

R.J. BERRY**Eden & Ecology: Evolution & Eschatology¹**

If God is both Creator and one who reveals himself, there can be no inevitable conflict between our knowledge of him as derived from his written and living Words and that obtained from the study of his creation, which is mainly through science. How does the Garden of Eden fit with our knowledge of ecology; does evolution deny the possibility of a historical Adam; and where is creation headed? This paper examines how we can reconcile a creation which God declared to be 'very good' with our present imperfect world and how we may perceive its final fate.

Key words: ecology, creation, fall, atonement, apocalypse

I am a Christian and a scientist. My science is ecology, involving me in studying interactions within the natural world; I am also a Christian convinced that the world was made by a God who has revealed himself both in creation and in his living and written Words. This means that for me science and religion are two methods of revelation and not merely discrete 'magisteria', as suggested by Steven Gould;² nor are they independent and potentially competing descriptions of reality as conventionally argued by atheists. For me, any conflict between the two methods of revelation must be either the result of misinterpretation of the written Word or the consequence of scientific misunderstanding or error.

A complication about making sense of any conflict is that both science and religion habitually view the other from a safe distance. For Jürgen Moltmann as a theologian, 'what we are pursuing in our theological faculties is really pastoral theology. The professional purposes for which theology is required has been reduced to the requirements of priest or pastor, or those responsible for religious education in schools.' Notwithstanding Moltmann believes that 'theology and science are now encountering each other at a more fundamental level than ever before, as they both face the question of the ethos of the technological acquisition of the power given by scientific knowledge'.³

Such imperfect communication between theology and science breeds mutual suspicion, probably more acute for the theologian than for the scientist,

1 This is a revised version of a paper given at a Consultation on Creation Theology organised by the John Knox International Reformed Center and the European Christian Environmental Network in Geneva, 27 March-1 April 2004. The proceedings of the consultation were published in 2004 as *Listening to Creation Groaning*, ed. Vischer, L. Geneva: John Knox Series no. 16.

2 Gould, S.J. *Rocks of Ages*, New York: Ballantine (1999).

3 Moltmann, J. *Science and Wisdom*, London: SCM (2003), pp. 18-19.

because scientific advances may threaten what the theologian regards as definitive, and therefore non-negotiable, understandings. At the same time, theologians tend to respect (and perhaps even sometimes envy) scientists for their ability to grapple with everyday problems. Unfortunately these attitudes are asymmetrical: scientists frequently scorn theologians as ignoring the reality of the world and its inhabitants. One of the aims of this paper is to present some seemingly pertinent scientific results and interpretations in a context that will hopefully help theologians in their understanding and make it easier for them to challenge me (and people in my position) with their relevant insights.

This enterprise is needful to avoid the sort of disaster produced in the early Christian centuries when much speculative Greek philosophy was embraced by the fledgling Christian Church. Perhaps the most pernicious was that of Plato and his successors. Plato emphasised changelessness. His pervading influence meant that anybody or anything challenging the status quo automatically came under suspicion. It was hundreds of years before the inconsistencies of this position forced the basis for truth to move from tradition to experiment. The Copernican/Galileo-an concept of a moving Earth challenged the Aristotelian hegemony; two centuries later, the emerging notion that the surface of the planet might have changed in ways other than those produced by the Noachian Flood, followed by the burgeoning discoveries of geologists were even more troubling – but raised exactly the same questions about God’s relationship to creation.⁴

Natural Theology and Natural Law

The traditional notion that nothing had changed significantly since God’s original creation is undermined by the command to Adam in Genesis 2:15 to ‘till and look after’ the land, a charge which requires active oversight and hence potential adjustment. Coupled with the ordinance to ‘have dominion’ (Gen. 1: 28) which implies loving care in the pattern of the shepherd-kingship laid upon Israel, and does not support the common assumption that ‘dominion’ authorises despotic plunder), this gives rise to ‘stewardship’ – characterised better by the Benedictine Rule rather than by the over-reverential approach perceived of Francis of Assisi.⁵ In modern times the contrast between passive preservation and active conservation has resurfaced in the debate between John Passmore (*Man’s Responsibility for Nature*) and Robin Attfield (*The Ethics of Environmental Concern*). Its difficulties are emphasised by Lovelock’s Gaia hypothesis, which implies that all global activities are self-regulating and difficult to influence, and by the position adopted by Stephen Jay Gould and others, that any

4 Cutler, A. *The Seashell on the Mountain Top*, London: Heinemann (2003).

5 Dubos, R. *A God Within*, London: Angus & Robertson (1973), pp. 153-174.

attempt to modify our environment is both ineffectual and arrogant.⁶

These debates need grounding. Following the publication of Darwin's ideas in 1858, Christian commentators increasingly saw the world as the dynamic outworking of processes driven by divine laws. Frederick Temple, who had preached the British Association sermon during the notorious Oxford meeting in 1860 when Thomas Henry Huxley confronted the Bishop of Oxford, wrote in his Bampton Lectures, *The Relations Between Religion and Science*, a work generally taken to mark the acceptance of Darwinism by the British church:

[God] did not make the things, we may say; no, but He made them make themselves... [We] look on the Almighty as creating the original elements of matter, determining their number and properties, creating the law of gravitation whereby as seems probable the worlds have been formed, creating the various laws of chemical and physical action by which inorganic substances have been combined, creating above all the laws of life, the mysterious law which plainly contains such wonderful possibilities within itself, and thus providing for the ultimate development of all the many wonders of nature.⁷

Temple's God was not Paley's Great Watchmaker, but he was still very much a law-maker.⁸ Temple clearly did not alienate the ecclesiastical establishment because in 1896 he became Archbishop of Canterbury.

The same theme is evident in a more sophisticated way in an 1889 essay by Aubrey Moore on the nature of God:

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... Its theory of knowledge was a crude empiricism; its theology unrelieved deism. God was 'throned in magnificent inactivity in a remote corner of the universe' and 'a machinery of secondary causes' had practically taken His place... Slowly but surely that theory of the world has been undermined. The one absolutely impossi-

6 Passmore, J. *Man's Responsibility for Nature*, London: Duckworth (1974, rev. 1980); Attfield, R. *The Ethics of Environmental Concern*, Oxford: Blackwell (1983, rev. 1991); Gould, S.J. 'The Golden Rule: a proper scale for our environmental crisis', In *Eight Little Piggies*, London: Jonathan Cape (1993), pp. 41-51; Lovelock, J.E. *Gaia. A New Look at Life on Earth*, Oxford: Oxford University Press (1979); Lovelock, J.E. 'The living Earth', *Nature*, (2003) 426, 769-770.

