

## Book Reviews

---

### Richard Swinburne *Is There a God?*

Oxford University Press: Oxford,  
1996, pp. vii + 144, £20, £7.99 pbk.  
ISBN 0–19–823544–5/3 (pbk).

By ‘God’, Richard Swinburne understands a maximal personal being who is everlasting (but not timelessly eternal) and who does not yet know the outcome of future free actions by his creatures. Such a being can fill the role of ‘the ultimate brute force which explains everything else’ (p. 19) and the principal reason for believing he exists is that he ‘provides by far the simplest explanation of all phenomena’ (p. 41). The claim of simplicity of explanation is central to Swinburne’s case for theism. Making that claim depends to a significant extent on devaluing alternative ‘brute fact’ grounds of explanation. It seems to me that a physical reductionist could assert a comparable simplicity for the equations of a Grand Unified Theory, whose validity everywhere and at all times would be held to be the explanation of all that is. The choice between physicalism and theism is to be made, I believe, on the grounds of adequacy to the many-layered reality to be understood, rather than of simplicity. The deep intelligibility of the physical world is suggestive of a Mind behind it. Swinburne recognizes this when he writes ‘I do not deny that science explains, but I postulate God to explain why science explains’ (p. 68).

Swinburne is a dualist, believing that mind and brain are two distinct substances. Consequently, for him, God plays the additional role of the one who adjoins soul to body at the appropriate stage of fetal development. Interestingly, he believes this happens for the higher animals also.

Perhaps the greatest difficulty about belief in God is presented by the problem of evil and suffering. Here the limits of Swinburne’s coolly rational approach are most evident. With considerable candour he says ‘It is inevitable that any attempt by myself or anyone else to construct a theodicy will sound callous, indeed totally insensitive to human suffering’ (p. 95). One has to admit that the careful treatment of variations on the free will defence that is presented here, does have that character to it. For example, much of the problem lies in the sheer scale and extent of human suffering. Swinburne’s response is to say that this is limited by our life span: ‘one human can hurt another for no more than eighty years or so’ (p. 100). These problems lie too deep for philosophical musing alone. The Christian response is to be found in the theology of the Cross.

The book concludes with a discussion of religious experience. Swinburne believes that on the whole we should trust people’s reports and that this decisively tips the balance in favour of belief in God’s existence.

The book is clearly written, compact, and it provides an excellent introduction to the work of a prolific and significant contemporary Christian philosopher of religion. Not all will be convinced by every argument, but all will benefit from reading it with attention.

**J. C. Polkinghorne**

**Revd Dr John Polkinghorne is the President of Queens’ College, Cambridge. His latest book is *Scientists as Theologians* (SPCK).**

**Frank Tipler**

***The Physics of Immortality: modern cosmology, God, and the resurrection of the dead.***

Doubleday, 1994; Macmillan 1995,  
528 pp. hb £20 ISBN 0-333-61864-5

A book by a physical scientist claiming to prove the existence of God and the certainty of ultimate resurrection is a brave, possibly foolhardy, venture which, not surprisingly, has received a rather hostile reception from both theologians and physicists. It is important therefore to begin this review by saying that Frank Tipler has given us an excellent book which is informative, provocative and full of interest. My inadequate summary of the book's amazing claims is that scientific progress is inevitable, and will continue at an ever increasing rate, that it will result, on a time scale less than a hundred years, in the building of intelligent robots who will be regarded as superior versions of 'people' who will eventually colonise the solar system, the galaxy and ultimately the whole universe, who will learn how to take apart, and reconstruct, the earth, the sun and even whole galaxies, who collectively will control the destiny of the universe in its collapsing stage in such a way that 'life' will last for ever, and that beings of the future will resurrect all who have ever lived to a future eternal life, where they will meet with a being whom they will quite properly regard as God. All this is a consequence of a totally materialistic, reductionist, physics! Even if the tale is not true, even if it fails to happen in quite the way that Tipler suggests, it is a wonderful story, full of vision and hope, and with many fascinating sub-plots.

Tipler is an enthusiastic advocate of the 'strong AI' view, that computer-directed robots when sufficiently intelligent will be in all ways equivalent to, and ultimately superior to, humans, and that therefore they will have the equivalent of 'human' rights.

