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All Things New

It is common for Christians to associate Christ's Return with a catastrophic end of the world, the universe and/or space-time. Cosmology describes the future of the universe, and even of individual stars, in time-scales of billions¹ of years. Does this mean that Christians should view cosmology as a vast 'might-have-been'? Will the Second Coming be a cosmic guillotine? Does it matter anyway? The purpose of this study is to examine the claims of scripture and science concerning the end times and to see if either has anything to say to the other.

Keywords: apocalypse, cosmology, curse, end times, environment, eschatology, heaven, resurrection, SETI, universe

Introduction

There has been much debate among Christians about the compatibility or otherwise between the scientific and biblical accounts of creation, but much less on the accounts of the 'end times'.² Over a decade ago, attention was drawn to this by the American Scientific Affiliation in their newsletter parody 'Loseletter'³ in which it was stated: 'The relationship between eschatology and science has been eclipsed in recent years by origins issues involving creation and evolution. Some ASAers, however, think it's time that "destinies" issues receive more treatment.' Whether this statement was among those which were 'not to be taken seriously' or one where the reader was intended to 'read between the lines' is not entirely clear.

What is clear is that those who have recognised that there is an issue to be addressed have seen it to be of primary importance, just as Paul saw that the resurrection was the *central* tenet of our faith on which all else stands or falls. R J Russell, director of the Center for Theology and the Natural Sciences, California, has asserted that 'if Christian theology cannot make genuine headway on this problem, everything else we do is, ultimately, biding time until the cognitive claims of theology either collapse into their own self-referential isolation, or are overturned by the increasing attacks of atheism, or abandoned by

1 1 billion = 10⁹.

2 Since writing this article, I discovered the very relevant paper by Dr D Wilkinson (2004), 'The End of it All: Cosmology and Christian Eschatology in Dialogue', (in 'Creation and Complexity: Interdisciplinary Issues in Science and Religion', ed. C Ledger and S Pickard, Canberra, Australian Theological Forum), which starts with a similar comment. Wilkinson makes a number of the points in my article, though with greater effect and scholarship. I have noted some of these below.

3 Loseletter, Vol. 36 No. 5A, Sept/Oct 94, to be found at: <http://users.stargate.net/~dfeucht/Loseletter.htm>

parishioners searching for a credible and intelligible faith.... *We are irrevocably committed to facing and responding to the challenge of physical cosmology.*⁴ One person of note who has responded to the challenge is J. Polkinghorne, who as both particle physicist and theologian is eminently qualified to consider possible syntheses of cosmology and eschatology. In the late 1990s he participated in a three-year multidisciplinary consultation called the 'Eschatology Project' hosted by the Center of Theological Inquiry, Princeton, which culminated in the publication of two books: the first,⁵ a collection of papers by different members of the group, and the second,⁶ a more accessible presentation by Polkinghorne specifically from his own viewpoint.

A possible reason for the absence of what the Loseletter called the 'destruction/devolution' controversy is the uncertainty of the data and their interpretation.⁷ In the case of creation, there is one major biblical account (Gen. 1-2:4a), one biological theory (evolution) and one mainstream cosmological theory (the Big Bang theory). The discussion therefore simply turns on how literally you read the biblical account and whether or not you are prepared to accept the possible truth of the scientific theories. But in the case of the end times, there are several relevant long passages of scripture, which have given rise to various doctrinal positions, and three logical divisions of cosmological theory with which to compare them.

The End Times – Theological

It is not my intention to discuss the scriptural basis of the main doctrinal systems which describe the end times. The reader who wishes to pursue this question is referred elsewhere.⁸ I give here a brief description in order to indicate the basis of a comparison.

1. The Millennium

The earliest divisions of thought proceed from the three logical positions that can be, and have been, adopted with respect to the thousand year period of Revelation 20:1-6.

4 Russell, R. J. *Eschatology and Scientific Cosmology: From Conflict to Interaction, 2004 Wither-
spoon Lecture*, Princeton, USA: Center of Theological Inquiry (2004); my emphasis.

5 Polkinghorne, J. & Welker, M. (eds.) *The End of the World and the Ends of God: Science and The-
ology on Eschatology*, Trinity Press Int. (2000).

6 Polkinghorne, J. *The God of Hope and the End of the World*, SPCK (2002).

7 Wilkinson, D. *op.cit.* (1) suggests four reasons, of which his first is similar to mine. His others are (2) the 'difficulty of discussing the beginning and end of the Universe from inside it', (3) 'the theo-
logical excess of former years' and (4) the difficulty of seeing 'how work on the end of the Universe
has any practical value'. However, I wonder if these distinguish as much between the *difference* in
interest between beginning and end.

8 e.g. Berkhof, L. *Systematic Theology*, Edinburgh: Banner of Truth (1958) Part 6, General Escha-
tology, II

- a. Premillennialism: From the early centuries of Christianity, this doctrine held that on Christ's return believers who had died would be resurrected and those who were alive transformed. Christ would then reign as King for 1000 years, after which would follow a final resurrection, the last judgement, and a new creation of heaven and earth.
- b. Postmillennialism: From the sixteenth century, several theologians taught that Christ would return at the end of the 1000 years. This made it hard to define the millennium, since its beginning was not marked by a clear supernatural event. Equally open to opinion, it was thought of as a period of greater spiritual triumph, and later, even of growing prosperity and civilisation owing to the general increase of knowledge and wisdom of humanity.
- c. Amillennialism: This doctrine is of equal antiquity to premillennialism, and was the alternative view to 'chiliasm' in the second century, becoming dominant in the reformed church. The doctrine is essentially that there is no scriptural warrant for a belief in a literal millennium on Earth, and that Christ's return and the last judgement form a single demarcation between the temporal phase of human existence and the future eternal phase.

2. The Parousia

A later issue concerned the timing of the events surrounding Christ's return. According to E. B. Elliott,⁹ there are three major divisions of doctrine, the first two of which were devised to counter the protestant identification of the Pope with the antichrist.

- a. Preterism: In 1614 the Jesuit Alcasar proposed that most of the events in the Revelation were associated with the destruction of Jerusalem (70 AD) or the fall of the Roman Empire (410 AD); modern preterists associate the parousia with the former.
- b. Futurism: A proposal of the Jesuit Ribera ca.1580-91 made 'the whole of the Apocalyptic Prophecy, (excepting perhaps the primary Vision and Letters to the Seven Churches,) to relate to things now future, viz. the things concerning Christ's second Advent'.
- c. Historicism: The fourteenth century pre-reformers and the protestant church saw the Revelation 'as a prefiguration in detail of the chief events affecting the Church and Christendom, whether secular or ecclesiastical, from St John's time to the consummation'.

⁹ Elliott, E.B. *Horae Apocalypticæ – A Commentary on the Apocalypse*, 5th edn., (1862), vol.4, pp. 562-563.