7 Temple, F. *The Relations Between Religion and Science*, London: Macmillan (1885), pp. 115-116.

8 Darwin took a very similar position. He ended the *Origin of Species*, 'It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other and dependent upon each other in so complex a manner, have all been produced by laws acting around us... There is a grandeur in this view of life with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautiful and most wonderful have been, and are being evolved.'

ble conception of God in the present day, is that which represents Him as an occasional Visitor. 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.⁹

Darwin's ideas represented a death blow to natural theology,¹⁰ at least in its developed form as a proof of the existence of God. Karl Barth did his best to hammer in the coffin nails.¹¹ But this consequence was obscured for three quarters of a century by the eclipse of Darwinian mechanisms (as distinct from the fact of evolutionary change per se). Darwin's genius had been putting together the ecological principle of a 'struggle for existence' with the observed phenomenon of variation. However, the causes of variation were very poorly known in his day; genetics only came to birth with the rediscovery of Gregor Mendel's experiments in 1900. This ignorance opened the way to much speculation, in particular that variation might be somehow directed, thus leading to progressive evolution. Coupled with the fact that many scientists (never mind the general public) did not really understand how natural selection operated, some sort of purpose in evolution was influentially espoused by leading scientists, including the zoologist Ray Lankester and the physiologist J.S. Haldane, the psychologists Lloyd Morgan, William McDougall and E.S. Russell, physicists like Oliver Lodge, the cosmologists A.S. Eddington and James Jeans; as well as by popularisers like Arthur Thomson and politicians such as Arthur Balfour. Not surprisingly with such apparently informed authority, these ideas were seized upon by churchmen, prominent among them being Charles Gore, and somewhat later by W.R. Inge, Hensley Henson, Charles Raven and E.W. Barnes. This cross-over of evolutionary idealism from science to theology has been elegantly chronicled by Peter Bowler.¹²

The problem was that the scientific ideas about purpose and progression were wrong. Most scientists realised this fairly quickly, but it took the theologians a long time to catch up. Indeed, Bowler's conclusion is that optimistic progressionalism in theology was not so much rejected as condemned by its perceived ineffectiveness – '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

9 Moore, A. 'The Christian doctrine of God', In Gore, C. (ed.) *Lux Mundi*, London: John Murray (1889), pp. 57-109, (pp. 99-100).

10 Ernst Mayr (*The Growth of Biological Thought*, Cambridge, MA: Harvard University Press (1982), p. 349) has pointed out that the time factor integral to evolution is 'the Achilles heel of natural theology'. Although a Creator could be presumed to design a perfect organism in an unchanging world, such perfectionism would disappear as soon as the environment changed.

11 Baillie, J. *Natural Theology comprising 'Nature and Grace' by Professor Dr Emil Brunner and the reply 'No!' by Dr Karl Barth*, London: Geoffrey Bles (1946).

12 Bowler, P. *Reconciling Science and Religion: The Debate in Early Twentieth-Century Britain*, Chicago: Chicago University Press (2001).

alienation from God incompatible with the idea of progress.¹³ One can have some sympathy with the theologians here, because it took evolutionary scientists four decades to marry palaeontology and genetics, and another three to recognise the importance of ecology. The main events¹⁴ were the neo-Darwinian synthesis of the 1930s through the application by R.A. Fisher of what Ernst Mayr called 'population thinking', thus overcoming the typology inherited from Plato via Linnaeus and classical taxonomy; the bringing of ecology into the evolutionary fold in the 1970s sparked by the discovery of unexpectedly high amounts of inherited variation in natural populations; and the ecological realisation that populations (and individuals) have to be considered in the context of a fluctuating and intrinsically non-stable environment.¹⁵

Reflecting on this scientific and theological history highlights the distinctions between natural law, natural theology and what may be called a theology of nature. They are very different. Colin Gunton has defined natural law and natural theology as rational constructs, while 'a theology of nature is the gift of biblical revelation, for it teaches us that the unity of things is upheld neither by the formal causality of the Greeks nor by the supposed omnipotence of human reason, but by the incarnate Lord whose work on earth was achieved in the power of the Spirit and in weakness'.¹⁶ This should make us wary of the common nineteenth-century response to the *Origin of Species*, that evolution was little more than the outworking of divine laws. Temple and Moore have already been quoted. Similar views were expressed by Charles Kingsley and Oxford mathematician Baden Powell. Asa Gray, Darwin's chief US apologist, saw evolution as guided creation: 'Darwin's great service to Natural Science is bringing it back to Teleology; so that instead of Morphology versus Teleology, we have Morphology wedded to Teleology.'¹⁷ The Duke of Argyll wrote, 'Creation by Law – Evolution by Law – Development by Law, or as including all those kindred ideas, the Reign of Law, is nothing but the reign of Creative Force directed by Creative Knowledge, worked under the control of creative Power and in fulfilment of Creative Purpose.'¹⁸ Charles Hodge's well-known equating of evolution with atheism was not inspired by evolution or by natural selection as such, but because 'Darwin rejects all teleology... it is this feature of his system which brings it into conflict not only with Christianity, but with the fundamental principles of nature religion.'¹⁹

Unfortunately for these apologists, there is no evidence whatsoever that evo-

13 Bowler, *op. cit.* (12), p. 417.

14 Mayr, E. & Provine, W.B. (eds.) *The Evolutionary Synthesis*, Cambridge, MA: Harvard University Press (1980); Berry, R.J. *Neo-Darwinism*, London: Edward Arnold (1982).

15 Berry, R.J. *Inheritance & Natural History*, London: Collins (1977).

16 Gunton, C.E. *A Brief History of Revelation*, Edinburgh: T & T Clark (1995), p. 59.

17 Gray, A. *Darwiniana*, New York: Appleton (1876), p. 237.

18 Argyll, Duke of *The Reign of Law*, London: Alexander Strahan (1867), pp. 293-294.

19 Hodge, C. *What Is Darwinism?*, New York: Scribner, Armstrong (1874), pp. 176-177.

lution proceeds in the deterministic way they envisaged.²⁰ The gulf that opened between evolutionists and geneticists in the early 1900s was in large part due to a realisation that the causes of variation could be explained without any recourse to any assumptions about extrinsic involvement (including divine control). However much protagonism for design, ranging from the persuasive philosophy of Alvin Plantinga through to modern creationism,²¹ or from the currently fashionable ‘intelligent design’ movement to the mysticism of Teilhard de Chardin, may posit a divine controller, evolution can be regarded as a wholly natural process.²²

Perhaps for this reason, biologists have been more sceptical than physical scientists about the existence of general rules or laws.²³ Over the last couple of decades, many physicists and theologians have seen the ‘Anthropic Principle’ (the idea that there are too many ‘coincidences’ in the properties of physical constants for them to be entirely the result of chance) as a justification for a world governed by natural law, getting close to a restatement of the Design Argument for God’s Existence.²⁴ In contrast, there is a persisting assumption that Darwinism implies randomness and hence lack of any sort of providential or divine control. The apparent chance involved in evolutionary processes worries many; indeed most recent theological concerns about science have concentrated on biological randomness, which is the antithesis of the determinism that traditionally preoccupied pre-Einsteinian physicists.²⁵ This is wrong at the scientific level because evolutionary change is driven by adaptation through natural selection, not by chance; it is only the source of variation that

20 Debates about evolutionary progress should not be confused with the arguments of Simon Conway Morris (*Life’s Solution: Inevitable Humans in a Lonely Universe*, Cambridge: Cambridge University Press (2003)) that the emergence of humans from the evolutionary process should not be totally unexpected – see also Conway Morris, S. ‘Darwin’s compass: how evolution discovers the song of creation’, *Science & Christian Belief* (2006) 18, 5-22, and comments, *Science & Christian Belief* (2006) 18, 23-40.

