lamarck envisaged the continuous spontaneous generation of new species which then move up the escalator of life, with all steps occupied at all moments. This is the primary process and it is then the differing circumstances on each step that lead to different adaptations and consequent variations. The idea for which Lamarck is now chiefly remembered – the inheritance of acquired characteristics – played a relatively small role in his grand evolutionary scheme. This scheme was much modified by Charles Darwin (1809–1882) in his *On the Origin of Species*. It was Darwin's inspiration to bring history into biology, so that now all living things were joined up in one single evolutionary tree of life. In the struggle for life those

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organisms better adapted to their environments would be more likely to pass on their adaptations to their offspring, so leaving more progeny to subsequent generations, the process of "natural selection."

Following Darwin's death in 1882 the idea of natural selection as the main mechanism for evolutionary change declined in popularity, being displaced by a range of more Lamarckian ideas. But it was eventually revived following the rediscovery of Mendel's laws of inheritance around 1900, which led to the discovery of the unit of inheritance, the gene. The fusion of genetics with the idea of natural selection which took place during the 1920s and 1930s became known as the neo-Darwinian synthesis. Indeed, it was mathematical genetics that rescued natural selection from oblivion, showing how many variant genes within a single organism could contribute to reproductive fitness (Alexander 2011).

Today Darwinian evolution is perceived as involving two key steps. In the first step variation is introduced into the genome, meaning the sum total of all the information encoded in the DNA of a single living organism, known as the "genotype." Variation in the DNA can increase by a wide range of mechanisms, including mutations, gene flow, and that arising from the exchange of DNA material that occurs between paired chromosomes during the generation of the sperm and eggs ("recombination"). Each genotype generates a "phenotype," meaning the visible characteristics of the organism. In the second step in the evolutionary process, that of natural selection, the slightly different phenotypes are tested out in the workshop of life, and those that are more successful at contributing more progeny to subsequent generations spread their particular sets of beneficial variant genes through an interbreeding population. Speciation occurs when one population no longer interbreeds with another. Speciation can occur suddenly, as often occurs in plants, and some animals, when the number of chromosomes is increased ("polyploidy"), or gradually, as in most animal populations, a process associated with reproductive isolation.

Initial Christian responses to Darwin's *On the Origin of Species* were varied. The first written response to Darwin in existence is a letter from Charles Kingsley, rector of Eversley, to whom Darwin had sent an advance copy of the *Origin of Species*. Kingsley wrote to Darwin on November 18, 1859, six days before the book's publication date, that: "All I have seen of it awes me," going on to comment that it is "just as noble a conception of Deity, to believe that He created primal forms capable of self-development . . . as to believe that He required a fresh act of intervention to supply the lacunas [gaps] which He Himself had made" (Kingsley 1859). Darwin was so impressed with this response that he quoted these lines in the second edition of the *Origin*.

Another Anglican cleric, Adam Sedgwick (1785–1873), Professor of Geology at Cambridge and Darwin's old mentor and teacher, was less enthusiastic. Sedgwick had also received an advance copy of the *Origin*, and on November 24, the official publication day, wrote to Darwin, "I have read your book with more pain than pleasure. Parts of it I admired greatly; parts I laughed at till my sides were almost sore; other parts I read with absolute sorrow; because I think them utterly false & grievously mischievous" (Sedgwick 1859). Sedgwick did not like what he saw as Darwin's departure from the sound inductive approach of true science, he wanted to maintain a role for God in creating species separately, and above all he feared that human moral dignity was being undermined by Darwin's theory.

Kingsley and Sedgwick typify two of the contrasting voices that can be heard amongst the initial responses to the *Origin*. The idea that there was a universal chorus of disapproval from the Church is a myth. What is perhaps more surprising in retrospect is how quickly Darwinian evolution was baptized into a traditional Christian understanding of creation. A future archbishop of Canterbury, Frederick Temple, extolled Darwinian ideas in his official sermon

at the annual meeting of the British Association for the Advancement of Science at Oxford in 1860, and would later develop this theme more fully in his Bampton lectures of 1884 (Temple, 1903). Questions about Darwinian evolution were already beginning to appear by the mid-1860s in the science examination papers of Cambridge University, that bastion of Anglican respectability.