The End Times – Cosmological

The idea that the universe might be finite and have a natural gloomy end began to feature strongly in science in the nineteenth century with the growth of thermodynamics.¹⁰ The cosmic stage on which the tragedy would be performed appeared after the publication of Einstein's General Relativity,^{11, 12} which allowed a finite universe, but at the expense of its equilibrium. Lemaître built on this with his proposal of the 'hot big bang' in 1927,¹³ supported in 1929 by Hubble's work on redshift.¹⁴ Big Bang theory is now the prevailing view among cosmologists, who distinguish among three logical outcomes for an expanding universe. Which description fits the real universe depends on how its density, ρ , compares with a critical value ρ_0 .¹⁵

1. The Bounded or Closed Universe

If $\rho > \rho_0$, gravity will eventually reverse the expansion, ending in a 'Big Crunch' further in the future than the Big Bang was in the past;

2. The Marginally-Bounded or Flat Universe

If $\rho = \rho_0$, gravity would require an infinite time to halt the expansion, so there will never be a contraction phase;

3. The Unbounded or Open Universe

If $\rho < \rho_0$, gravity would never halt the expansion, even given an infinite time.

Current evidence seems to rule out the first option, and inflationary theory¹⁶ favours the second, but a curious twist in the story has developed in the last few years. Observation of very distant supernovae seems to indicate that the expansion of the universe, far from slowing down as all three models require, is actually accelerating.¹⁷ This could not be explained at all on the standard theory of gravitation, or if gravity were the only long-distance force acting

10 The growth of 'scientific pessimism' that resulted during the following 100 years or so has been described by Davis, J.J. 'Cosmic endgame: theological reflections on recent scientific speculations on the ultimate fate of the universe', *Science & Christian Belief* (1999) 11(1), 15-27.

11 Einstein, A., 'Die Grundlage der allgemeinen Relativitätstheorie', *Annalen der Physik* (1916) 49 (7), 769-822.

12 Einstein, A. *Kosmologische Betrachtungen zur allgemeinen Relativitätstheorie*, Berlin (1917).

13 Lemaître, G. *Ann. Soc. Sci. Bruxelles* (1927) A47, 49.

14 Hubble, E. 'A relation between distance and radial velocity among extra-galactic nebulae', *Proc. Natl. Acad. Sci. USA* (1929) 15, 168-173.

15 The theoretical value of the critical density, ρ_0 , is $3H_0^2/8\pi G$, where H_0 is Hubble's Constant and G is the gravitational constant, $6.67 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$. Using a nominal value for H_0 of $75 \text{ km s}^{-1} \text{ Mpc}^{-1}$ ($= 2.43 \times 10^{-18} \text{ s}^{-1}$) gives a value for ρ_0 of $1.06 \times 10^{-26} \text{ kg m}^{-3}$, which is equivalent to just over 6 hydrogen atoms per cubic metre.

16 Guth, A. *Inflationary Universe: The Quest for a New Theory of Cosmic Origins*, Addison-Wesley/Perseus Books (1997).

17 Perlmutter, S., et al. (SCP) 'Measurements of Omega and Lambda from 42 High-Redshift Supernovae', *Astrophys. J.* (1999) 517, 565, 1999; Riess, A.G., et al. (H-Z SS) 'Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant', *Astron. J.* (1998) (AAS) 116(3), 1009-1038.

between galaxies, because it would require a repulsive force. Our universe appears then to be destined to go on for ever. The same cannot be said, however, of life. The inevitable destiny of the universe, according to the second law of thermodynamics, is 'heat death'.

In the last few decades bold attempts have been made to challenge this fate. In 1978 Dyson proposed how some form of sentient life derived intellectually from our own might survive the demise of an open universe.¹⁸ Later Barrow and Tipler developed a theory which promised subjectively infinite continuation of intelligence in a closed universe.^{19,20} More recently Noyes and Lindesay have tackled the possibility of accelerating expansion.²¹ They conclude that it is probably harder for our civilisation to last the current century and make the required political decisions than it is to solve the science of survival of sentience. Needless to say, these attempts to give the cold pessimism of physics a dose of vicarious but impersonal hope bear little similarity to the future glory promised to Christians. In the words of J. J. Davis, 'Dyson's vision of the remote future seems to bear more resemblance to the endless cryo-preservation of a human body in a persistent vegetative state or to the "outer darkness" of the gospel tradition than to the "abundant life" and "life everlasting" of the Christian eschatological hope.' He sees such works as 'expressions at a particular historical period dominated by the scientific imagination of the perennial human search for *transcendence*'.²²

On a more local scale, our life expectancy is much more limited. The Earth was formed about 4.55 billion years ago,²³ but it has taken most of this time just to get the 'house ready for the baby'; mitochondrial Eve has been estimated to have lived about 200,000 years ago.²⁴ The Sun has a lifetime of about 10 billion years, so is about halfway through its life. It will then become a red giant, with disastrous consequences for the Earth, before finally giving up the ghost. However the Earth will cease to be habitable long before this, possibly in about 1 billion years, when the Sun's luminosity is expected to be about 50 % greater than it is now.²⁵ Thus if we take into account the possibility that a civilisation might be curtailed by such limiting factors as self-annihilation, uncontrollable

18 Dyson, F.J. 'Time without end: Physics and biology in an open universe' *Rev. Mod. Phys.* (1979) 51, 447-460.

19 Barrow, J.D. & Tipler, F.J. *The Anthropic Cosmological Principle*, Oxford: Clarendon Press (1986).

20 Tipler, F.J. *The Physics of Immortality – Modern Cosmology, God and the Resurrection of the Dead*, London: Macmillan (1994).

21 Noyes, H.P. & Lindesay, J.V. *Scientific Eschatology*, Stanford Linear Accelerator Center, PUB-11063, (2005).

22 Davis, J.J. *op.cit.*, (10).

23 York, D. & Farquhar, R.M. *The Earth's Age and Geochronology*, Pergamon Press (1972).

24 Cann, R.L., Stoneking, M., & Wilson, A.C. 'Mitochondrial DNA and human evolution', *Nature* (1987) 325, 31-36 ; Wilson, A.C. & Cann, R.L. 'The recent African genesis of humans', *Scientific American* (1992), 266, 68-73.

25 Lovelock, J. *The Revenge of Gaia*, London: Penguin Books (2006), p.45.

disease, natural disaster, or global warming, the lifetime of an intelligent race might range from about 105 to 109 years.