Presumably when we upgrade our computer equipment our discarded models will have to be given a suitable retirement home. (Unless, of course, before this time is reached they have already placed us in such homes). A failure to accept this, and to recognise the rights of computers, will be, he claims, equivalent to a new form of racism—the fact that computers do not look like us is no more a reason for treating them as inferior or less worthy of care than is the fact that certain people have different coloured skins. Tipler claims to demolish the types of argument based on Gödel's theorem, or on the difference between semantics and syntax, that would assert that computers are in some intrinsic way different from human (etc.) brains. This is an argument that will run and run. I believe Tipler is missing something important, but I am not sure what. It almost certainly has something to do with consciousness, which we are not (yet) able to study in physical terms; we can attempt to calculate some measures of the 'intelligence' of computers, but have no idea how to go about estimating if they are conscious. Difficult topics of courses do not go away if we ignore them, and strangely, the word is not in the index of Tipler's book. Surely, the reason why we respect the rights of people and animals is not, so we would say, because they are intelligent, but because they are conscious.

We are told that the 'people' of the future will alter the way the universe develops and finally how it collapses (essentially the idea here is that they will make it collapse along just one dimension of space so that they can utilize the energy of the collapse), and it is asserted (p. 137) that they will do this because they will *want* to. I am puzzled here. In a classical (deterministic) universe there are no 'choices' that will have any effect on what happens—it is all written into some initial conditions. Of course, as Tipler

recognises, this classical picture is wrong. First, it ignores quantum theory. Tipler, along with others, sees the experience of free-will as perhaps being in some way associated with a particular action. The selection of one outcome from the superposition—a process associated with the idea of observation in quantum theory—would result in a particular choice having been made. However, Tipler also advocates a version of the Many-Worlds Interpretation of Quantum Theory, in which all outcomes are selected, with a corresponding ‘splitting’ of perception into many branches. This would suggest that it is not so much that intelligent beings are *choosing* the destiny of the universe, but rather that we are simply saying (hoping) that there is a part of the universal wavefunction of the universe in which this will happen, and since in this interpretation anything that can happen, regardless of how small the probability, will happen, therefore life will exist for ever. This relies on what, to me, is the most objectionable feature of this interpretation of quantum theory. If I jump off a high building then there will be a certain part of the wavefunction, corresponding to elastic scattering, in which I will be alive and unharmed. Therefore, according to this interpretation, I will certainly still exist, having survived the fall. Apart from whatever conceptual misgivings one might have with this, it points to a serious problem with this interpretation, namely that it has no role for probability. One thing we know about quantum theory is that the Born probability rule works, and probabilities must refer to something that ‘happens’, whereas here nothing happens, or perhaps one should say everything happens, but that equally gives no role to probability. I note that probability is another word that does not appear in the index. I believe that many-worlds ideas can only be saved if there is some sort of selection, e.g., by conscious mind, which introduces

something less obviously ‘materialistic’ into the discussion, but which is not necessarily incompatible with Tipler’s main thesis.

Tipler, of course, is aware of the fact that there is no indeterminism in his chosen version of quantum theory, and hence goes on to invoke another source of genuine randomness, namely that there is no calculational procedure, even in principle, for solving (or even writing down) an equation for the wavefunction of the universe if it is given its full generality. This is a mathematical fact based on a theorem that it is not possible to classify all compact four manifolds. Tipler is right to note this important result, even though it seems to imply that at some basic level it is anarchy that governs the universe: ‘one might as well say, whatever happens, happens’ (p. 190). In so far as this is true it is well hidden from our observational powers, and does not in any obvious way help Tipler’s cause. He attempts to convince us that this randomness is the source of free-will (p. 198). I am not convinced, but even if this is granted, the model seems to suggest, not that we can prove that life will exist for ever, but only that it will *if we are lucky in the way that this randomiser makes its selections*.

Elsewhere in the book Tipler seems to be saying that some sort of extremely special state of the universe in the far future might in fact be imposed as the boundary condition that determines the state of the universe at all other times. Here we seem to be postulating that particular things will happen rather than proving that they will. In saying this I am by no means unsympathetic to the idea that ‘final’ conditions, as much as, or even more than, initial ones are crucial to the way things are. To some extent the experience of ‘purpose’ is associated with particular final conditions (and I have never understood people who say the universe has no purpose since

I have purpose and am a part of the universe).

Readers who might feel that future computer simulations of themselves will not really be themselves restored to life, are reassured by arguments that sufficiently close simulations actually *are* the things simulated. Just as we can argue that we exist from the fact that we think, so our simulation will be able to repeat the argument and reach the same conclusion.