Some of the warmest support for Darwinian evolution came from evangelical Protestants. Henry Drummond, Scottish naturalist and professor in the Free Church College in Glasgow, thought that natural selection was "a real and beautiful acquisition to natural theology" and that the *Origin* was "perhaps the most important contribution to the literature of apologetics" to have appeared during the nineteenth century (Smith 2005, 47).

Meanwhile in the USA the *Origin* was widely promoted by Christian academics. Asa Gray, Professor of Natural History at Harvard and a committed Christian, was Darwin's long-term correspondent and confidant and helped organize the publication of the *Origin of Species* in America. The Calvinist James McCosh, president of the College of New Jersey (later to become Princeton University), held strongly to the concept of natural selection, but equally strongly believed that "the natural origin of species is not inconsistent with intelligent design in nature or with the existence of a personal Creator of the world." Upon looking back over his 20 years as president, McCosh remarked "I have been defending Evolution but, in so doing, have given the proper account of it as the method of God's procedure, and find that when so understood it is in no way inconsistent with Scripture." Even amongst the writers of *The Fundamentals*, that mass-produced series of 12 booklets published in the period 1910–1915 which later contributed to the emergence of the term "fundamentalism," we find a number of evangelical writers committed to Darwinism, such as James Orr and Benjamin Warfield.

The historian James Moore (1981, 79) writes that "with but few exceptions the leading Christian thinkers in Great Britain and America came to terms quite readily with Darwinism and evolution," and the American historian George Marsden (1984, 101) reports that "with the exception of Harvard's Louis Agassiz, virtually every American Protestant zoologist and botanist accepted some form of evolution by the early 1870s." Where there was opposition to evolution, it was not connected with the age of the earth, since by the time the *Origin* was published, everyone knew that the earth was very old, although the precise age remained a topic of ongoing investigation. More commonly, opposition arose from the concern that common descent with the rest of the animal kingdom might reduce humanity's special role and value in God's creation. There was also concern about subversion of the moral order if Man began to be perceived as "just another animal." The dynamic nature of the evolutionary process also challenged ancient ideas of Platonic essentialism, replacing the static notion of a species with that of historical process, and subverting the teleological idea of Aristotelian final cause in which humanity lies at the center of the cosmos – instead portraying Man as but one little twig in a very large evolutionary tree.

Creationism in the contemporary sense of that term is a twentieth-century phenomenon and arose in the USA partly as a reaction against the inroads made by German liberal theology into American denominations, partly in response to the supposed Darwinian threat to morality posed by the philosophy of "might is right" that was used to justify German military expansion during World War One, and partly as a reaction against the perceived centralized US government control of educational curricula (Numbers 2006). The Seventh-day Adventist writer George McCready Price published *New Geology* in 1923, an attempt to interpret the geological column based on the Mosaic flood story. In 1925 a teacher called John Scopes "confessed" to violating the recently passed law banning the teaching of human

evolution in his state of Tennessee, but was acquitted on a technicality in the subsequent farcical trial (Larson 2003). The term "creationism" began to be associated with this early anti-evolutionary movement, which eventually ran out of steam in the late 1920s, particularly with the advent of the Depression. Nevertheless there is good evidence that the campaign had a long-lasting impact on the contents of the nation's biology textbooks. In 1942, a nationwide survey of secondary school teachers in the USA indicated that less than 50% of high-school biology teachers were teaching anything about organic evolution in their science courses.