21 Modern creationism largely derives from the campaigning of the Adventist, George McCready Price (1870-1973) on the grounds of ‘No Adam, no Fall; no Fall, no Atonement; no Atonement, no Saviour’. It has only tenuous links with the earlier nineteenth-century debates (Numbers, R.L. *The Creationists*, New York: Knopf (1992)).

22 Ruse, M. *Darwin and Design*, Cambridge, MA: Harvard University Press (2003). The non-scriptural nature of many versions of modern creationism has been powerfully exposed by Oliver Barclay (‘Design in nature’, *Science & Christian Belief* (2006) 18, 49-61).

23 ‘The reason that general laws cannot be found in population biology is that the dynamical processes of population change depend on the functional forms of the interaction of organisms and these functional forms may be positive or negative, convex or concave functions. If there are to be general laws, they must be both structurally and parametrically stable, or they will fail in particular cases, perhaps in most cases’. (Lewontin, R.C. ‘Laws of biology and laws in social science’, In Keyfitz, N. (ed.) *Population and Biology*, Liège: Ordina Editions (1984), pp. 19-28, (p.26)).

24 Montefiore, H. *The Probability of God*, London: SCM (1985); Polkinghorne, J.C. *Science and Providence*, London: SPCK (1989).

25 For example, Haught, J. *God After Darwin*, Boulder, CO: Westview Press (2000); Haught, J. (ed.) *Science and Religion in Search of Cosmic Purpose*, Washington, DC: Georgetown University Press (2000).

is random as regards the needs of the organism, and most variation is produced by recombination and segregation, not fresh mutation.

However, theological problems really centre on the nature of humankind. They are powerfully illustrated by Stephen Jay Gould's oft repeated assertion that rerunning the 'tape' of evolution would almost certainly not lead again to human beings.²⁶ This has been challenged by Simon Conway Morris²⁷ who argues that the options for particular evolutionary adaptations are so limited that there is a strong likelihood a repeat of evolution might lead again to human beings as we know them – which makes the process much easier to be understood as overseen and ultimately under the control of God, and which equally certainly does not foreclose the possibility of emergence of *Homo divinus* (see below).

These considerations force us to look hard at our interpretations of both biological processes and theological meanings. Old-style natural theology is not viable; likewise, natural law is subject to so many different interpretations that it is a dubious foundation for theology. Is there a way forward?

A Theology of Nature

John Polkinghorne has argued that

natural theology is currently undergoing a revival, not so much at the hands of the theologians (whose nerve, with some honourable exceptions, has not yet returned) but at the hand of the scientists. There has grown up a widespread feeling, especially among those who study fundamental physics, that there is more to the world than meets the eye. Science seems to throw up questions which point beyond itself and transcend its power to answer.²⁸

James Barr has identified six streams of natural theology (*sensu lato* – i.e. including variants of traditional natural theology as well as a 'theology of nature'):²⁹

1. a determined continuance of the old idealist natural theology;
2. the process theology of people like John Cobb;

²⁶ See, for example, Gould, S.J. *Wonderful Life*, London: Hutchinson Radius (1989), p. 318f.

²⁷ Conway Morris, S. (2003), *op. cit.* (20)

²⁸ Polkinghorne, J.C. *Science and Creation*, London: SPCK (1988), pp.15-16. The weakness of a reductionism which claims that all is discoverable by scientific investigation has been exposed by Peter Medawar: 'that there is a limit upon science is made very likely by the existence of questions that science cannot answer and that no conceivable advances of science would empower it to answer... I have in mind such questions as: How did everything begin? What are we all here for? What is the point of living? Whatever else may be in dispute, it would be universally agreed that it is not to science that we should look for answers.' (*The Limits of Science*, New York: Harper & Row (1984), p. 66).

²⁹ Barr, J. *Biblical Faith and Natural Theology*, Oxford: Oxford University Press (1993), p. 18.

3. attempts to combine 'basic Barthian insights' with classical natural theology;
4. a revival of interest in philosophical theism;
5. a concentration on 'normal' life; Barr cites Wisniewski as an exponent of this;
6. linking with current ecological problems to produce a theology of nature.

Most theological attention has been on various 'process' approaches.³⁰ However, I want to concentrate on Barr's last stream, the need for a robust theology of nature. I have three reasons for distinguishing this from natural theology *sensu stricto*:

1. whilst I am not competent to develop a comprehensive philosophical approach, I am clear that a biblically-based theism must concern itself with a God who both brings into being and upholds his creation;
2. the God of the Process Theologians does not seem to be the same as the One who redeemed the creation once and for all at Calvary; and
3. a theology which minimises or even ignores the reality of the world in which we live is unrealistic and unattractive; like most believing scientists I am a critical realist.

What are the components of a theology of nature? I suggest that there are at least four.

1. An unapologetic and unyielding acceptance of a God who is outside creation and yet who has created and in some way oversees his work (Ps 104: 27-30; Col 1:17; Heb 1:3) – 'Even the winds and the sea obey him' (Mt 8:27). God is both transcendent and immanent.
2. A belief that the natural (or scientific) and the religious accounts of the world are incapable of conflicting; any apparent differences may result from imperfect scientific understanding or wrong exegesis. God is the author of both a Book of Words and a Book of Works.³¹
3. As full as possible understanding of the world. Scientific interpretation may be provisional, but it is based on the way things are. It is distorting and ultimately self-defeating to temper scientific knowledge because of theological or philosophical doctrine; we ignore Galileo at our peril: 'It was Galileo's telescope that conclusively refuted the interpretation of Psalm

30 For example, Clayton, P. & Peacocke, A. (eds.) *In Whom We Live and Have Our Being: Panentheistic Reflections on God's Presence in a Scientific World*, Grand Rapids, MI: Eerdmans (2004).

31 On the title page of the *Origin of Species*, Darwin quoted (presumably with approval) from Francis Bacon's *Advancement of Learning* (1605): 'Let no man think or maintain that anyone can search too far or be too well studied in the book of God's words or in the book of God's works; rather let all endeavour an endless progress or proficience in both.'

96:10 [“The world is fixed immovably”] as a proof-text against the earth’s rotation.³²

4. A sense of awe and wonder. Creation is God’s work, but at the same time we must remember that Adam was placed in a garden ‘to till it and look after it’, not to preserve it in a pristine condition.

God saw all that he had made and declared it to be ‘very good’. It is misleading to equate this state with perfection. Change is an inevitable part of our history and destiny. Whatever the uncertainties, we know that the world is not the same as it was at its beginning: there were once dinosaurs, now there are none; for most of the earth’s history, there have been no humans. A child is immature in both body and behaviour; his or her immaturity is ‘natural’ but becomes ‘unnatural’ if it persists into adult life.

