Creation and Evolution
Not Creation or Evolution

R.J.Berry

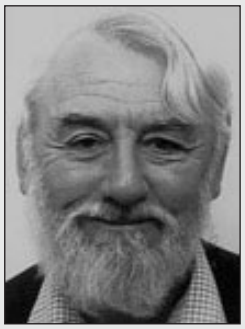
Summary

This paper argues that it is a misconception to oppose the concepts of creation and evolution. 'Creation' is a theological term acknowledging the dependence of all that exists upon the authorship of the Creator. 'Evolution' refers to our current understanding as to how God has brought biological diversity into being. Both accounts are required to do justice to what we as scientists observe.

The Bible begins with an account of the creation of the universe: 'In the beginning God created the heavens and the earth.' On the face of it, this seems a simple and unequivocal statement, but it has sparked endless debate over the last couple of centuries. When did this happen? How did God do it? What materials did God use? And was God really the originator and designer of *everything*? These questions became sharper by the end of the eighteenth century when it became clear that the Earth was considerably older than the general assumption of 6000 years or so, a timespan based on extrapolating backwards the genealogies in the Bible (e.g. Genesis 4; Matthew 1:1-16; Luke 3:23-38).

The reason for extending creation's history was nothing to do with religious belief or unbelief, but was based on the study of sedimentary rocks and the association of particular fossils with particular strata. Its conclusions have been confirmed and quantified by radio-isotopic calibrations and by many other methods.[1] The extended timespan inevitably led to questions about the interpretation of scripture, sharpened by debates between 'uniformitarians' (who believed that similar processes had been operating at the same rate throughout geological time) and 'catastrophists' (sometimes called 'diluvialists' because of their emphasis on prehistoric floods; they believed that one or more cataclysms had a major effect on the survival of plants and animals). Although the debate went on longer, by the 1860s it was difficult to find any clerics arguing that the 'days' of Genesis 1 should be interpreted as literal twenty-four hour periods.[2] As Francis Schaeffer pointed out, time in the early chapters of Genesis is not used chronologically and the genealogies (the basis of the calculated dates) are not complete. And for him, 'In regard to the use of the Hebrew word day in Genesis 1, it is not that we have to accept the concept of the long periods of time that modern science postulates, but rather that … prior to the time of Abraham there is no possible way to date the history of what we find in Scripture.'[3]

Around the time that the age of the Earth was being stretched, ideas of biological change (or evolution) began to circulate. The outlines of the fossil record were becoming clearer, showing organisms increasingly like living animals in the younger as opposed to the older rocks. Notwithstanding, the prevalent view remained of an unchanged and unchanging world, created by a divine craftsman, who then retreated above the bright blue sky and looked benignly upon his achievement. The key advocate of this interpretation was William Paley, Archdeacon of Carlisle. In his *Natural Theology* (1802) he argued that God has designed everything perfectly, and wills the good of all his creatures. Darwin was impressed; he wrote in his *Autobiography*, 'The logic of this book gave me as much delight as did Euclid. The careful study of [Paley's] works was the only part of the Academical Course [at Cambridge University] which was of the least use to me in the education of my mind.'



About the Author

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In 1844, Edinburgh publisher Robert Chambers published *Vestiges of the Natural History of Creation*, effectively a tract against Paley's deism. Chambers wrote: 'If there is a choice between special creation and the operation of general laws instituted by the creator, I would say the latter is greatly preferable as it implies a far grander view of the divine power and dignity than the other.' For Darwin, 'the prose was perfect, but the geology strikes me as bad and his zoology far worse'. Nevertheless the book stirred much debate in Britain: Darwin welcomed it on the grounds that 'it has done excellent service in calling in this country attention to the subject and in removing prejudices'.

The *Origin of Species* was published in 1859. Darwin's insight was based on combining two readily testable concepts – a struggle for existence in nature and the existence of heritable variation. In it, Darwin put forward a mechanism (natural selection) by which adaptation to the environment could occur, so removing the need for a designer; Paley's divine watchmaker became an impersonal machine, Richard Dawkins' 'Blind Watchmaker'.[4] More important at the time, Darwin brought together evidence for the fact that evolution had occurred, making sense of a range of phenomena: the possibility of rationally classifying organisms, explaining similar-

1 Lewis, C. & Knell, S.J. (eds.) *The Age of the Earth: from 4004BC to AD2002*, London: Geological Society of London (2000). See also White, R.S. *The Age of the Earth*, Faraday Paper No 8.