The Comparison

A careful comparison between scripture and science reveals that there is probably a contribution that each can make to our understanding of the other. On the one hand, the scriptural account does not merely require a belief that the scientific account is to be guillotined, as if the author of a story decided to excise the final chapters of an otherwise logically constructed story and substitute others which bore little relation to it. On the other hand the scientific account requires that we examine very carefully the claims of scripture before we reject out of hand a reasonable and coherent scientific scenario. Taking a lesson from the evolution/creation controversy, we might, in fact, expect to see that there is a continuity in the story of the universe at its end in the same way that we expect a continuity at its beginning. In other words, Christians who have rejected the discontinuity in the creation account that is required by 'instant' creationism (e.g. the creation of trees with false history in their trunks, and light rays that had never travelled along their paths), might expect that God would show a similar respect for his own creation at the other end of time. J Polkinghorne sees this as a necessary consequence of the new creation being '*ex vetere*' as opposed to the old, which was *ex nihilo*: 'the present created order... is the raw material from which the new will come. Just as the cross and the resurrection are part of the one drama of the incarnation, so the old and new creation must be part of the one drama of God's purpose for his creatures'.²⁶ Lady Julian of Norwich would have seen it as a necessary consequence of the character of God: 'God made it,... God loveth it,... God keepeth it.'²⁷

Five main areas of interest arise in comparing the prophecies of scripture with the predictions of science, namely the signs, the timing, the place, the nature and the extent of the events described.

26 Polkinghorne, J. *The Faith of a Physicist*, Fortress Press (1996), ch.9 Eschatology.

Prof. G. Wenham drew a very similar parallel in the First Annual John Ray Initiative Lecture, 'The Bible and the Environment'(2000): 'The doctrine of the resurrection of the body is surely a paradigm of transformation and perfection of the present existence rather its replacement. If God the Father glorified the earthly body of his Son by raising him from the dead and has promised to raise every human being in a similar resurrection, it would be reasonable to suppose that the rest of this earthly creation will be similarly transformed in the last day.'

27 Lady Julian of Norwich (1368), *Revelations of Divine Love*, ch.V, Westminster MS: 'And in þis he shewed me a lytil thyng þe quantite of a hasyl nott. lyeng in þe pawme of my hand as it had semed. and it was as rownde as eny ball. I loked þer upon wt þe eye of my vnderstondyng. and I þought what may þis be. and it was answered generally thus. It is all þat is mad. I merueled howe it myght laste. for me þought it myght sodenly haue fall to nought for lytyllhed. & I was answered in my vnderstondyng. It lastyþ & euer shall for god louyþ it. and so hath all thyng his begynning by þe loue of god. In this lytyll thyng I sawe thre propertes. The fyrst is. Þt god made it. þe secunde is þet louyþ it. & þe þrid is. þat god kepith it.'

The Signs

Traditionally, Christ's teaching in Matthew 24, Mark 13 and Luke 21, has been regarded as a description of the 'end times' interwoven with prophecy of the destruction of Jerusalem in 70 AD, the former being preceded by catastrophic environmental events:²⁸

On the earth, nations will be in anguish and perplexity at the roaring and the tossing of the sea;... 'the sun will be darkened, and the moon will not give its light, the stars will fall from the sky, and the heavenly bodies will be shaken.' At that time, men will see the Son of Man coming in clouds with great power and glory. (Lk. 21:25; Mk 13:24-26, also Matt. 24:29)

By contrast, N. T. Wright has argued persuasively that such passages refer historically solely to the destruction of Jerusalem,²⁹ and that an end to the world or space-time could have formed no part of first-century Jewish thinking. Whatever position is taken, it is likely that the language is figurative. It was certainly common both in the Old Testament and in the intertestamental literature³⁰ to use such language to describe catastrophic historical events.

Those who have favoured a more literal interpretation and have applied it to the Second Coming have variously associated the portents with such possibilities as nuclear holocaust, meteoric impact and local supernovae, all of which could cause sudden global devastation. By contrast, it is unlikely that such scenes could be attributed to the natural ageing or death of the Sun, as the passage through Main Sequence phase and transition to Red Giant, and thence to White Dwarf, is a slow process by human standards. A literal view would therefore make Christian eschatology a very parochial affair, leaving open the question of what is to become of the rest of the universe. Modern cosmology therefore obliges us to consider a far more comprehensive view of eschatology.

The Time

It is apparent that the early church expected an early return of Christ. But it is obvious that even within New Testament times expectations were being modified and rationalised. Peter countered the taunts of those who said 'Where is this "coming" he promised?' with the comment that 'With the Lord a day is like a thousand years, and a thousand years are like a day', explaining that

28 Berkhof, L. *op.cit.*, (8) Part 6, General Eschatology, I.B.3 & 5.

29 Wright, N.T. *Jesus and the Victory of God*, Fortress Press (1996): e.g. 'If Jesus and the early church used the relevant language in the same way as their contemporaries, it is highly unlikely that they would have been referring to the actual end of the world, and highly likely that they would have been referring to events within space-time history which they interpreted as the coming of the kingdom.' (p.321).

30 e.g. Is. 13:10 (fall of Babylon), Enoch 1:7.

what appeared as 'slowness' was in reality forbearance, 'not wanting anyone to perish' (2 Pet. 3:1-10). Christians who hold non-preterist theologies do not now seem unduly concerned that this forbearance has in fact extended to two thousand years. A 'delay' that might not have been countenanced by the apostles, does not now appear faith-threatening.

Many believe that there are still prophesied events or Christ-appointed tasks, such as the preaching of the gospel to all nations, tribes and language groups (Matt. 28:19, Rev. 5:9), to be fulfilled. The latter could not, or would not, have been done in the event of an earlier return. However, a literal reading of these words is probably not fully justifiable and this particular task is certainly not recorded in the epistles among the reasons for spreading the gospel. This suggests that the disciples themselves might well have understood the Great Commission more as a 'derestriction', as did Peter when he was sent to Cornelius (Acts 10), than as a hurdle which had to be overcome before Christ would return. Some may think that this view undermines motivation for reaching the unevangelised and translating the Bible. But surely the primary reason for these tasks is that of Romans 10:14-15: all those now alive should have the opportunity to hear. Our obligation to spread the gospel is rooted in God's desire 'who wants all men to be saved and to come to a knowledge of the truth' (1 Tim. 2:4), not in completing a tick list of jobs to be done.

If the Great Commission did not preclude, in the minds of the apostles, an early return of Christ, then no more does it preclude a late return for us. Whatever the extent to which we think that we have finished the task, in every generation there are those to whom we are obliged to take the gospel. The only real certainty is that 'the Son of Man will come at an hour when you do not expect him', therefore 'you must be ready' (Matt. 24:44). Other than that, it could be at any time; there could never come a day when Christians would be justified in saying that it has to be tomorrow. As far as the individual believer is concerned, it will be soon enough anyway (Lk. 23:43, Phil. 1:23, 1 Thess. 4:16); no one has to wait more than a lifetime. There is nothing unscriptural about a preacher using the hypothesis of an imminent parousia to encourage spiritual integrity, but equally there is no eschatological necessity for God to be confined to a box that is small in comparison to the cosmological timescale.