Likewise there is no inevitable and correct state for the natural world. The common mediaeval analogy that the microcosm of the body reflects the macrocosm of the wider world implied that there is a mature and final state to the natural world in the same way there is to the human body. Similarly, many early ecologists believed that natural communities progressed to an inevitable ‘climax’ in any particular situation – usually woodland of some sort. Such communities consisted of repeated internally organised units with a considerable degree of integration; they were more than the sum of their parts and could be described as a quasi-, or even super-, organism. ‘Ecological vitalism’ of this sort paralleled and co-existed with evolutionary vitalism. The latter was mortally wounded by the neo-Darwinism synthesis but the former lives on: it is explicit in many of the pseudo-mystical speculations about Gaia (as distinct from the strictly scientific claims) and is implicit in much eco-feminism.³³

As long ago as 1935, the pioneer British ecologist Arthur Tansley attempted to counter ecological vitalism by introducing the concept of ‘ecosystem’ as a neutral descriptive word for both ‘the organism-complex and... the habitat factors in the widest sense of the word [which] are the basic units of nature on the face of the earth’,³⁴ but even this has been hi-jacked so that ecosystems are now supposed to have resilience, persistence, resistance, health and to suffer damage – properties more properly attributed to organisms. A better understanding of natural organisation is that it consists of ‘self-organizing systems in which random disturbance and colonisation events create a heterogeneous landscape of diverse species, which then become knotted together through nutrient fluxes and other forms of interaction... some simply having to do with chance and geography’.³⁵

32 Kidner, D. *Genesis*, London: Tyndale (1967), p. 31.

33 See, for example, Bratton, S.P. ‘Ecofeminism and the problem of divine immanence/transcendence in Christian environmental ethics’, *Science & Christian Belief* (1994) 6, 21-40.

34 Tansley, A.G. ‘The use and abuse of vegetational concepts and terms’, *Journal of Ecology* (1935) 16, 284-307.

35 Levin, S.A. *Fragile Dominion*, Reading, MA: Perseus (1999), pp. 38, 80.

A theology of nature should not be sought in vitalism, nor in 'balance' which is its intellectual twin. These concepts should not be confused with the characteristics of an organism for self regulation, where disturbance is automatically followed by a return to an efficient working condition. When we talk about 'balance' in nature, a supposedly equilibrium state is implied; the assumption being that when 'nature' is disturbed (usually anthropogenic insults are involved), the system reverts to its rightful state once the disrupting influence is removed. The language of balance and equilibrium is commonly used by politicians, particularly in the context of the need to correct or remove a polluting or otherwise undesirable influence.

However there is no intrinsic balance in the natural world. Opportunistic redress follows disturbance. In an empty environment (such as following a volcanic eruption or a catastrophic fire or flood), colonisation will be from the nearest source of mobile organisms; they will in turn be succeeded and possibly replaced by more robust immigrants, but the resultant assemblage of organisms will not have an inevitable composition – except in the sense that it will contain many of the characteristic species of that particular habitat. If a mature community such as a tropical forest or a rocky sea-shore is disturbed, re-colonisation will be from local species (seaweeds and crustaceans in a littoral situation; mosses and grasses among otherwise barren rocks), which will give the impression of restoration rather than opportunism.³⁶ These processes are well illustrated by the biota of oceanic islands, which reflect an apparently chance sequence of colonisation and subsequent change rather than any deterministic progress towards an ideal community.³⁷ This does not detract from the undeniable existence of predictable successions or of well-defined associations; what it does is to shift the appropriate questions from descriptive statics to dynamic processes, with the focus on ordering mechanisms rather than the results of that process.

Theology has traditionally concentrated on pattern rather than process. Paley's Watchmaker is a prime exemplar of this. This is an error. As Paine³⁸ put it, 'Pattern is generated by process. The former embodies static description, the latter more subtle and dynamical events.' This is where a theology of nature meets and challenges natural theology. For John Polkinghorne³⁹

The twin discernment of both pattern and process in the workings of the world, of being and becoming, lie at the heart of any attempt to construct a natural theology in true accord of the way things are. There has been a per-

36 Connell, J.H. 'Diversity in tropical rain forests and coral reefs', *Science*, NY (1978) 199, 1302-1310.

37 Williamson, M. *Island Populations*, Oxford: Oxford University Press (1981); Berry, R.J. 'Diversity and differentiation', *Oikos* (1983) 41, 523-529.

38 Paine, R.T. 'Food webs: linkage, interaction strength and community infrastructure', *Journal of Animal Ecology* (1980) 49, 667-685.

39 Polkinghorne, J.C. *Science and Creation*, London: SPCK (1988), p.6.

petual temptation in religious thought to concentrate on one pole or other of this dialectic – the static perfection of the God of the philosophers, in all his remoteness; the living God of Abraham, Isaac and Jacob, in all his dangerous anthropomorphism. A true account will hold the two in balance.

It is impossible to emphasise enough the change that has taken place in biological understanding through replacing static pattern with dynamic process⁴⁰ and the implications this has for seeking the working of God in the natural world. Failure to absorb this change is as misplaced as ‘diluvialism’ was in the nineteenth century or ‘progeessionalism’ in the twentieth century. Attempts by Alvin Plantinga and, more recently, by Phillip Johnson and the proponents of ‘intelligent design’ to decry focus on mechanism as equating to atheistic naturalism are seductive but utterly misplaced.⁴¹

Homo sapiens* and *Homo divinus

A theology of nature frequently ignores – or glosses over – theological anthropology. The simplest way to regard the biological species *Homo sapiens*, descended from a primitive simian stock and related to living apes, is as having been transformed by God into *Homo divinus*, biologically unchanged but spiritually distinct. There is no reason to insist that this event took place at the same time as the emergence of *H. sapiens*; Genesis 1 describes it as a *bara* event, a specific act of God, while Gen 2: 7 describes it as a divine in-breathing into an already existing entity.⁴²

Mankind-made-in-the-image-of-God (*Homo divinus*) is a creature in relationship with God,⁴³ his conspecifics, and with the rest of creation. Although the creative acts of God are described throughout Genesis 1 as divinely driven processes (‘Let there be...’), in Gen 1:26 (only), the text is explicitly personal: ‘Let *us* make human beings...’; in v.29 God addresses the newly created humans as ‘you’. The ‘image of God’ means that we are sufficiently like God that we can have an intimate relationship with him: we are told that God

40 Botkin, D. *Discordant Harmonies*, New York: Oxford University Press (1990);

Reice, S.R. *The Silver Lining: The Benefits of Natural Disasters*, Princeton: Princeton University Press (2001).

41 Hasker, W. ‘Evolution and Alvin Plantinga’, *Perspectives on Science & Christian Faith* (1992) 44, 150-162; Johnson, P.E., Lamoureux, D.O. et al. *Darwinism Defeated?*, Vancouver: Regent College (1999); Pennock, R.T. *Tower of Babel: the Evidence Against the New Creationism*, Cambridge, MA: MIT Press (1999); Pennock, R.T.(ed.) *Intelligent Design Creationism and its Critics*, Cambridge, MA: MIT Press (2001); Dembski, W.A. & Ruse, M. (eds.) *Debating Design*, Cambridge: Cambridge University Press (2004).