In 1957 the Russians launched *Sputnik*, the first space satellite, and US alarm at falling behind in the space race led to reforms in science teaching, including increased emphasis on the teaching of evolution. This in turn helped to boost interest in Henry Morris and John Whitcomb's new book *The Genesis Flood*, published in 1961, a reformulation of the ideas in Price's *New Geology*. Within a quarter of a century *The Genesis Flood* went through 29 printings and sold over 200 000 copies (Numbers 2006). The interest stimulated by this book led to the formation of the Creation Research Society (CRS) in 1963 and other creationist organizations since that time. Whereas the earlier creationist movement of the 1920s still maintained that the earth was very old, the late twentieth-century movement initiated by Morris and Whitcomb promoted the idea that the earth is only about 10 000 years old, a belief not otherwise widely held since the eighteenth century. The term "creationism" began to be associated specifically with this brand of "young-earth creationism." Various forms of anti-Darwinian creationism are held by around 40–45% of the US population, whereas in European countries the level of creationist beliefs is generally much lower (Spencer and Alexander 2009).

In considering the various responses to evolution since 1859, it is worth noting that the biological theory has often been used and abused for ideological purposes, for example in support of capitalism, socialism, communism, racism, militarism, feminism, atheism, and other political and social ideas, many of them mutually exclusive (Alexander and Numbers 2010). These are parasitic upon the scientific theory and none are intrinsic to the theory itself, but the deployment of evolution in their support helps us to understand why there has been such a heterogeneous and often robust range of responses to evolution.

The Contemporary Discussion

Four main positions are held by Christians in relation to the contemporary discussion between creation and evolution, though each position can be sub-divided into many further variants.

First, young-earth creationism rejects the mainstream scientific view that the earth is 4.6 billion years old and maintains that all the main "kinds" of living things were created in six literal days of 24 hours about 10 000 years ago. Since that time very rapid evolution has occurred in which the "kinds" have diversified into all the species extant today. In this view there was no physical death of animals before the Fall, death being seen as punishment for the disobedience of Adam and Eve (Whitcomb and Morris 1960; Ham 1987).

Second, old-earth creationism accepts the date of the earth provided by science, but sees the creation of life, of the main kinds of living organisms, and especially the creation of Adam and Eve, as a series of miraculous events, that in some versions of this perspective are identified with six literal days of creation. In some variants of this position

physical death was already present before the Fall, whereas in others it came afterwards (Ross 2009).

Third, intelligent design (ID) is an anti-Darwinian movement that emerged in the USA during the early 1990s which is distinct from creationism, although some of its proponents maintain creationist beliefs. ID maintains that Darwinian evolution is intrinsically materialistic and therefore a threat to religious belief. At the same time, it is maintained, science itself can be used to detect "signs of intelligence" which point to design, and so by inference a designer. Certain entities in biology are deemed to be "irreducibly complex" and their origins supposedly inexplicable by evolution, so pointing to "design." ID proponents look not to the Bible but to science in order to support their position (Behe 1996; Dembski 2004).

Fourth, theistic evolution, sometimes known as evolutionary creationism, fully accepts the current mainstream scientific understandings of evolutionary theory. In this view, God is seen as the author of all that exists, fulfilling his intentions and purposes through the evolutionary process. The adjective "theistic" does not imply that there is anything distinctive about the scientific theory itself, but simply points out that it can be incorporated within a Christian worldview, as indeed can all other scientific descriptions, given that their goal is the understanding of God's creation. Of course some scientific theories turn out to be wrong, but all are attempts to understand the created order, even though the attempts are always open to revision and improvement (Falk 2004; Collins 2007; Alexander 2008).

Theistic evolution comes in three distinctive flavors. In the first, sometimes known as "directed evolution," God is seen as providentially orchestrating the process, for example by bringing about specific events, such as mutations, that influence the course of evolutionary history. Some of the early theological responses to the *Origin of Species* constructed schemes of this kind. The second and rather more nuanced notion of theistic evolution derives from later twentieth-century thinkers such as the biochemist Arthur Peacocke and others (Peacocke 1993), who perceive God's actions and purposes as being immanent within the evolutionary process. The properties of matters are only what they are because of God's faithfulness in willing and sustaining those properties and, as a matter of fact, evolution will happen with matter possessing these properties given the appropriate conditions. This is what God's materials do. The third very different brand of theistic evolution derives from the writings of the Catholic paleontologist and philosopher Pierre Teilhard de Chardin (1881–1955), who built a Lamarckian version of evolution into an ambitious theological scheme in which the whole universe is evolving towards the "omega point," the stage of maximum organized complexity (Teilhard de Chardin 2002). Censured by the Catholic Church during his lifetime for departing from theological orthodoxy, Teilhard de Chardin's ideas have been influential in popularizing evolution within Catholic circles, albeit of a kind barely recognized by contemporary Darwinian biology.