The Place

Most Christians will express their belief in, and assurance of, eternal life in terms of their assumed death and translation to heaven (Phil. 1:23). The emphasis is on leaving this world for a better place. Those that actively acknowledge the possibility of Christ's return before their death may focus on such texts as John 14:3 and 1 Thessalonians 4:17 which speak of Christ taking the living believers with him when he returns. Again the emphasis is on removal to heaven. The Earth, the physical universe, is removed from the equation. This idea is reinforced by certain scriptures that seem to speak of the dis-

solution of the present world order (2 Pet. 3:10)³¹ and by philosophical considerations that also find support in scripture (1 Cor. 15:50) that there is no physical link between the temporal and the eternal realms. In other words, heaven is not a place in this universe that we could find if we travelled long and far enough, and once our souls are taken to heaven we have no dealings with the Earth any more. To stray from this position might seem like playing with the error of the Jehovah's Witnesses, who hold that heaven is only for a select 144,000, the remaining 'second class' believers having to be content with life on an albeit idyllic Earth.

However, the scriptures do not cut the world out quite so neatly. Indeed it might have been difficult or incomprehensible to do so, since the Jews did not have our knowledge of astronomy, and therefore could not have made the watertight division between heaven and our universe that we do today. Thus the description of Adam and Eve hearing 'the sound of the Lord God as he was walking in the garden in the cool of the day' (Gen.3:8), did not raise questions about the manner in which the Garden of Eden was linked to the normal abode of the Almighty. Similarly, Jesus's ascension into heaven did not present any philosophical problems to the disciples. If you have no knowledge of what the sky is or what is beyond it, or even whether 'beyond' has a meaning, and have no concept of how you might explore such questions, the distinction between a spiritual heaven and the physical heavens is very hard to make, if not impossible. So the Greek word 'οὐρανοῦς' used in the New Testament, sometimes singular, sometimes plural, is the same in cases where we would take it to mean the sky (e.g. 'the heavens gave rain', Jas 5:18) as in cases where we would take it to mean the abode of God (e.g. 'there will be more rejoicing in heaven', Lk. 15:7). With this in mind, we can imagine that it might well appear just as incongruous to the mind of that day to suggest that the coming of the kingdom of heaven would involve the abolition of the earth, as it would to suggest that birds would be happier if there were no trees to land on, once they had learnt to fly.

A close study of the teaching of scripture on life after death shows that the primary belief held by the Jews (with the exception of the Sadducees) at the time of Christ, and which was endorsed and enhanced by Christ's teaching, was that of a future resurrection on earth. Examples abound:

- When Lazarus died, Jesus did not comfort Martha with an assurance that Lazarus was in heaven, but that he 'will rise again'. Martha affirmed her faith that 'he will rise again in the resurrection at the last day' (Jn 11:23-24).

31 'Most Christians' are unaware of the considerable textual difficulty of this verse, particularly the meaning of εὐρεθησεται ('will be laid bare', NIV, but 'shall be burned up', KJV). My point is that most Christians *do* use the verse in the KJV sense. For a convenient commentary, see Wallace, D.B. 'A Brief Note on a Textual Problem in 2 Peter 3:10', at: http://www.bible.org/page.asp?page_id=1188

- Paul, when arraigned before the Sanhedrin deliberately polarised the argument by declaring ‘I stand on trial because of my hope in the resurrection of the dead’ (Acts 23:6).
- Even though Paul speaks concisely of his desire ‘to depart and be with Christ’ (Phil. 1:23), his detailed doctrine of this process shows that this is effected only through the resurrection: ‘For as in Adam all die, so in Christ all will be made alive. But each in his own turn: Christ, the firstfruits; then, *when he comes*, those who belong to him’ (1 Cor. 15:22-24).
- The ‘elementary teachings’ of the Christian faith, according to the writer to the Hebrews (6:1-3), include the doctrine of ‘resurrection of the dead’. There is no mention here of eternal life in heaven.
- Peter speaks of our ‘living hope’ which is ‘*kept in heaven*’ but ‘ready to be revealed *in the last time*’ (1Pet. 1:3-5).

Thus the Jewish understanding of the after-life was wholly dependent on the possibility of a resurrection. If there was no resurrection, there was no after-life (1 Cor. 15:16-18). If there was to be life after death, it was because there was a resurrection.

It should not then come as a surprise to find that scriptures describing the end times do not dispense with the world, but transform it:

- ‘The creation waits in eager expectation for the sons of God to be revealed. For the creation was subjected to frustration, not by its own choice, but by the will of the one who subjected it, in hope that the creation itself will be liberated from its bondage to decay and brought into the glorious freedom of the children of God’ (Rom. 8:19-21).
- ‘But in keeping with his promise we are looking forward to a new heaven and a new earth, the home of righteousness’ (2 Pet. 3:13).
- ‘Then I saw a new heaven and a new earth, for the first heaven and the first earth had passed away’ (Rev. 21:1).

The creation was ‘subjected to frustration’ because it had to accommodate a fallen race; it will be restored because it will have to accommodate a redeemed race. But that restoration goes further than merely improving the fine-tuning of a few laws, so that we are no longer troubled by thorns and thistles or rust and decay. The vision of Revelation 21:3 ‘Now the dwelling of God is with men, and he will live with them’³² implies nothing less than a full reinstatement of the unity between the physical and the spiritual universes. It will then no longer be a subject of debate whether it is incongruous to speak of the Lord God walking in his garden, even if it does at present transcend our imagination. The fabric of our universe has been likened to a vast expanding balloon, the

32 Significantly *not* ‘Now the dwelling of men is with God’.

surface of which represents the four-dimensional spacetime of general relativity. There is no reason to believe that God intends to prick the balloon, but there are very good reasons for believing that he is going to do something before it bursts. It is, after all, *his* garden.

The Nature

If we accept that the universe has an optimistic ‘supernatural future’, the frequently asked question ‘What will it be like in heaven?’ amongst young and old alike, is equivalent to the question ‘What will be the nature of redeemed creation?’. Most of our biblical certainties are built on negatives – ‘no more death or mourning or crying or pain’ (Rev. 21:4), but a few on positives – ‘In my Father’s house are many rooms’ (Jn 14:2). Inevitably, the latter come to be seen as symbols of deeper realities. Images of a better life always build on present culture and experience, otherwise they would not be better, but alien. Therefore in a different culture or era they must become symbols.

Jesus himself did not use extreme symbolism to describe the nature of heaven, but instead used everyday illustrations concerning marriage, rooms, drink (Mk 12:25, Jn 14:2, Matt. 26:29). The symbolism that we have come to associate with heaven, typified by the ‘streets of gold’ picture, is derived primarily from the New Jerusalem of Revelation 21-22, which draws on similar eschatological imagery from certain parts of the Old Testament, mainly Isaiah onwards, and the apocryphal literature. For the best part of the first millennium this dominated religious thinking about heaven.³³ But in the mediaeval period, there arose a new feature in poetical writing, which can be called the vision of the Earthly Paradise, which became attached to, but did not replace, the orthodox symbolism. This new imagery was sometimes identified as the Garden of Eden, and sometimes represented a sort of suburb or rural region of heaven, through which a traveller was usually guided towards a sight of the central heaven.