2 Roberts, M.B. 'Darwin's doubts about design', *Science & Christian Belief* (1997) 9, 113-127.

3 Schaeffer, F.A. *Genesis in Space and Time*, London: Hodder & Stoughton (1973), p.124. See also Lucas, E. *Interpreting Genesis in the 21st Century*, Faraday Paper No 11.

ities between putative relatives and its obverse (rudimentary organs), and interpreting biogeographic anomalies (i.e. the restriction of kangaroos to Australia, penguins to the Antarctic, polar bears to the Arctic, etc).

The arguments of the *Origin* were quickly accepted, despite continuing assertions to the contrary by those unfamiliar with the relevant historical literature. Claims of a major conflict between science and religion are grossly exaggerated. For example, the infamous debate between the Bishop of Oxford and Thomas Huxley at the 1860 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 legitimising change in an age when he believed it was having deleterious social and theological effects; Huxley was aiming for the secularisation of

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society, his aim was to establish the legitimacy of science against what he regarded as improper influence of church leaders.[5] By 1884, episcopal imprimatur had been given to the *Origin* by Frederick Temple, Bishop of Exeter and soon to become Archbishop of Canterbury: '[God] did not make the things, we may say: no, but He made them make themselves… It has often been objected to Paley's argument that it represents the Almighty as an artificer rather than a creator… But this objection disappears when we put the argument into the shape which the doctrine of Evolution demands.'[6]

Five years later, Oxford theologian Aubrey Moore wrote,

> 'The break up of the mediaeval system of thought and life resulted in an atomism which if it had been more perfectly consistent with itself, would have been fatal alike to knowledge and society… God was 'throned in magnificent inactivity in a remote corner of the universe'… Science had pushed the deist's God farther and farther away, and at the moment when it seemed as if He would be pushed out altogether, Darwinism appeared and, under the disguise of a foe did the work of a friend.'[7]

Darwinian Evolution

Although by the 1880s there was little dissent that evolution had occurred[8] nor that Darwinian natural selection was a plausible mechanism for it, there was no clear understanding of the details of evolutionary mechanisms and in particular about the causes and maintenance of variation. This changed in 1900 with the 'rediscovery' of Mendel's results and the founding of the science of genetics. Alterations ('mutations') in the inherited factors (or genes) studied by the early mendelists (or geneticists) were the obvious source of new variation, which provided the material for selection to act. However, mutations were generally:

- deleterious in their effects (e.g. removing an organ or function);
- major in their consequences, while Darwin had suggested that variants useful for selection would have small effects; and
- inherited as recessive characters, whilst 'advantageous' traits in nature were almost all inherited as dominants.

This led to the perception that evolution was not driven by natural selection, and a plethora of speculation about possible alternative mechanisms, including nomogenesis, 'age and area', holism, and a variety of internal operators depending on an inner urge or *élan vital*.

Fortuitously, three standard histories of biology (by Nordenskïold, Radl and Singer) were written in the 1920s at a time when natural selection was thought to be a wholly negative process and irrelevant to evolution, and their mistaken account of it continues in circulation.

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The split between geneticists and evolutionists (mainly palaeontologists) was resolved during the 1930s by the theoretical work of R.A. Fisher, J.B.S. Haldane and Sewall Wright and experimental studies by Theodosius Dobzhansky and E.B. Ford.[9] It involved:

1. a better understanding of the inheritance of continuous variation (helped especially by Fisher's theory of the evolution of dominance) and the realisation that the mutations studied by laboratory geneticists were extreme events;
2. the recasting of ideas about events in nature in terms of populations rather than 'types', thus taking into account the existence of variation and the wrongness of the classical, static concept of species, dating back to Plato; and
3. acceptance by specialists in different disciplines that they could learn from and contribute to sister disciplines.[10]

The resulting 'neo-Darwinian synthesis' remains the current orthodoxy. A major challenge came in the 1960s and 70s when the introduction of molecular techniques revealed an unexpectedly large amount of inherited variation which seemed to be 'neutral', i.e. to have no effect on its carriers. The problem was resolved by a variety of approaches which are not of direct relevance here but which largely confirmed the correctness of the selectionist understanding.[11] What is worth comment is that the controversy showed science in action, testing out new ideas and modifying existing doctrine. It is not true, as is sometimes claimed, that evolution is pure untestable dogma.