An assessment of these various Christian responses to evolution can best be made by considering them from the perspective of the Christian doctrine of creation.

The Christian Doctrine of Creation

Traditional Christian notions of creation are largely derived from the biblical literature, from the early Church Fathers such as Augustine of Hippo, from medieval theologians such as Thomas Aquinas, and from Reformation theologians such as John Calvin.

There are three key aspects of God's character in creation: his transcendence, his immanence, and his personal Trinitarian character. God's transcendence refers to his eternal being, to his "otherness," the fact that God's power and actions lie beyond human understanding or ultimate comprehension (Ps. 90:2; Jer. 10:10). "My thoughts are not your thoughts, neither are your ways my ways, declares the Lord. As the heavens are higher than the earth, so are my ways higher than your ways and my thoughts than your thoughts" (Isa. 55:8–9). This implies that we cannot tell God how he should be writing the book of creation. The properties of creation are contingent upon God's will and actions; we cannot derive them from first principles. Scientists can only describe what God does in the created order for there is nothing else to describe.

This presents a challenge to those who maintain that the evolutionary process is wasteful. Wasteful compared to what? We now know that the universe with its 10^{11} galaxies each containing an average 10^{11} stars has to be this large and this old in order for us to exist. It is difficult to know what "waste" means to the God who is the ground of all existence. Equally with those who wonder why evolution has taken "so long" before arriving at humans, one may question the anthropocentric assumption that the only purpose of evolution is to produce humanity, when God clearly enjoys and values all his works of creation (Gen. 1; Job 38–39; Ps. 104). Furthermore, God in his transcendence is not encompassed by space nor by time, so the question "why so long?" hardly seems relevant to such a creator.

God's immanence refers to his continuing creative activity in relation to his universe and intimate involvement in upholding and sustaining its properties. All that exists continues to do so only because of his continued say-so. The properties of matter continue to be what they are because God wills that they should continue to have such properties. It is what makes science possible. The biblical literature frequently draws attention to God's creative power in every aspect of the created order. God is the one who "gives life to everything" (Neh. 9:6) in the present tense. In the Book of Job, God is the one, in the present tense, who generates earthquakes (Job 9:5–6), brings about eclipses (9:7), wraps up water in the clouds (26:8), spreads his clouds over the moon (26:9), brings down hail and snow from his storehouses (38:22), and molds Job himself like clay (10:9). In the New Testament the emphasis shifts to Christ the Word of God, in whom and through whom the whole created order exists (John 1:3). "He is before all things, and in him all things hold together" (Col. 1:17). The Son is the one who "sustains all things by his powerful word" (Heb. 1:3).

The immanence of God in creation is an important reminder that creation in Scripture is seen as a continuous process with past, present, and future aspects. Christians are "theists," those who see God's continuing involvement in the whole created order, not "deists" who perceive a distant God who endows the universe with a suite of laws, but otherwise remains aloof. Discussion of creation and evolution too often focuses on distant origins, but this is not where Scripture chooses to place its emphasis. Furthermore, the immanence of God subverts "God-of-the-gaps" or "designer-of-the-gaps" types of argument in which attempts are made to locate special divine action within current domains of scientific ignorance. For example, our scientific understanding of the processes whereby complex biological systems arose during the origin of life is very limited, so attempts have been made to argue for a designer based on our current lack of knowledge of these processes, the approach of intelligent design advocates. But if all things hold together in Christ, then it is unclear why current human ignorance should have any particular theological relevance. And as science continues to extend its understanding, so the role for the putative designer will inevitably shrink, and the gaps will close. "Designer-of-the-gaps" arguments are disastrous when deployed in Chris-

tian apologetics, and a firm grasp of the biblical understanding of God's immanence in creation will in any case render them superfluous.