In the twelfth century Vision of Tundale, the pilgrim’s guardian angel guides him through gardens of ever-increasing loveliness bounded by walls, one made of gold

That was schynand and more clere
Than ever was gold in this world here

beyond which

So fayr a plas saw he never are,
Ne he, ne noo eyrthely mon.³⁴

³³ e.g. Augustine *City of God*, (c.420), Book XX, chs.16-17.

³⁴ Marcus *The Vision of Tundale*, (1149), National Library of Scotland MS Advocates’ 19.3.1, Gaudium VI, ll.1831-41: ‘That was shining and more clear / Than ever was gold in this world here’; ‘So fair a place saw he never before / Neither he, nor any earthly man.’

Dante is led out of purgatory

Through that celestial forest, whose thick shade
With lively greenness the new-springing day
Attemper'd

to a heavenly hierarchy modelled on the Ptolemaic System, where we find that Dante has *abilities* that exceed normal human experience:

Beyond our mortal wont, I fix'd mine eyes
Upon the sun. Much is allowed us there,
That here exceeds our pow'r.³⁵

In *Paradise Lost*, the angel Raphael is conscious of the problem of describing heavenly realities in earthly terms when he prepares to relate to Adam 'th'invisible exploits of warring spirits', and therefore proposes that

what surmounts the reach
Of human sense, I shall delineate so,
By lik'ning spiritual to corporal forms,
As may express them best.

But Milton runs this straight on into what appears to be his own speculation (Raphael, after all, should know):

though what if earth
Be but the shadow of heav'n, and things therein
Each to other like, more than on earth is thought?³⁶

In an age now characterised by a desire to explain physically everything that exists and happens, it is natural to seek our own version of the vision, to speculate, as others have done, on what redemption may involve scientifically. Scripture gives us only hints, as in Romans, where we are told that creation will be set free from its bondage to decay. Perhaps there are physical constants that, when subtly changed, would produce a better universe. Perhaps there are laws that could serve us better if they were less immutable, if they interacted with our minds. Perhaps Christ's miracles, and the powers of his resurrection body,³⁷ were a foretaste of the way in which man was intended to interact with his environment, if he had not fallen and made such powers a liability to others. Presumably we should at least never want for strength or vitality. In a description which sounds to our ears amazing for its time, the fourteenth cen-

35 Dante Alighieri (1306-21), *The Divine Comedy: Paradise*, Cary, H.F. (trans.): Purgatory, Canto XXVIII & Paradise, Canto I.

36 Milton, J. (1667), *Paradise Lost*, Book V: ll.565-576

37 Polkinghorne, J. *op.cit.*, (26) comments that 'hints of continuity and discontinuity (sharing of food; appearance and disappearance within closed rooms) which the gospel accounts of the resurrection appearances give us can be interpreted as indications appearing within history of the transformed nature of eschatological "matter".'(ch.9, Eschatology, p. 168).

ture Pearl poet actually links the heavenly equivalent of 'physical' ability to moral virtue:

Vtwyth to se Ðat clene cloystor
Pou may, bot inwyth not a fote;
To strech in Ðe strete Ðou hath no vygour,
Bot Ðou wer clene wythouten mote.³⁸

It would be reasonable to suppose that the space-time continuum could not remain unaffected. Perhaps time itself, far from being abolished, would become more complex, instead of being uni-dimensional and uni-directional.³⁹ Almost certainly there would be a dimensional adjustment to undo the barrier between heaven and earth, the spiritual and the 'physical' (Rev. 21:2-3). And the tree of life would no longer need to be guarded by a flaming sword which turned every way (cf. Gen. 3:24, Rev. 22:2).⁴⁰

All this may seem to be the stuff of science fiction, but it would not be the first time that science fiction had foreseen science fact, and it is not so far removed from the revelation given to Paul concerning the nature of the spiritual body (1 Cor. 15:42-44, 49-50), which will be superior in every way to the original physical body, and which believers, both dead and living, will be given on Christ's return (also 1 Thess. 4:13-18). Nevertheless, if, as J. B. S. Haldane said, 'the universe is not only queerer than we suppose, but queerer than we CAN suppose',⁴¹ we can be sure that the new creation will certainly be *better than*, and in some way different from, our best visions and symbols. Our suppositions must always come with a health warning. Continuity from known

38 Pearl, 969-972: 'Without, to see that clean enclosure / You may, but within, not a foot; / To stride in the street you have no vigour, / Unless you were clean without mote.' This is very reminiscent of the ghosts in C. S. Lewis's *The Great Divorce*, that had difficulty with such basic tasks as walking on grass and picking up apples.

39 Turl, E.J. *Have We No Choice?*, New Horizon (1978), Part II, 19, Heaven, pp.192-196. Eternity is not an absence, but a transcendence, of time, as can be seen from Calvin's description of 'prescience' (foreknowledge): 'When we attribute prescience to God, we mean that all things always were, and ever continue, under his eye; that to his knowledge there is no past or future, but all things are present, and indeed so present, that it is not merely the idea of them that is before him... but that he truly sees and contemplates them as actually under his immediate inspection' (Institutes, III:XXI.5). As Polkinghorne, *op.cit.*, (26), points out, the timelessness of God's existence cannot be fully shared with the new creation since 'if it is intrinsic to humanity to be embodied, then it must be intrinsic to humanity to be temporal'. So also Wilkinson, *op.cit.*, (2): 'Time is important for relationship and growth. The continuity may be that time is real in the new creation but the discontinuity is that time no longer limits us in the way that it does in this creation.' Russell, R.J., *op.cit.*, (4) has even questioned whether 'nature might already have a "multiple temporality" with the eschatological "future" woven into and between the ordinary "future"'.
40 Turl, E.J., *op.cit.*, (39), Part II, 26, Temptation, p.273. The significance of the Tree of Life, I take to be that God originally made man to be capable of irreversible decision to be good. Unfortunately, Eve and Adam chose the wrong tree. They had the power to choose the other. This is of crucial importance to the new creation, in which we shall not be able to sin, not because we are programmed not to, which would reduce us to sub-humanity, but because we have aligned ourselves to God, in contrast to the decision made by Adam.

41 Haldane, J.B.S. *Possible Worlds and Other Papers*, London: Chatto & Windus (1927).

physics is a seductively attractive idea, but not even the history of physics shows continuity from known physics.