42 Berry, R.J. ‘Did *Homo sapiens* become *Homo divinus*?’, In Vischer, L. (ed.) *Listening to Creation Groaning*, Geneva: John Knox Series no. 16 (2004), pp. 172-186.

43 ‘The uniqueness of human beings consists in their being God’s counterparts. The relationship to God is not something which is added to human existence; humans are created in such a way that their very existence is intended to be their relationship to God.’ (Westermann, C. *Genesis, 1-11*, Scullion, J.J. (trans.), London: SPCK (1984), p.158).

walks in the garden with Adam and Eve, and he speaks to them personally – in a different way from the rest of creation. The woman was created as an equal partner to Adam because ‘it was not good for the man to be alone’. The ‘Fall’ story describes a multiple break in relationships so that Adam and Eve were scared and hid from God; tense with each other and alienated from the non-human creation.⁴⁴ Walter Brueggemann⁴⁵ identifies the agenda of the narrator of Genesis 2 and 3 as about ‘how to live with the creation in God’s world on God’s terms... The text probes the extent to which one may order one’s life autonomously, without reference to any limit or prohibition.’

A significant characteristic of *H. divinus* is that (s)he is given ‘dominion’ over the rest of creation. As Lynn White⁴⁶ notoriously pointed out, this has led to the widespread assumption that ‘we are superior to nature, contemptuous of it, willing to use it for our slightest whim’. This interpretation is common, but wrong. Exegetes are unanimous in rejecting it. For example, Westermann⁴⁷ puts it:

The subjection of the earth has royal overtones which must be clarified by the concept of kingship in antiquity. As lord of his realm, the king is responsible not only for the realm; he is the one who bears and mediates blessings for the realm entrusted to him. Man would fail in his royal office of dominion over the earth were he to exploit the earth’s resources to the detriment of the land, plant life, animals, rivers and seas.

We are God’s vice-gerents on earth. The common word for this is that we are his stewards. This is a name disliked by some because they see connotations of an absent landlord, a hierarchy, or a vassalship,⁴⁸ but we should not be distracted by etymology. Alternative words are manager, trustee or simply creation-carer. The key is that we have a responsibility towards our world as a consequence of being in God’s image. We are more than animals with an interest in protecting our kin and resources; if we deny our status as *H. divinus*, we belittle and damage our God-appointed role here on earth. Acknowledging humankind as *H. divinus* is a key to any true theology of nature.

44 Wilkinson, D. *The Message of Creation*, Leicester: IVP (2002), p. 70. Ernest Lucas comments, ‘It is worth stressing that the emphasis in these verses (Gen 3:14-19) is not on things (with the exception of the serpent, which is a symbol of all that is opposed to God), but on changes in relationships.’ (*Can We Believe Genesis Today?*, Leicester: IVP (2001), p.146.)

45 Brueggemann, W. *Genesis*, Atlanta, GA: John Knox Press (1982), p.51.

46 White, L. ‘The historical roots of our ecologic crisis’, *Science*, NY (1967) 155, 1203-1207.

47 Westermann, C. *Creation*, London: SPCK (1974) (Originally published in German as *Schöpfung*, Stuttgart: Kreuz-Verlag (1971)), p.52.

48 Palmer, C. ‘Stewardship: a case study in environmental ethics’, In Ball, I., Goodall, M., Palmer, C. & Reader, J. (eds.) *The Earth Beneath*, London: SPCK (1992), pp. 67-86; Santmire, P. ‘Partnership with nature according to the scripture: beyond the theology of stewardship’, *Christian Scholar’s Review* (2003) 32, 381-412; Berry, R.J. (ed.) *Environmental Stewardship*, London: T&T Clark (2006).

A Polluted and Degraded World

A conventional theological understanding of the evolving ape which became humankind, is that the 'temptation story' in Genesis 3 is merely a way of describing the advent of self-awareness; the eating of the fruit which led to 'the opening of the eyes' of our first parents refers to the development of conscience and the possibility of moral choice. In these terms, the 'Fall' becomes an upward leap into true humanness rather than a descent into moral turpitude. Julian Huxley used to speak of us as having moved from the biological phase of evolution into what he called the 'psychosocial phase'; C.H. Waddington described it as the 'sociogenetic phase'. Teilhard de Chardin's idea of progress towards 'omega point' expressed a similar notion.

An intrinsic objection to the notion of an 'upward Fall' is that there is no evidence whatsoever that we are improving morally in any respect. A more serious problem is the damage that it does to the biblical meta-narrative. I am not referring here to the fate of the Garden of Eden story; its interpretation is bound to be difficult and its lack of mention in the rest of the older Testament has encouraged its downplaying. However, it is taken up again in the New Testament, most explicitly in Romans 8: 19-24.⁴⁹

The most often repeated description of Christ's accomplishment in redemption is that he 'delivered us from death' ('You once were dead because of your sins and wickedness... but God brought us to life with Christ when we were dead because of our sins' Eph 2: 1,5; 'Although you were dead because of your sins... he has brought you to life with Christ' Col 2: 13; 'We know we have crossed over from death to life' 1 Jn 3: 14; it is implicit in our Lord's conversation with Nicodemus about being 'born again' recorded in Jn 3:1-21). In the context, 'death' cannot be physical death, nor can it be simply a figure of speech (as in the Parable of the Prodigal Son: 'My son was dead'); it must mean spiritual death in the sense of being separated from God – the fate Adam and Eve suffered when they were banished from Eden.

The language and imagery of 'death' suggest that physical and spiritual death are the same, but we should resist this. The death from which Christ saved us is not simply spiritual insensitivity or blindness, nor is it merely a liability to physical mortality; it is a severance of relationship with God, the source of life. Interestingly William Buckland suggested as early as 1837 in his *Bridgewater Treatise* that human death ought to be distinguished from animal (i.e. biological) death. The deciding factor for him was the vast numbers of previously living organisms represented only by fossils. Challenged about this, he preached a sermon before the University of Oxford on Romans 5: 12, 'It was through one man that sin entered the world and through sin death, and thus death pervaded the whole human race, inasmuch as all have sinned.'

49 Interestingly, and relevantly in this context, the Jews do not have a developed doctrine of 'the Fall'.

Distinguishing between biological and spiritual death could be regarded as reimporting dualism into humanness, but it is a very weak version of dualism; in no way does it represent 'body' and 'soul' as separate entities as in the classical dualism of Plato or Descartes. Charles Moule⁵⁰ has argued that there is indeed a dualism in Paul's thought, but it is one between filial obedience and disobedience. This gives independent support to the Bible's understanding about death because it buttresses the interpretation of our divinely given humanness as being essentially about relationships.