God's personal Trinitarian character in creation is rooted in the eternal relationship of love that has always existed in the Godhead between Father, Son, and Holy Spirit. The creation of other personalities is therefore what one expects in a universe which exists because of his creative activity. We live in a relational universe. Our own human existence continues to maintain its sense of value and purpose only insofar as we are enmeshed within a network of meaningful relationships. As God's intentions and purposes have been worked out through the evolutionary process, so this has involved the emergence of mind, consciousness, and free will, so rendering possible the practice of human relationships that reflect something of God's Trinitarian character. That same suite of human abilities also renders feasible a personal relationship with God. Without our brains' large frontal lobes, which have come into existence through a long evolutionary process, our minds would lack the subtle properties that make possible practices such as prayer and worship.

Once the personal Trinitarian character of God in creation is fully grasped, then it comes as no surprise to note that the main metaphor used in the Bible to describe God's creative actions is that of speaking. In Genesis 1 God speaks and calls no less than 14 times to instantiate the created order. When Jesus wanted to calm the storm he spoke to the wind and waves and said "Quiet! Be still!" (Mark 4:39). In John 1 it is through the divine Logos, the incarnate Son of God, that the whole universe has been brought into being, for "without him nothing was made that has been made" (John 1:3). It is through the Son that God has made the universe (Heb. 1:2).

What is striking in this brief overview of the character of God in creation is the realization that creation theology is thoroughly integrated into the biblical literature from its first page until its last. We look forward to a new heaven and a new earth (2 Pet. 3:13; Rev. 21:1). There is plenty more creation yet to come. This is not to downplay the importance of the early chapters of Genesis, only to place them within the context of the biblical corpus as a whole.

The Bible contains more than 20 different genre of literature, and it is important that we interpret different biblical narratives according to their own particular genre and context. Clearly the early chapters of Genesis cannot represent scientific literature for the simple reason that scientific literature, with its specialized language involving very specific meanings for words, did not exist at the time, only developing during the past few centuries. Indeed the literary genre of Genesis 1 is unique in the whole of Scripture, defying ready classification. It is not Hebrew poetry, but has poetic elements, leading to its description as "elevated prose." The first few chapters of Genesis may be read as a theological essay that embodies great truths expressed in figurative language. For example, it really is true that God, and not many gods, has created all that exists (Gen. 1). It really is true that only humankind is made in the image of God with the particular responsibilities that this entails (Gen. 1:26–27). And it really is true that human disobedience to God's commands leads to alienation from God and to bitter consequences (Gen. 2 and 3). Those coming to such ancient texts with a set of questions to do with science and chronology will find that the early chapters of Genesis are addressing a quite different set of priorities; for example, who is the one who creates and for what purpose, and how are the status and role of humankind to be understood in relation to God's intentions (Lamoureux 2008)? Commentators have emphasized the way in which Genesis 1 involves the creation of function more than form, reflecting the assumptions of the contemporary literature of that era (Walton 2009). Others have focused on the covenantal features of the texts (Godfrey 2003). Many have drawn attention to the way in which Genesis

1 is best understood by reference to its cultural and religious context (Wenham 1987; Lucas 2001; Alexander 2008).

The handling of the early chapters of Genesis by early Jewish and Christian commentators during the first few centuries AD is of particular interest given their pre-scientific context. The first-century Jewish philosopher and theologian Philo taught that God had made all things instantaneously and that the days of creation, Adam and Eve, and the garden of Eden were all "intended symbolically rather than literally," being "no mythical fictions . . . but modes of making ideas visible." The six days of creation therefore provided a way for Moses to explain God's orderly manner of creation.