The Extent

The tendency of the universe to 'run down' can be thought of as an aspect of decay. In common with other types of decay – radioactive, biological, chemical – it is a consequence of the second law of thermodynamics. The exact formulation of this law is rather obscure, namely that in all irreversible processes the total entropy (and hence 'disorder') of a closed system will always increase. But specific examples are fairly easy to illustrate, the most well-known probably being Flanders and Swann's 'Heat cannot of itself pass from one body to a hotter body – And all the heat in the Universe is gonna coool down'.⁴²

If our cosmology is correct, and if physical laws are the same everywhere, it would appear that the 'curse' (Gen 3:17) on creation for the fall of man is universal. This, however is open to a number of objections. First, it would at the very least seem to be a little wholesale for such a local misdemeanour, rather like a child throwing a tantrum when it cannot get its own way. We would expect God to have good reasons for any sanctions he imposes on man for his error. Secondly, it would seem to be unfair on the rest of the universe if there are other rational and moral creatures on other planets who have not fallen spiritually. Why should a perfect civilisation suddenly be plunged into environmental disfavour as a result of the first sin of a race perhaps millions of light years distant? Thirdly, even if human beings were the first creatures in the physical universe to be made in the image of God, what sense would it make to prejudice the whole of creation against future experiments? If Adam and Eve really need not have sinned, is it not worth 'trying again' somewhere else with at least equally favourable conditions?

The alternative is that the effects of the Fall are more limited. In the first of his science fiction trilogy⁴³ C. S. Lewis portrays Earth (Thulcandra – 'the silent planet') as being an ostracised member of the solar system, cut off from normal communications with the heavens and heavenly beings, subject in some way to an embargo not shared by the rest of the planets. This is an attractive scenario, but there was no suggestion in that story that terrestrial physics in any way differed from that of the rest of the solar system. Indeed this would be difficult to believe in reality, in view of the successful work of mathematicians and scientists such as Kepler, Newton and Einstein, all of which is based on the universality of the laws that they proposed. This would force us to re-examine our understanding of scriptures that describe the curse of creation. It would therefore be wise first to look briefly at the possibility of the existence of 'rational

42 Flanders, M. & Swann, D. 'The First and Second Laws of Thermodynamics'.

43 Lewis, C.S. *Out of the Silent Planet* (1938)

extraterrestrial intelligence' (RETI),⁴⁴ without which we could probably live with the option of a stricken universe, however much we might not understand why God would have needed to go that far.

SETI

The possibility of the existence of 'other worlds' was debated by the philosophers of ancient Greece and was recognised to have implications for Christian theology since the third century AD, but primarily in relation to the uniqueness of the gospel and the doctrine of redemption. J. J. Davis has outlined this discussion,⁴⁵ showing that all the logically possible positions have been held, with varying degrees of logical and scriptural support, namely:

- there cannot be RETI, this being precluded by the doctrine of atonement,
- there may be RETI, which is not fallen and so not in need of redemption,
- there may be RETI, which is fallen and has not been offered redemption,
- there may be RETI, and if fallen, could have been redeemed by a local work of God,
- there may be RETI, and if fallen, would be redeemable by Christ's work on Earth.

It is the last of these positions which Davis espouses and develops in his article. Personally I am not convinced that this is the only possible theology, and believe that a good case could be made for a single act of redemption of cosmic efficacy being manifestable in different worlds in different ways. My own focus, however, is not so much on the redemption of fallen rational souls as on the (related) redemption of a creation that in some sense and in some manner (Rom 8:20-21) has been subjected to a 'curse' on account of the specific fall of humanity on Earth.

The Search for ExtraTerrestrial Intelligence⁴⁶ is a programme of attempted communication with possible intelligent beings beyond our solar system. It is now generally accepted that there is no chance of finding such life within the solar system, although the possibility of basic life forms such as microbes on some planet or moon, such as Mars or Europa, has not been ruled out. In 1960 Frank Drake made the first calculated attempt to receive messages from likely nearby star systems. There is now a well-supported ongoing programme of monitoring and analysis. Coded signals have also been sent out towards cer-

⁴⁴ I qualify the term 'extraterrestrial intelligence' with the adjective 'rational' to denote that it is only intelligent life which possesses what is sometimes called a 'rational soul', by which it can make moral judgements, that is of relevance in this article. This important distinction is emphasised in C. S. Lewis' 'Religion and Rocketry' included in the collection *Fern-seed and Elephants*, Fontana (1975).

⁴⁵ Davis, J.J. 'Search for extraterrestrial intelligence and the Christian doctrine of redemption', *Science & Christian Belief* (1997) 9 (1), 21-34.

⁴⁶ SETI, <http://setiathome.ssl.berkeley.edu/>

tain stars to announce our own presence. It goes without saying that ET has not yet been found.

In 1961 Drake proposed an equation⁴⁷ to serve as a means of estimating the number, N , of civilisations in the Milky Way Galaxy with the technology to communicate with us. Unlike most scientific equations it does not yield a solution; it is more a means of focusing ideas on relevant factors for the purposes of discussion. The equation states that:

$$N = R_* f_p n_e f_i f_l f_c L$$

where R_* = the rate of formation (per year) of stars in the galaxy

f_p = the fraction of those stars with planets

n_e = the number of planets, per star system, with an environment suitable for life

f_i = the fraction of suitable planets on which life actually appears

f_l = the fraction of life bearing planets on which intelligent life emerges

f_c = the fraction of civilisations that develop radio

L = the length of time (years) such civilisations release signals into space

Drake's original suggested values were: $R_* = 10$, $f_p = 0.5$, $n_e = 2$, $f_i = 1$, $f_l = 0.01$, $f_c = 0.01$, $L = 10$. This would give a value for N of only 0.01. The only parameters for which we now have observational evidence in our own Galaxy are R_* and f_p ; more recent evidence on star formation and extrasolar planets would favour values in the region of $R_* = 7.5$,⁴⁸ $0.25 \leq f_p \leq 1$.⁴⁹ In addition, Franck et al. argue that n_e may be as small as 0.12,⁵⁰ and Lineweaver and Davis argue from the biogenesis rate on Earth that $0.13 \leq f_l \leq 1$.⁵¹ Michael Shermer has estimated a value of $L = 420$ by averaging the value for 60 historical civilisations.⁵² We have no information at present to guide our estimation of values for the other factors, but we might suggest that $f_c = 1$. The remaining factor, f_l , is probably responsible for the greatest uncertainty in the equation, with speculative suggestions (excluding near-zero) ranging from 10^{-7} to 1. If we take the most pessimistic combination of these factors we would get a mini-

47 Drake, F.D. *Intelligent Life in Space*, New York: Macmillan (1962).

48 Diehl, R. et al., 'Radioactive ²⁶Al from massive stars in the Galaxy' *Nature* (2006) 439, 45-47.

49 Lineweaver, C.H. & Grether, D. 'What fraction of Sun-like stars have planets?', *Astrophys.J.* (2003) 598, 1350-1360.

50 Franck, S. et al. 'Planetary habitability: is Earth commonplace in the Milky Way?', *Naturwissenschaften* (2001) 88, 416-426.

51 Lineweaver, C.H. & Davis, T.M. 'Does the rapid appearance of life on Earth suggest that life is common in the Universe?', *Astrobiology* (2002) Vol. 2, No. 3, 293-304.