However, there is another aspect of distinguishing spiritual from biological death: we can be justly accused of callous irrelevance if we ignore the immensity of biological death through evolutionary time in the interests of theological tidiness. The historian David Hull asks:

What kind of God can one infer from the sort of phenomena epitomised by the species on Darwin's Galapagos Islands? The evolutionary process is rife with happenstance, contingency, incredible waste, death, pain and horror... Whatever the God implied by evolutionary theory and the data of natural selection may be like, he is not the Protestant God of waste not, want not. He is also not even the awful God portrayed in the Book of Job. The God of the Galapagos is careless, wasteful, indifferent, almost diabolical. He is certainly not the sort of God to whom anyone would be inclined to pray.⁵¹

Hull is polemicising: 'horror' is a human reaction; pain is a necessary mechanism for survival; death is a thermodynamic necessity; 'waste' implies purposelessness, but he raises valid questions about the nature of God which have received somewhat inadequate answers – ranging from the extreme anthropocentricity of Aquinas and Paley (that all must be for the best for humankind), through claims that non-human suffering is somehow redemptive,⁵² to suggestions of a panexperiential metaphysicism as imagined by Teilhard de Chardin and Rupert Sheldrake (who finds common ground with Matthew Fox and his 'creation spirituality'⁵³). Southgate⁵⁴ has reviewed the suggestions that have been made for a robust evolutionary theodicy, and concluded that the only satisfactory answer must include the recognition that:

- a. God does not abandon the 'victims' of evolution, because
- b. Humans have a calling, stemming from Christ's transforming power through the Cross, to participate in the healing of the world.

50 Moule, C.F.D. 'St Paul and dualism: the Pauline conception of resurrection', *New Testament Studies* (1965-6) 13, 106-123.

51 Hull, D.L. 'God of the Galapagos', *Nature* (1992) 352, 485-486.

52 Or 'cruciform': Rolston, H. 'Kenosis and nature', In Polkinghorne, J.C.(ed.) *The Work of Love: Creation as Kenosis*, London: SPCK (2001), pp. 43-65.

53 Sheldrake, R. & Fox, M. *Natural Grace*, London: Bloomsbury, (1996).

54 Southgate, C. 'God and evolutionary evil: theodicy in the light of Darwinism', *Zygon* (2002) 37, 825-882.

We shall see the force of this argument when we examine further our response to the gospel.

To return to the death that characterises humans, the ‘sin that led to death’ (Rom 5:12) was, of course, Adam’s disobedience in Eden. It does not seem too far-fetched to note that Adam’s failure was at root a failure of stewardship, disregarding the very first command to the human race and hence ignoring the purpose for which we were placed on earth; at one level, eating the forbidden fruit was simple disobedience, but its effect was treating God as unnecessary and irrelevant.

What were the effects of Adam’s disobedience? The most relevant commentary on the consequences of ‘the Fall’ described in Genesis 3 is in Romans 8: 19-22, where the created universe is said to have been ‘made subject to frustration’ and to be ‘groaning as if in the pangs of childbirth’. It is a difficult passage. As Dunn⁵⁵ points out, at one level it ‘recalls the extent to which believers continue to be thoroughly bound up with creation, and that precisely as part of and not despite the process of salvation’. But this is only part of it. Commenting on the Genesis story, Derek Kidner⁵⁶ links the pre-Fall situation with our present existence: ‘Leaderless, the choir of creation can only grind on in discord. It seems from Romans 8: 19-23 and from what is known of the pre-human world that there was a state of travail from the first which man was empowered to “subdue” until he relapsed into disorder himself.’

Charles Cranfield⁵⁷ has used the same analogy with a powerful *reductio ad absurdum* argument:

What sense can there be in saying that the ‘sub-human creation – the Jungfrau, for example, or the Matterhorn, or the planet Venus – suffers frustration by being prevented from properly fulfilling the purpose of its existence?’ The answer must surely be that the whole magnificent theatre of the universe, together with all its splendid properties and all its life, created for God’s glory, is cheated of its true fulfilment so long as man, the chief actor in the great drama of God’s praise fails to contribute his rational part. The Jungfrau and the Matterhorn and the planet Venus and all living things too, man alone excepted, do indeed glorify God in their own ways; but since their praise is destined to be not a collection of individual offerings but part of a magnificent whole, the united praise of the whole creation, they are prevented from being fully that which they were created to be, so long as man’s part is missing, just as all the other players in a concerto would be frustrated of their purpose of the soloist were to fail to play his part.

55 Dunn, J.D.G. ‘Spirit speech: reflections on Romans 8: 12-27’, In Soderlund, S.K. & Wright, N.T. (eds.) *Romans and the People of God*, Grand Rapids, MI: Eerdmans (1999), pp. 82-91, (p.88).

56 Kidner, D. *Genesis*, London: Tyndale (1967), p.73.

57 Cranfield, C.E.B. ‘Some observations on Romans 8: 19-21’, In Banks, R. (ed.) *Reconciliation and Hope: New Testament Essays on Atonement and Eschatology presented to L.L. Morris on his 60th Birthday*, Grand Rapids: Eerdmans (1974), pp. 224-230.

Henri Blocher⁵⁸ makes essentially the same point, 'If man obeys God, he would be the means of blessing the earth, but in his insatiable greed... and in his short-sighted selfishness, he pollutes the earth and destroys it. He turns a garden into a desert (cf. Rev 11: 18). That is the main thrust of the curse of Genesis 3.'

Tom Wright⁵⁹ agrees:

The Christian inheritance is not one piece of geographical countryside. It is nothing less than the renewed, restored creation. Paul's spectacular picture of creation groaning in birth-pangs, longing to share the freedom of the glory of God's people (8: 16-27), owes a great deal on the one hand to the image of the 'Messianic woes', but on the other hand to the scriptural sense in which the fate of the land is bound up with the fate, and the covenant behavior of Israel (For the positive side, see, e.g. Is 35; for the negative compare the suggestive Lev 26:24, 43; 2 Chron 36: 21). When Christians are finally redeemed, Paul is saying, then the land – only now, in this case, the whole cosmos – will be redeemed.

Ecology and exegesis come together to indicate that the earth's curse is not a change in ecological law, but a massive failure by what a biologist would call a 'key-stone species' – in this case, the human species.⁶⁰ The cause of our environmental problems lies in human carelessness and greed. The 'Fall' is not primarily about disease and disaster, nor about the dawn of self-awareness. Rather it is a way of describing the fracture in relationship between God and the human creature made in his image. The rupture means that we rattle around in our space, as it were, producing disorder within ourselves, with our neighbours and with our environment (human and non-human). This will continue until our relationship with God is restored and we become 'at peace with God through our Lord Jesus who has given us access to the grace in which we now live; and we exult in the divine glory which is to be ours' (Rom 5: 1,2) – words which condition and explain the state of nature which Paul uses later in the same passage (Rom 8: 19-21). This is the point where we converge on Southgate's (2002) defence of divine teleology in creation through humans having a crucial role as 'created co-creators' with God, rather than through the classical and persistent tradition of ingenuous anthropocentrism.