The early Church Fathers likewise interpreted the Genesis narratives figuratively. Origen wrote:

> What man of intelligence, I ask, will consider that the first and second and the third day, in which there are said to be both morning and evening, existed without sun and moon and stars, while the first day was even without a heaven? And who could be found so silly as to believe that God, after the manner of a farmer "planted trees in a paradise eastward in Eden" . . . I do not think anyone will doubt that these are figurative expressions which indicate certain mysteries through a semblance of history. (Origen 1936, book IV, chapter 3)

In his commentary entitled "The Literal Interpretation of Genesis," the final version of which was published in AD 415, Augustine also adopted a distinctively figurative interpretation of the days of Genesis, seeing God's creative activity as having two different aspects: "Some works belonged to the invisible days in which he created all things simultaneously, and others belong to the days in which he daily fashions whatever evolves in the course of time from what I call the primordial wrappers" (Augustine 1982, 6.6.9, 183–184).

The "invisible days" in Augustine's exposition were the days as described in Genesis 1, which he understood not chronologically but as a kind of inventory of all God's acts of creation which were performed simultaneously. This single act of creation then brought forth, in due course, all the rest of the diversity of the created order. All the potentiality of the created order was encompassed within those original "primordial wrappers."

Later Calvin promoted the principle of accommodation whereby the biblical writers used everyday language so that essential truths could be understood by the general reader. As Calvin put it, Moses "adapted his writing to common usage." The Bible was "a book for laymen" and "he who would learn astronomy and other recondite arts, let him go elsewhere."

> The Holy Spirit had no intention to teach astronomy; and, in proposing instruction meant to be common to the simplest and most uneducated persons, he made use by Moses and the other prophets of popular language. . . . the Holy Spirit would rather speak childishly than unintelligibly to the humble and unlearned. (Calvin 1847–1850, Ps. 136:7)

Christians who today continue to interpret the language of the early chapters of Genesis figuratively stand in a long tradition which represents not a response to science, but concern for the integrity of the text. This is not to say that Christians today would accept all the interpretations of Genesis provided by the early Church Fathers; some, like Origen, went too far in their allegorical musings. The point is that it is not modern science that dictates how the text should be interpreted. By contrast the interpretative stance adopted by creationists tends to be influenced more by modernism, the idea that the only "real" truths are scientific truths, leading to the interpretation of texts as if they were making claims about science.

This modernistic tendency is widespread also amongst Muslims in their interpretation of the Qur'an.

Questions Posed by Evolution for Christian Theology

Evolution raises three main questions for theology: first, how can a God of love use a process involving so much death to bring about his intentions? Second, how do we understand Adam and Eve in light of human evolution? And, third, what about the Fall? Many books have been written on these topics. Brief summaries are provided here of some of the common responses to these questions.

Death in the evolutionary process

There is no doubt that 3.8 billion years of evolution have involved pain and death on a vast scale. More than 99% of the species that ever lived have become extinct. Carbon-based life is impossible without death. All living things are embedded in huge food-chains in which ultimately most of the energy used in living organisms is derived from the sun. We are all on the great escalator of life and the dead are constantly making space for the living. If there were no death on this planet, then it would be packed full of life forms within weeks, as crowded as a New York subway.

In fact science is of considerable help in reflecting on the challenges of death and suffering, for it demonstrates all the various ways in which carbon-based life is a "package deal." Every aspect of our genetics and biochemistry that is positive for our survival and wellbeing has by the same token a down side as well. Without genetic variation there would be no evolution and we would not exist. If we suddenly came into existence with identical genomes, then we would comprise one giant clonal population, there would be no sexual differentiation, and life would be boring. But genetic variation is also the cause of cancer and of genetic diseases, and our genomes encode our ultimate demise as well as our present ability to live (Southgate 2008).

All of these aspects of our biology reflect "nomic regularity," the lawlike behavior of the matter and energy comprising our universe that provides it with its inherent intelligibility and functioning properties. It is this internal consistency and reproducibility in the properties of the universe that renders life possible, that enables rational existence, and that makes science feasible. Christians see this as an aspect of God's faithfulness in creation, without which existence could have no coherence (Murray 2008).