52 Shermer, M. 'Why ET hasn't called', *Scientific American* (2002), p. 21.

imum value for N of $\sim 10^{-6}$, which would imply that of the approximately 200 billion stars in our galaxy, ours is probably the only one to host a technologically advanced civilisation, and that on this basis we are therefore unlikely to have any success with our SETI program.

The Drake equation was only intended to be applied to our own Galaxy, because the distance to the next galaxy of similar size, the Andromeda galaxy, M31, is about 3 million light years. This made it inconceivable that we could detect artificial radio transmissions from this or more distant galaxies, because of the attenuation of the signal. However, in this discussion we are more interested in the mere existence of intelligent life, rather than its ability to communicate with us. In that case, the factor f_c becomes redundant, the factor L will represent the entire lifespan of the race, and we shall also need an additional factor, say g_t , for the total number of galaxies in the observable universe.

Lower and upper limits for L of 10^5 and 10^9 years have already been suggested. Within this range lies R. Gott's somewhat controversial 95% confidence level estimate⁵³ of the lifetime of the human race, based on his 'Copernican Method', of between 205,000 and 8 million years.⁵⁴ Current estimates of g_t place this number at about 165 billion.⁵⁵ These figures would imply that there could be anything from 5×10^7 to 5×10^{11} intelligent races in the universe. For an observable universe of approximate observable volume 10^{31} ly³, this gives an extremely sparse population, implying an average distance of between 3 and 60 million light years between neighbouring civilisations, or roughly one per galaxy cluster. Nevertheless, ignoring the question of separation, there appears to be a high probability of there being a very large number of intelligent civilisations in the universe.

It might be objected that it takes more than mere evolution to produce a race of creatures which are moral, rational and which bear the image of God – it requires a supernatural act of God, whatever your view of the process of physical creation. This, I believe to be the case.⁵⁶ But with figures of this magnitude,

53 Gott, J. R., III *New Scientist*, 15 Nov. 1997, pp. 36-39; Gott, R.J. 'Implications of the Copernican principle for our future prospects', *Nature* (1993) 363, p. 315-319.

54 $\text{Age} \times 2/(1+p) < \text{Lifetime} < \text{Age} \times 2/(1-p)$, where p = fractional confidence level.

55 Extrapolated from the Hubble Ultra Deep Field, which shows about 10,000 galaxies or proto-galaxies in an area of sky 3 arcminutes square.

56 The nature of the soul or spirit is another, but not unrelated, subject, as it has a bearing on the process of resurrection. If the spirit is a non-material entity hosted by the brain, and does not die with the body, it is 're clothed' (2 Cor. 5:3) in the resurrection. Various doctrinal positions exist concerning the state of the soul in the intervening period, e.g.: (1) it is fully conscious and in the presence of Christ in heaven (Lk. 23:43, Phil. 1:23), pending the resurrection; (2) it is 'sleeping' (Acts 7:59-60); (3) it is 'timeless', so that the spirit does not perceive any break between death and the resurrection (Job 19:25-27). Alternatively, if the spirit is a product of the brain, then it dies with the body. Resurrection is then a reconstitution of a physical pattern remembered by God (Polkinghorne, *op.cit.*, (26)). There is a tendency to regard the first of these alternatives (dualism) as scientifically suspect. But in view of the wealth of human conscious experience with no hint of explanation on a monistic programme it seems premature to ditch a system so close to scripture. The

we would have to ask ourselves if it seems likely that a God who created a universe with such potential for life would withhold the ultimate gift in all but one case. All the evidence points to a God who is prodigious in his creation. Also, we are not trying to establish – obviously we cannot – whether these races do exist. We are simply trying to establish whether the likelihood is sufficiently great to make it necessary or sensible for our theology to encompass its implications. It appears that it is.

The Curse

A universal curse has the advantage that the uniformity of physical laws is preserved, but the disadvantages of unfairness and capriciousness to other races. A local curse reverses the situation. It is difficult to imagine a middle course, or third option. The only possibility would seem to be that the curse did not affect the laws themselves, but only the particular way in which the laws worked themselves out, and continue to do so, with the particular materials that they have to work with on Earth, from the point of view of the human race. It was, after all, a curse on the ground, or the earth, not on heaven and earth. It was a curse that affected the predisposition of the earth to bring forth produce ('thorns and thistles') and would result in inconvenience to man in his fallen state. This, however, may be a difficult concept to translate into our current understanding of science.⁵⁷ Prof. R. J. Berry suggests that the curse is not an adaptation of nature, but more an inability of nature to adapt to the change in man.⁵⁸ In the same way, a good teacher does not cease to be a good teacher if confronted by an impossibly unruly class, but nevertheless cannot perform properly. The teacher might well consider himself or herself cursed, and would certainly feel subjected to frustration. There are after all creatures even in this

philosophical basis of my certainty is, briefly: (1) We are made in the image of God; (2) We must be rational and responsible; (3) So the human will must be capable of causally free acts; (4) This cannot be so in a fully material universe; (5) Quantum theory alone does not provide the type or degree of freedom necessary for rational freedom; (6) Therefore the human mind cannot be explained completely materially. The basis of the argument is the much-quoted logic of Haldane, *op.cit.*, (41)

It seems to me immensely unlikely that mind is a mere by-product of matter. For if my mental processes are determined wholly by the motions of atoms in my brain I have no reason to suppose that my beliefs are true. They may be sound chemically, but that does not make them sound logically. And hence I have no reason for supposing my brain to be composed of atoms.

In order to escape from this necessity of sawing away the branch on which I am sitting, so to speak, I am compelled to believe that mind is not wholly conditioned by matter.

It is still felt by many to be inescapable (e.g. Barr, S.M. 'The Devil's chaplain confounded', *First Things* (2004) 145, 25-31).

⁵⁷ If, as suggested earlier, redeemed creation makes 'vigour' consequent on 'virtue', might it be that the material universe has never lost this ability to respond – that this is a quality which will be 'continuous' into the new creation? The curse would then indeed have consisted, at least in part, of a 'subjection to frustration' (Rom. 8:20). Nature would have become a piano in a world of incapacitated pianists.

⁵⁸ Berry, R.J. "This cursed Earth: is "the Fall" credible?" *Science & Christian Belief* 11(1), 6.c. Nature, p.46.

world to whom thorns and thistles are not a problem, and creatures who do not have to toil for their livelihood. 'Look at the birds of the air; they do not sow or reap or store away in barns, and yet your heavenly Father feeds them' (Matt. 6:26). They do not share this aspect of the curse with us.

Does this mean that if we travelled far enough we could find worlds which are differently adapted, and would seem to our eyes as the Garden of Eden? It may be so, just as Ransom journeyed to Venus in C. S. Lewis's *Perelandra*,⁵⁹ and, as was the case in that story, there is no reason to suppose that such a world would have to be physically immune from the contaminating effects of a fallen race. Our own was not. But if it came to a comparison between the timescale necessary to develop and achieve interstellar travel and the timespan within which Christ will return, the latter may well be judged to be the more imminent.⁶⁰ In that case it is improbable that we shall have the opportunity to jeopardise the spiritual and physical future of another race.