Redemption and Reconciliation

The most important implication of 'the Fall' is that it highlights the need for

58 Blocher, H. *In the Beginning*, Leicester: IVP (1984), p. 184.

59 Wright, N.T. 'New Exodus, new inheritance: the narrative substructure of Romans 3-8', In Soderlund, S.K. & Wright, N.T. (eds.) *Romans and the People of God*, Grand Rapids, MI: Eerdmans (1999), pp. 26-35.

60 John Bimson has usefully and comprehensively reviewed the effects and extent of the 'Fall' ('Reconsidering a cosmic fall', *Science & Christian Belief* (2006) 18, 63-81).

restoring the break in our relationship with God. The possibility of this is, of course, the gospel: we are assured that God, through Christ, has ‘reconciled *all things* to himself, making peace through the shedding of his blood on the cross’ (Col 1: 20). C.F.D. Moule⁶¹ has commented that Romans 8: 19-21 means that ‘man is responsible before God for nature. As long as man refuses to play the part assigned him by God, so long the entire world of nature is frustrated and dislocated. It is only when man is truly fitting into his proper position as a son in relation to God his Father that the dislocation of nature will be reduced.’

Commentators sometimes write about the need for nature to be ‘redeemed’.⁶² The Bible does not explicitly connect redemption with the non-human creation, but it comes very close in speaking of ‘reconciliation’ of all things through the cross. Oliver O’Donovan⁶³ is confident about the link:

In speaking of the redemption of all creation, we must not allow the idea to float free in independence of the revealing of the sons of God (Rom 8: 19ff). We cannot profitably speculate on what ‘redemption’ will mean for the non-human creation, but yet Scripture speaks of such a redemption. For redemption is what God has done for the whole and not just for a part of that he once made. The redemption of the world does not serve only to put us back into the Garden of Eden where we began.⁶⁴ It leads us on to the future destiny to which even in the Garden of Eden we were already directed. For creation was given to us with its own goal and purpose, so that the outcome of the world’s story cannot be a cyclical return to the beginnings, but must fulfil that purpose in the freeing of creation from its ‘futility’.

All this means that working with God in caring for creation is not an optional extra, but is inseparable from the fullness of humanness. This is sometimes described as ‘co-creatorship’. Philip Hefner⁶⁵ prefers ‘created co-creatorship’, so avoiding the arrogance of implying that we are equal to God who created us in the first place. Interestingly, Lynn White’s indictment that Christianity is to blame for the ecological crisis on the grounds that ‘it is God’s will that we exploit nature for his proper ends’ was followed by the conclusion that ‘since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not’.⁶⁶

From beginning to end, the Bible speaks of our interdependence with the rest of creation. There is no hint of distinct ‘magisteria’ as suggested by

61 Moule, C.F.D. *Man and Nature in the New Testament*, London: Athlone (1964), p. 12.

62 For example, Rolston, H. ‘Does nature need to be redeemed?’, *Zygon* (1994) 29, 205-229.

63 O’Donovan, O.M.T. *Resurrection and the Moral Order*, Leicester: IVP (1986), p. 55.

64 Francis Schaeffer was a pioneer in recognising our divine mandate to care for creation (*Pollution and the Death of Man*, London: Hodder & Stoughton (1970)). However he seems to have believed in a ‘restoration’ to a pre-Fall situation (*Genesis in Space and Time*, London: Hodder & Stoughton (1972), p. 63).

65 Hefner, P. *The Human Factor: Evolution, Culture, Religion*, Minneapolis: Fortress (1993).

66 White, *loc. cit.*, (46).

Stephen Gould.⁶⁷ Sometimes we are given direct commands, as when we are told to 'have dominion'; in other places, the instructions are implicit (the perils of a journey, the care needed for a farm or a flock of animals, the mastery we may expect over wild animals or fierce weather). We are told that sin led to Noah's flood and also to drought (Lev 26, Deut 28); the food laws regulated hunting; a very positive attitude to creation is expressed in the Wisdom Literature. Increasingly we are learning how much we depend upon 'creation's (nature's) services'.⁶⁸ In all cases we interact with creation; we are a part of it as well as apart from it. But throughout is a parallel theme: that this is God's world, that he has made a covenant with us which he has promised to uphold, and that both creation and ourselves were reconciled to God by Christ's death on the cross. James Jones⁶⁹ has pointed out that the only title Jesus uses for himself is 'Son of Man' (*Adamah* – son of the Earth) and on seven occasions (Mat 9: 2-8, 12: 38-42, 24: 27-30; Luke 18:8, 21: 35-36; John 12: 23-24, 12: 32-34) he links this with a specific reference to the 'Earth'. Jones warns against building too much on this, but insists that the repeated association is too strong to be ignored.

Conclusion

There is widespread – but sadly not universal – agreement that our attitudes to the natural world are flawed. Peter Scott⁷⁰ describes it as 'the displacement' or 'eclipse' of God. Some regard our attitudes as the result of Darwin's demonstration of the validity of naturalism, some to the 'de-sacralisation' of the natural world, others to simple self-centredness. Whatever the proximate cause, the ultimate cause is the separation of humankind from nature/Creation.

God's answer to this is, of course, the Gospel: by his death on the Cross, the Son reconciled *all things* to the Father. A theology of creation should certainly involve a sense of awe and wonder, as expressed by Job and in many of the Psalms. But as grace without works is dead, so such response must also result in a praxis of care. This praxis is too often extinguished because of eschatological views that remove the need for any practice of Creation care: if a 'New Heavens and the New Earth' are imminent, there is little point in caring for our existing earth. A key verse in this context is 2 Peter 3: 10, commonly translated as implying destruction of this present world (RSV: 'and the earth and the works that are upon it will be burned up'; TEV: 'the earth also and the works

⁶⁷ see note 2

⁶⁸ Robert Constanza et al. ('The value of the world's ecosystem services and natural capital', *Nature* (1997) 387, 254-260) calculated that 'nature' supplies us with c.\$33 million million a year through photosynthesis, waste disposal, direct solar energy, stabilising soils, etc, a sum twice the total annual gross national product of all the nations of the globe. The topic of 'nature's services' is developed by Lester Brown in *Eco-Economy*, London: Earthscan (2001).

⁶⁹ Jones, J. *Jesus and the Earth*, London: SPCK (2003).