All living organisms have a means of detecting and interpreting their environments, which can be experienced as "pain" as the nervous system increases in complexity. The more developed the brain, the more developed is the acute awareness of pain. The experience of pain is essential for human survival. Those rare individuals born without functioning pain responses do not live for long without clinical intervention. Since carbon appears to be ubiquitous in the universe, it is likely that there are carbon-based life forms in other parts of the universe, since of all the elements carbon seems to be uniquely suited to functioning as a key building block for life. If these life forms have likewise evolved complex nervous systems, then they also will experience pain, and in any case will certainly die and be involved in food-chains similar to those on planet earth.

Nothing in biological evolution is gratuitous. All makes perfect sense in the light of the evolutionary mechanisms that in turn reflect the chemical composition of the universe. But clearly the evolutionary process is very costly in terms of life and death. We are used to the idea of costly processes leading to outcomes that are of particular value. The Christian claim is that the cost is worth it – the generation of a planet full of fascinating life forms that have intrinsic worth in their very existence, and the generation of humans with cognitive abilities that enable them to enjoy the richness of this diversity. More than that, perhaps this is the only way in which beings can come into existence who are genuinely free, able to make moral decisions, and free to respond, or not, to God's love. Freedom is costly, gained at great price. Of course, ultimately we cannot know the mind of God to know whether this really is the only way to create beings who can freely respond to his love, but even supposing it might be the case provides us with a potentially helpful insight (Hebblethwaite 2000; Alexander 2008).

If this present life were the only one, then the potent objection would remain that the costs involved in generating conscious intelligent beings are simply not worth the benefits. But for the Christian who sees God as the creator of the new heavens and the new earth, to be enjoyed forever clothed in new resurrection bodies, the pain and suffering of the present order are but stepping-stones on the path to eternity. Our new resurrection bodies will certainly not be carbon-based, and will experience neither pain nor suffering. The present "vale of soul-making" makes far more sense viewed in the light of eternity, even if we will never ultimately know, in this life at least, the final answer as to why God has created a universe with these particular properties to bring about God's purposes.

Adam and Eve, and the Fall

It makes sense to take these two topics together because the way one interprets one will strongly influence interpretation of the other. The main question is how to relate the Adam and Eve narrative provided in the early chapters of Genesis with current anthropological accounts of human evolution. In the "Out-of-Africa" model that currently holds sway, anatomically modern humans first emerged in Africa about 200 000 years ago, before a small group emigrated out of Africa to populate the rest of the world around 60 000 years ago. Speciation in mammals involves reproductive isolation and, in the case of humans, an interbreeding population that may have numbered only a few hundred individuals. A new species does not start with a single breeding pair.

Some Christians do not think that one should seek any kind of connection between the Genesis narrative and anthropology. In this view the Genesis 2 account is about the human responsibility to obey God's commands and the Genesis 3 narrative of human disobedience is the "story of everyman." We have all sinned and fallen short of the glory of God (Rom. 3:23), and these passages present this truth in a vivid narrative style that is about theology rather than historical events (Lamoureux 2008).

Whereas these theological convictions are entirely appropriate, other Christians think that the approach of model-building can be helpful in bringing the theological and anthropological truths into conversation with each other. Our last common ancestor with our nearest living genetic relative, the chimpanzee, lived about 6 million years ago. Since our evolutionary lineages parted ways, chimpanzees have emerged from the ape lineage without religion, whereas we have religious capacities. Furthermore, there must have been a time when humans first started knowing God in a personal way such that they could engage in prayer and worship. How and when did that happen? Rejecting the concordist idea that scientific

meanings can be imposed on theological texts, models can nevertheless be constructed that incorporate theological and anthropological insights into a single integrated narrative. The notion of models is common in science, referring to the way in which certain sets of data can be rendered coherent by explaining them in terms of a physical, mathematical, or even metaphorical representation.

Two general models have been proposed for the purposes of bringing the theology of Genesis into conversation with anthropology, which we will here label the "Retelling model" and the "*Homo divinus* model." The Retelling model suggests that as anatomically modern humans evolved in Africa from 200 000 years ago, or during some period of linguistic and cultural development since then, there was a gradual growing awareness of God's presence and calling upon their lives to which they responded in obedience and worship. The earliest spiritual stirrings of the human spirit meant that it was natural at the beginning for humans to turn to their Creator, in the same way that children today seem readily to believe in God almost as soon as they can speak (Barrett 2004). The Fall is then interpreted as the conscious rejection by humankind of the awareness of God's presence and calling upon their lives in favor of choosing their own way rather than God's way. In this model, the early chapters of Genesis represent a retelling of this early episode, or series of episodes, in our human history in a form that could be understood within the Middle Eastern culture of the Jewish people of that time.