Two other general points about evolution:

- when scientists speak about the 'theory of evolution', they are using 'theory' in the sense of an 'established body of scientific understanding' and not in the way that 'theory' is used in detective novels; and
- the philosopher Karl Popper's description of evolution as 'non-science' because it was 'non-falsifiable' was quickly withdrawn by him; he accepted that 'historical sciences' (he included astronomy in this category) were valid sciences, albeit with a different methodology from experimental sciences like physics or chemistry.

There are certainly data that could, in principle, undermine the theory of evolution: for example if the genetic code had turned out to be different for different groups of animals, or if modern humans had been shown to live at the same time as dinosaurs. In reality all living things studied to date have essentially the same genetic code (with a few minor variants), and modern humans were definitely not alive at the time of the dinosaurs. But such 'what if?' questions are important for science, reflecting the fact that the theory of evolution is a refutable theory, just like any other scientific theory.

Evolution and the Bible

There is a large difference between accepting the Bible as authoritative and believing that it can function as a textbook of science. If it is to be understood over the centuries, it has to be written in non-

4 Dawkins, R. *The Blind Watchmaker*, London: Longman (1986).
5 Desmond, A. & Moore, J.R. *Darwin*, London: Michael Joseph (1991), p. 497.
6 Temple, F. *The Relations Between Religion and Science*, London: Macmillan (1885), pp.115-116.
7 Moore, A. 'The Christian doctrine of God', In Gore, C. (ed.) *Lux Mundi*, London: John Murray (1889), pp. 57-109 (pp. 99-100).
8 Moore, J.R. *The Post-Darwinian Controversies*, Cambridge: Cambridge University Press (1979).
9 Berry, R.J. *Neo-Darwinism*, London: Edward Arnold (1982).
10 Mayr, E. *The Growth of Biological Thought*, Cambridge, MA: Harvard University Press (1982).

technical language. We commonly use the latter; we say the 'sun sets' rather than 'the sun has now become invisible from my vantage point because the Earth has rotated so that I can no longer see the sun'. Galileo wrote about his own conviction that the Earth orbits the Sun and not vice versa, 'the Bible teaches us how to go to heaven, not how the heavens go', but he was pilloried by his contemporaries because 'the earth is fixed so firm that it cannot be moved' (Ps. 96:10; see also Ps. 19:5.6). Examples like this should make us aware of the importance of distinguishing between the text of the Bible and its interpretation. In the late nineteenth century Princeton theologian and defender of biblical inerrancy, B.B. Warfield wrote, 'I do not think that there is any statement in the Bible or any part of the account of creation, either as given in Genesis 1 and 2 or elsewhere alluded to, that need be opposed to evolution.'[12]

A crucial instance of the need for care is in interpreting the Genesis 1 account of creation as taking place in six 'days'. As Henri Blocher[13] sets out in detail, 'day' in the context may be legitimately interpreted as a passage of time (perhaps a geological era), as a period of revelation[14], as a time of reconstruction (after a period of chaos), or as a literary device to highlight the Sabbath – the 'seventh day'. Once we accept that creation might have occurred over more than six times twenty-four hours, the extent of change in creation can be appreciated: from nothing to something, from inorganic to organic, from animals to humans. Indeed the whole of scripture is an account of change: from garden to city, from wilderness to Promised Land, from sin to salvation, from incarnation to apocalypse. The biblical God is one who oversees change, not preserves stasis. And more: something that does not emerge in translation is that the original text uses two different words for 'create' or 'make': *bara* which implies a sovereign work of God with God as its subject (and which is used in this context only of the creation of matter, the great monsters and humankind) while the commoner word *asah* is a more general word with the sense of shaping (and is used on all other occasions in the creation account).

One thing we are not told in the Bible is ***how*** God created. This is not unusual: it is rare in scripture to be told how God did any of his mighty acts, although the Bible is full of descriptions of them. However, the Bible is unequivocal that creation is God's work (Pss. 24:2, 95:5, 148; Jn. 1:3; Col. 1:16; Heb. 1:2; Rev. 4:11) and we are told explicitly that we should understand this by faith, not because we necessarily understand all the processes involved (Heb. 11:3).