⁷⁰ Scott, P. *A Political Theology of Nature*, Cambridge: Cambridge University Press (2003).

that are therein shall be burned up'; NIV: 'the earth and everything in it will be burned up'). Steven Bouma-Prediger⁷¹ castigates it as 'perhaps the most egregious mistranslation in the entire New Testament'. Tom Finger⁷² concludes that 'the main emphasis of the text is that everything will be scrutinized or assessed by God, and not necessarily destroyed'. Most expositors emphasise continuity and the renewal of creation rather than its replacement.⁷³

Tom Wright has argued that in Romans 5-8, Paul had the story of the Exodus in mind, drawing a parallel between the redemption experienced by the Israelites accompanied by the freedom of the Promised Land, with the Redemption of all mankind by Christ and the new Creation to which we are the heirs. This leads Wright to insist that:

when discussing the future hope of Christians, it is important that Romans 8, seen as Paul's reworking of the Exodus-shaped 'inheritance' theme, is given full weight. It is not sufficient to speak of 'eternal life' on the basis of, e.g. Romans 5:21 and 6:23, and to assume that this refers to a generalized 'heaven' such as characterized in much common Christian tradition.⁷⁴ Paul's expectation was more specific: 'the life of the coming age' (an expanded translation of *zoe aionios*) was to be enjoyed, not in 'heaven' as opposed to 'earth', but in the renewed, redeemed creation that has itself shared the Exodus-experience of the people of God.⁷⁵

Wright is categorical:

the renewal of God's covenant results in the renewal of God's creation. Romans has expounded the fall of Adam (1:18-32, made explicit in 5:12-21). How is the fall of Adam reversed? Clearly, through Christ: but when Paul talks of the work of Christ (and of the Spirit, which implements the work of Christ) he uses explicit 'new covenant' language to do it... The result of the renewal of the covenant, according to regular prophetic Jewish literature, is the renewal of creation. That is why in Romans 4:13, Paul says that the

71 Bouma-Prediger, S. *For the Beauty of the Earth*, Grand Rapids, MI: Baker Academic (2001), p. 77.

72 Finger, T. *Evangelicals, Eschatology and the Environment*, Wynnewood, PA: Evangelical Environmental Network (1998), p. 5.

73 For example, Jones *op. cit.*, (69); Wright, N.T. *The Resurrection of the Son of God*, London: SPCK (2003).

74 Wright describes Romans 8:18-28 as 'one of the most central statements in the New Testament about what God intends to do with the whole creation'. He grieves that it 'is regularly marginalized in mainstream Protestant interpretations of Romans. If you insist on reading Romans simply as a book about how human beings "get saved" in the sense of "going to heaven when they die", you will find that these verses function as a kind of odd apocalyptic appendix. That in consequence is how the tradition has often regarded them, both in the "radical" scholarship of Lutherans like Bultmann and Käsemann and in the "conservative" readings of much evangelical scholarship. In fact, the passage is the deliberate and carefully planned climax to the whole train of thought in Romans 5-8, and indeed Romans 1-8, as a whole.' (Wright, N.T. *New Heavens, New Earth*, Cambridge: Grove Biblical Series B11 (1999)).

75 Wright, N.T. *op. cit.*, (59).

promise of Abraham and his seed was that they should inherit – not the land as one might expect – but the world, the cosmos. When God does for his people what he intends to do for them, the whole cosmos, the whole creation will be renewed as well. The wilderness and the barren land will celebrate. In Romans 8:18-27 we have the exodus-motif, which Paul has applied to the people of God in 8:12-17, applied now to the cosmos as a whole: the whole creation ‘will be set free from its bondage to decay and share the liberty of the glory of the children of God’... This is not a theology in which human beings are set free from space-time existence and escape into a ‘salvation’ which is detached from the created world. It is a theology which answers explicitly the problem of the cosmos as set out in Genesis 1-3, where the integration of the whole creation gives way to the subsequent dislocation and fracturing of that integration.⁷⁶

This gives a positive complexion to the cosmological debates about whether the earth will end in a whimper or a crunch, events which are thousands of millions of years in the future. Less optimistic but still beyond normal comprehension is the belief that the ‘circumstellar habitable zone’ is continually contracting, and our biosphere will no longer exist in under a million years (reviewed by Conway Morris⁷⁷). Much more sobering are the fears raised by Martin Rees, the British Astronomer Royal, that we may not survive as a species for even a hundred years.⁷⁸ The spectres raised by Rees are not cosmological or physical, not impact with an asteroid or an uncontrolled nuclear reaction, but the consequences of failures of responsibility – producing inadvertent or malevolent bioterrorism, or irreversible climate change leading to ecological collapse; Ed Wilson has discussed similar breakdowns from a more narrowly biological focus.⁷⁹ Rees and Wilson are not professional pessimists nor are they trying to make their case through science fiction. Their concerns are much more convincing than the sociological mayhem portrayed by someone like Francis Fukuyama⁸⁰ but these different apocalypses all add up to something utterly different from the optimistic evolutionism of Julian Huxley or Teilhard de Chardin.⁸¹

The end to the created order is a fit place for science and theology to find common ground. John Polkinghorne – a physicist by background – argues that cosmic death and human death pose equivalent questions about God’s purposes for his universe. His solution focuses on hope – not of an eternal *post mortem* survival, but of death followed by resurrection: ‘God will no more aban-

76 Wright, N.T. *op. cit.*, (59).

77 Conway Morris, S. *op. cit.*, (20).

78 Rees, M. *Our Final Century*, London: William Heinemann (2003).

79 Wilson, E.O. *The Future of Life*, London: Little Brown (2002).

80 Fukuyama, F. *Our Posthuman Future*, London: Profile Books (2002).

81 Teilhard repeatedly used analogy in his writing, which is more a poetic than a scientific tool. One of the reasons the Vatican gave for rejecting repeated revisions of *Le Phénomène Humain* was the ‘it was not scientific enough’. Despite this, Teilhard regarded himself first and foremost as a scientist.

don the universe than he will abandon us. Hence the importance to theology of the empty tomb, with the message that the Lord's risen and glorified body is the transmutation of his dead body...It is important that the Christian church does not lose its nerve in witnessing to the coherence and divine assurance of such a hope'.⁸² Polkinghorne has continued to reaffirm and develop this theme: 'any hope of a destiny beyond death can ultimately rest only on the faithfulness of God the Creator' and this means 'appeal to the revelatory insights by which the divine character is made known is absolutely fundamental to the discussion'.⁸³

This brings us full circle – to the God who has revealed himself in two complementary books – a Book of Words and a Book of Works.

Let Qoheleth have the last word. He was a scientist; Ecclesiastes can (and perhaps should) be read as a sort of laboratory record of a series of investigations. Where a mathematician writes 'QED' at the end of a proof, Qoheleth wrote 'futility' or 'vanity'. For him 'God is utterly present and at the same time utterly absent. God is 'present' in every event and yet no event is a 'place of encounter' with God, since humans do not understand what his will is.'⁸⁴ In an orgy of experimenting with different attitudes and behaviours, some of them certainly falling into the category of despotic domination rather than responsible dominion, Qoheleth travelled from Eden all the way to his version of Eschatology. His hard-won answer to it all was 'Fear God and obey his commandments; this sums up the whole duty of mankind' Eccles 12: 13).

R.J. (Sam) Berry is a former President of the British Ecological Society and of the European Ecological Federation. He was President of *Christians in Science* 1992-95.

82 Polkinghorne, J.C. *Science and Christian Belief*, London: SPCK (1994), p. 164.

83 Polkinghorne, J.C. *The God of Hope and the End of the World*, London: SPCK (2002).

84 Murphy, R.E. *Ecclesiastes. Word Bible Commentary, 23A*. Dallas, TX: Word Books (1992), p. lxix.