A possible problem with the Retelling model is the way in which it evacuates the Genesis narrative of any Near Eastern context, detaching the account from its Jewish roots. The *Homo divinus* model addresses this question, and places emphasis on the way that the Bible treats Adam as a real historical figure, particularly in the genealogies (Gen. 5; Luke 3), and in passages such as Romans 5 and 1 Corinthians 15 (Berry and Jeeves 2008; Alexander 2008). According to this model, God chose a couple of neolithic farmers in the Near East, or maybe a community of farmers, to whom he chose to reveal himself in a special way, calling them into fellowship with himself – so that they might know him as the one true personal God. From now on there would be a community who would know that they were called to a holy enterprise, called to be stewards of God's creation, called to know God personally. It is for this reason that this first couple, or community, have been termed *Homo divinus*, the divine humans, those who know the one true God, the Adam and Eve of the Genesis account. Being an anatomically modern human was necessary but not sufficient for being spiritually alive, as remains the case today. *Homo divinus*, in this model, were the first humans who were truly spiritually alive in fellowship with God, providing the spiritual roots of the Jewish faith. In this model the Fall then becomes the disobedience of Adam and Eve to the expressed revealed will of God, bringing spiritual death in its wake, a broken relationship between humankind and God. And as with the Retelling model, the physical death of both animals and humans is seen as happening throughout evolutionary history. Both models suggest that it is spiritual death that is the consequence of sin, Genesis 3 providing a potent description of the alienation that humankind suffers as a result of sin, with a fiery barrier separating them from the Tree of Life (3:24). But under the New Covenant the way back to the tree of life is opened up through the atoning work of Christ on the cross (Rev. 22:14).

Conclusions

There is no need to see creation and evolution as rival explanations for the origins of biological diversity. Creation provides ontological explanations for why things exist, interpretations

of existence, insights into its meaning. Evolution describes the mode whereby living things come into existence and have their being, its mechanisms. Mechanism and meaning provide complementary insights into reality; both are needed. The long process of evolutionary history provides some challenges for Christian theology, but also provides a great deal of help. As that great Victorian clerical enthusiast for Darwinism, Aubrey Moore, Fellow of St John's College, Oxford, once put it: "Darwinism appeared, and, under the guise of a foe, did the work of a friend."

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Further Reading

Alexander, Denis. 2008. *Creation or Evolution: Do We Have to Choose?* Oxford: Monarch. Surveys the biblical understanding of the term "creation" and explains the contemporary understanding of evolution, concluding that there is no need to choose between these two narratives describing the created order.

Falk, Darrel L. 2004. *Coming to Peace with Science*. Downers Grove, IL: InterVarsity Press. Surveys the main biological evidence for evolution showing how this can readily be incorporated within a traditional Christian understanding of creation.

Lamoureux, Denis O. 2008. *Evolutionary Creation*. Eugene. OR: Wipf and Stock. A detailed examination of the hermeneutics of biblical texts showing how they can be interpreted within their context without recourse to concordism, illustrating also the ways in which Darwinian evolution can be understood from the perspective of the Christian understanding of creation.

Lucas, Ernest. 2001. *Can We Believe Genesis Today?*, 2nd edn. Leicester: InterVarsity Press. Examines the hermeneutics and cultural context of the early chapters of Genesis in the light of contemporary Near East creation accounts.

Numbers, Ronald L. 2006. *The Creationists: From Scientific Creationism to Intelligent Design*. Cambridge, MA: Harvard University Press. An extensive overview of the way in which creationism became popular in the USA during the twentieth century, providing detailed analysis of the growth of specific creationist institutes and movements.