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The best approach is to recognise that any event can be regarded as having more than one cause. Aristotle identified four: material, formal, efficient and final; we often distinguish between mechanism – **how** something happens, and purpose – **why** something happens. The words on this page can be regarded as physical entities but they are also symbols transmitting a message to whoever reads them.[15] In a similar way we can treat the world as both God's wonderful creation and the result of millions of years of evolution. We are talking about the same thing but the two explanations do not contradict each other in any way. The two explanations can be described as 'complementary'[16]; it would be logically wrong to claim that any one explanation exhausts all possibilities; that is the error of doctrinaire reductionists like Richard Dawkins. God is creator. Those who believe in God are free to understand that he has used the mechanism of evolution to effect his purpose.

It is sometimes objected that evolution by natural selection is a chance process and therefore cannot be God's work. There are two answers to this: first, that 'chance' is usually nothing more than a confession of ignorance. But more importantly: evolution is driven by adaptation not chance. Although we do not know all the causes of mutation (which is the ultimate basis of variation), we should not overemphasise the role of chance [mutation] in producing variation: most observed variation (which is the material for selection and therefore adaptation) is the result of recombination and not fresh mutation. Indeed, Simon Conway Morris has argued that the possibilities for any new variation are so restricted that evolution can almost be regarded as directed.[17]

Another objection is that evolution is a wasteful and cruel process, 'red in tooth and claw'. It was a problem that troubled Darwin himself. He wrote to his friend and American protagonist, Asa Gray, Professor of Botany at Harvard, 'I cannot persuade myself that a beneficent and omnipotent God would have designedly created the Ichneumonidae [parasitic wasps] with the express intention of their feeding within the living bodies of caterpillars.' Notwithstanding, we have to recognise that pain is a valuable protective mechanism; and also that the Bible is clear that suffering is a route to maturity (Prov. 23:13; Rom. 5:3; Heb. 5:8). The ultimate answer for the Christian is that God has provided a way out of suffering because of Christ's death on the Cross (1 Pet. 3:18), an atonement which affects the natural world as well as the human realm (Col. 1:20). The Bible makes it clear that creation and its methodology is God's business, not ours (Job 38, 39). Whilst all major religions expect some form of divine judgment, there is no evidence for inevitable progress as imagined by some theologians (such as Teilhard de Chardin).[18]

Human evolution?

For religious people, the possibility of human beings evolving from 'lower' forms is a key reason for rejecting the whole notion of evolution. The frequently reproduced figure of a 'grim and grotesque procession' of ape skeletons from gibbon, orangutan, chimpanzee, gorilla to man[19] implicitly puts humans at the summit of a progressive continuum. In contrast, Darwin himself was doubtful that we could evolve the moral traits characteristic of humanness. He wrote, 'He who was ready to sacrifice his life, as many a savage has been, rather than betray his comrades, would often leave no offspring to inherit his noble nature… It hardly seems probable that the number of men gifted with such virtues could be increased through natural selection.'[20]

Half a century later, J.B.S. Haldane qualified this, pointing out that if individual unselfishness (even to the extent of self-sacrifice) had an inherited basis and (crucially) helped near relatives, then 'altruistic genes' could be selected and therefore spread in families. There could be situations where cooperation (or unselfishness) is an advantage to a group of individuals, even if particular individuals are disadvantaged. W.D. Hamilton[21] formalised this argument as 'inclusive fitness' (or 'kin selection'); it is now assimilated into general biology as the mechanism underlying 'sociobiology',[22] more recently termed 'evolutionary psychology'.

But these considerations are not critical for Christian humanness, because the distinction between humans and all other animals is that we (and only we) have the 'image and likeness of God' (Gen.

11 Berry, R.J., Crawford, T.J. & Hewitt, G.M. (eds.) *Genes in Ecology*, Oxford: Blackwell Scientific (1992).

12 Noll, M.A. & Livingstone, D.N. (eds.) B.B. Warfield *Evolution, Science and Scripture*, Grand Rapids, MI: Baker (2000), p.130.

13 Blocher, H. *In the Beginning*, Leicester: IVP (1984). See also Lucas, E. *Interpreting Genesis in the 21st Century*, Faraday Paper No 11.

14 P.J. Wiseman *Creation Revealed in Six Days*, London: Marshall, Morgan & Scott (1948)

15 See also Poole, M. *Reductionism: Help or Hindrance in Science and Religion?*, Faraday Paper No 6.

16 MacKay, D.M. *Behind the Eye*, Oxford: Blackwell (1991).

17 Conway Morris, S. *Life's Solution. Inevitable Humans in a Lonely Universe*, Cambridge: Cambridge University Press (2003).