This view, of a local and/or 'relative' curse, would not exclude a more universal transformation of the physical universe. However 'very good' God made his creation, there could still be a 'more excellent way', a more splendid destiny awaiting it, to render it appropriate to creatures who were either redeemed, or unfallen and vindicated. Paul's description of the liberation of creation could refer to the restoration from the curse; Peter's and John's descriptions of a new heaven and a new earth, to the final transformation where Earth and Heaven are united dimensionally in a manner perhaps not even seen before the Fall.

The Obligation

For many Christians, the question of which 'millennialism' they believe in is one of default; they either have not heard of the options or do not know enough about the doctrinal systems to decide. They are amillennial only inasmuch as it seems to provide a convenient fence on which to sit. However, Prof. A. Truesdale, of the Nazarene Theological Seminary, Kansas City, has considered that many evangelicals have absorbed premillennial eschatology, and that this has infected their attitude to environmental issues:

⁵⁹ Lewis, C.S. *Perelandra*, (1943).

⁶⁰ If this seems a rash statement in view of my earlier comments on the time of Christ's return, consider how long it might take to get to a civilisation in M31 from which we had received signals. The greatest speed so far achieved by a spacecraft is 70 km/s (Helios probes). If we are limited to using gravity-assist, we might not be able to exceed 100 km/s. At this speed it would take 9 billion years to reach Andromeda. If however we could maintain a constant local acceleration/deceleration of 'g', we could reduce this relativistically to a mere 29 years, but this would mean solving the fuel/propulsion problem. This is unlikely, because even the most efficient engine conceivable – an antimatter photon drive – would require for this journey 9.6 billion tonnes of fuel per kilogram of vehicle. Moreover, successful contact presupposes we know where in the haystack we are going to find the needle, and that the needle will still be there when we arrive, 3 million years after the signals were sent. Space-time is a wonderfully effective quarantine.

For them, the creation as we know it figures discontinuously rather than continuously in God's plans for consummating history and the Kingdom of God.... So long as evangelicals hold to an eschatology that understands the world to exist under a divinely imposed death sentence, we should expect no major change in their disposition toward the environment or the environmental movement.... Until evangelicals purge from their vision of the Christian faith the wine of pessimistic dispensationalist premillennialism, the Judeo-Christian doctrine of creation and the biblical image of stewardship will be orphans in their midst. These doctrines will be unable to yield their rich potential for environmental ethics.⁶¹

It is a natural consequence of this position that whilst they may give tacit approval to the call for stewardship of the planet, they do not make this part of their active theology, even regarding it as an unspiritual diversion from the Christian priority of evangelism.

If we accept that the universe is to be transformed, not replaced, used, not disposed of, our obligation to our physical home, placed on us by God from the beginning in the 'ecological commandment' (Gen. 1:28, 2:15), is thrown into much sharper relief. Sir John Houghton makes this one of his reasons why the Christian community should grasp the challenge and opportunity to combat negative attitudes toward the problem of climate change.⁶² The cogency of the argument is easily illustrated. If you live in a dilapidated rented house that is condemned, and you know that you are going to be given a *replacement*, on which you have spent no money and in which you have invested no energy, you are unlikely to look after the old house beyond that which is necessary to keep you going. But if you live in your own house, which needs a lot doing to it, and you have an offer of expert *renovation*, all freely given, you will make sure that when the builders arrive, they have plenty to improve and very little that they need to demolish.

The principle is the same spiritually in the lives of Christians. What we are capable of receiving in Heaven is dependent on what we make of our lives on Earth. 'Each one should be careful how he builds.... If any man builds on this foundation using gold, silver, costly stones, wood, hay or straw, his work will be shown for what it is.... If what he has built survives, he will receive his reward. If it is burned up, he will suffer loss; he himself will be saved, but only as one escaping through the flames.' (1 Cor. 3:10-15). It is a common principle in God's dealings with humanity. 'A man reaps what he sows' (Gal. 6:7).

J. Polkinghorne holds this to be a principle of God's working on all scales: 'What is to be will come from what is presently the case. That is so, not only in relation to the parochial concerns of terrestrial history, but also in relation to

61 Truesdale, A. 'Last things first: the impact of eschatology on ecology', *PSCF*, (1994) 46, 116-122.

62 Houghton, J. 'An environmental imperative for the new Millennium', *Science & Christian Belief* (2001) 13(1), 2-4.

the grand sweep of the development of the universe.⁶³ If God deals with our universe accordingly, it will indeed be transformed, but we may be more highly rewarded by the nature of the transformation if we have looked after our home – if we have been good stewards – than if we have squandered its resources, and expedited its decay.

Conclusion

The principal points of this discussion have been that:

- Christians generally think of eternal life in terms of going to Heaven, the abode of God (Matt. 6:9) when they die (Jn 3:16, 5:24). However the dominant concept in New Testament teaching is that of a future resurrection in a transformed creation, to which all believers may look forward;
- Heaven is a place and therefore has physical characteristics (Jn 14:2), but we refer to it as a spiritual place because for the human race it is not dimensionally related to our observable universe, and physical bodies could not enter it (1 Cor. 15:50);
- the physical universe is unimaginably vast, and was designed by God to last for a very long time, and possibly to host a large number of civilisations without risk of mutual interference;
- as a result of the Fall, the Earth was placed under a curse which imposed limitations on its convenience and response to Man;
- the curse is probably local/relative and did not change the physical laws of the universe, so that if there are other, unfallen, races in the universe, they are not necessarily subject to the same limitations, either physical or spiritual;
- eschatologies that envisage Christ's return as a future space-time event are not compromised by the cosmological scale, and do not require cosmological discontinuity;
- when Christ returns, the curse will be lifted, the dead raised, and the Earth restored (Rom. 8:21);
- there will be a final, universal, transformation (2 Pet. 3:13, Rev. 21:1-4), in which the physical universe will be raised to a more excellent state and united dimensionally with heaven;
- we have a duty of care for creation, and may well find that we are ultimately more greatly rewarded if we have exercised that responsibility wisely.

The purpose of the discussion has been to draw attention to an area of sci-

63 J. Polkinghorne, *op.cit.*, (26).

ence and Christianity that, for one reason or another, is not often debated. Whereas Christians are more or less able and willing to declare their stand over Adam, there seems to be less of a tendency to do so over Armageddon. This may stem from ignorance of the theological and scientific data, from confusion, from a fear of getting involved with doctrines hijacked by doubtful sects and theories promulgated by speculative scientists, or from an unwillingness to be branded as extreme. I think it most unlikely that what I have proposed contains no errors. But in the words of Francis Bacon, 'truth comes more readily out of error than out of confusion'. If, in any of this, I am wrong, I hope that at least the errors are clear and not confused.

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