1:26, 27) and this is not a genetic or anatomical trait. The idea of humankind being made in God's image is introduced in the context of delegated responsibilities to care for the earth, involving responsibility and trustworthiness. The simplest way (although clearly not the only way) to regard the biological species *Homo sapiens,* descended from a primitive simian stock and related to living apes (for which the fossil and genetic evidence is very strong)[23], is having been transformed by God at some time in history into *Homo divinus,* biologically unchanged but spiritually distinct.[24] Genesis 1 describes the creation of humans as a *bara* event, a specific act of God, while Genesis 2: 7 describes it as a divine in-breathing into an already existing entity. There is no reason to insist that this event took place at the same time as the emergence of *H. sapiens*, anatomically modern humans (which was about 200,000 years ago); Adam is portrayed in Genesis as a farmer, which would date him in Neolithic times, some time after 10,000 years ago. Adam and Eve were the ***spiritual*** progenitors of all of humankind who from that time on have had the potential to come to know God personally by faith. In this scenario and following Derek Kidner's lead in the Tyndale Commentary on Genesis, after the creation of *Homo divinus*, '…God may have now conferred his image on Adam's collaterals, to bring them into the same realm of being. Adam's 'federal' headship of humanity extended, if that was the case, outwards to his contemporaries as well as onwards to his offspring, and his disobedience disinherited both alike.'[25]

Indeed, Genesis 3 tells us that Adam and Eve disobeyed God and were banished from God's presence. God had warned Adam and Eve that disobedience would lead to death on the 'day' that this happened (Gen. 2:17 – the Hebrew text says 'on the day that you eat of it…'). But they did not die physically, instead they 'died' spiritually by losing the close fellowship with God that they had previously enjoyed and were banished from the garden. Exclusion from the garden is a powerful symbol of alienation from God, an alienation that influenced their work and their relationships. The Apostle Paul compares the death that comes as a result of sin via Adam to all humankind and, in contrast, the new life that all can experience through Christ by the way of repentance and faith (Rom. 5: 12-21; 1 Cor. 15:20-28). These passages make much more sense if we understand that the death that came to Adam refers to spiritual rather than physical death. Faith in Christ results in a spiritual rebirth, not a physical one, a point that Jesus had to make clear to Nicodemus (John 3:3-6). So if we accept that the physical evolution of human beings and their spiritual relationship to the creator are not the same thing, there is no conflict between the scientific and the Bible accounts of human origins.

Conflict? What conflict?

All members of monotheistic religions acknowledge a divine Creator. However, creationism in the usual sense of the word is effectively anti-evolutionism. Virtually all those who deny the possibility of evolution do so on religious grounds. They justify their belief because of their interpretation of the scriptures – the Bible, the Qur'an or some other holy book. Adventists, for example, are among the most fervent anti-evolutionists on the basis of the teachings of George McCready Price, who can be regarded as the founder of 'modern' creationism in the 1920s.[26] Such opposition is based on particular ***interpretations***; it is not intrinsic to religious belief per se.[27]

Anti-evolutionists support their beliefs by claiming deficiencies in either scientific data or analysis[28], often associated with imaginative extrapolations, such as that Noah's Flood makes orthodox geological stratigraphy impossible[29], or that some traits cannot have evolved because they are 'irreducibly complex'[30] – criticisms that were answered in principle fifty years ago by R.A. Fisher.[31] A further strategy is to treat standard scientific methodology as if it were imbued with 'philosophical naturalism' and thereby excludes the possibility of a creator[32] – an accusation dealt with by many authors.[33] In turn, evolutionists vent their spleen on their critics, often from a dogmatically reductionist viewpoint.[34] Arguably the opposite poles in debates need each other for their very existence; it has been suggested that Dawkins' attempt to invest evolution with atheistic overtones has actually stimulated the popularity of creationism.

It is easy to become entangled in negative arguments about creation and evolution.[35] There are proper scientific debates and uncertainties about the mechanism(s) causing evolution but no significant doubts about the fact that evolution has occurred and that it has taken place over many million years. Studying the natural world should fill us with awe and wonder (Ps. 8) but it cannot by itself lead us to a creator; we can only know God and his work through faith. When we put together faith and reason, we can join with the whole creation in praising our maker and redeemer, and rejoice in the wholeness which is the true end of humanity. We do not have to choose between evolution or creation; biblical faith leads us to affirming both.

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