The book contains much about the nature of the eternal life that will be ours. In a very real sense it will be lived in the mind of God; it may contain a period analogous to the 'purgatory' of some Christian traditions, during which our present defects will be removed; its joys (including sexual ones for those not content with intellectual pleasures) will far exceed those imagined in the world's religions, and will amply compensate the transient evils met by many in their previous life (evils which are shown to be, at least in some histories, a logical necessity). It is the fulfilment of Paul's expectation: '... (the body) is sown in dishonour; it is raised in glory; it is sown in weakness; it is raised in power; it is sown a natural body; it is raised a spiritual body ...' (1 Corinthians, 15, 42-44, quoted on p. 242). Paul, of course, could not have known that the spiritual body would be, in fact, a computer simulation!

Finally, whatever may be the weaknesses of various parts of the argument given in this book, I welcome it. In contrast to the gloom, the pessimism, the cynicism, of much of so-called postmodernist writing, Tipler offers the hope of continued progress. Maybe this hope, and something of Tipler's vision, can help us to overcome the hatreds inspired by race and clan that threaten, even now, to ruin our chance of giving humanity any sort of future at all.

**E. J. Squires**

**Dr Squires is Professor of Mathematics; University of Durham.**

**Paul Davies**

***Superforce***

Penguin, 1996, 255 pp, pb £7.99.

ISBN 0 14 024363 1

The first edition of *Superforce* was published in 1985. In a review in *Faith and Thought* B. W. Cook wrote, 'It should be bought by all school libraries and theological colleges. Clergy would be somewhat wiser if they read it and digested it. Those embarking on a degree course in physics would profit by it, and the layman interested in scientific speculation would find it most readable.' There is much more established physics than 'speculation', but otherwise that judgement stands. It is remarkable that ten years late only a new preface and a new introduction, together amounting to nine pages, are needed to bring the book up to date. In part this is a comment on the difficulties of making progress in particle physics. The cancellation of the US Superconducting Super Collider was no doubt a bitter disappointment to those in the field, but beyond any economic or political decisions by an individual nation, the costs of the new machines with the necessary energy capabilities are becoming beyond the capacity of the total world economy to afford, and there are plenty of areas of research on size scales closer to everyday life where great benefits can be won for less money. It is also a tribute to the shrewdness and accuracy of the earlier edition. Professor Davies' judgement then of what was important in the field, and the clarity of his exposition, have been vindicated by the passing of a decade. We should not underestimate the appeal of particle physics and cosmology in attracting young minds into the physical sciences.

There are two further aspects for which the book may be commended.

First, in the new introduction, Davies raises the question of finding a 'Theory of Everything', and proceeds briefly to introduce string theory as perhaps giving a hint of what a final TOE might be like. While sharing cautious excitement at the possibility that we might find the ultimate level of physical explanation, he also appreciates the limits of reductionism: 'It would not explain the origin of life or consciousness or why we fall in love.' Second, he has the courage to go beyond the hard atheism which is still fashionable among some life scientists, though it has become something of a period piece in cosmology. It is striking how books by leading scientist in this field (Weinberg, Hawking) end up mentioning topics such as purpose and God. Davies expresses a wider awareness than his own when he concludes, 'The laws which enable the universe to come into being spontaneously seem themselves to be the product of ingenious design. If physics is the product of design, the universe must have a purpose, and the evidence of modern physics suggests strongly to me that the purpose includes us.' The Christian can pick up this sense of something beyond the material world, and bring it into focus in Christ.

G. A. D. Briggs

**Dr Briggs is Lecturer in the Department of Materials, University of Oxford, UK.**

**Colin Tudge**

***The Day before Yesterday: Five Million Years of Human History***

Jonathan Cape, London, 1995. 390 pp. HB £18.99. ISBN 0-224-03772-2

Colin Tudge has published several excellent books on biological topics, and has earned an outstanding reputation as a science writer; and his latest work can only reinforce that reputation. *The Day before Yesterday* is a

fascinating account of human origins, which does much more than just recount the relevant palaeontological data.

The book opens with a discussion of the value to human thought of the biological understanding of human history, as complementary to other descriptions, theistic, mythical, or aesthetic. It then goes on to deal with the geological, astronomical, chemical, and physical mechanisms that shaped the earth's crust and rendered it a suitable stage for the drama of organic evolution. Chapter 3 outlines neo-Darwinism, with particular reference to environmental factors that determine, in a random fashion, the course of phylogenetic change.

There follows a chapter devoted mainly to the biology of the mammals, living and extinct. The greatest attention is given to the orders that include the large mammals; primarily, I suspect, because these beautiful beasts have a very apparent fascination for the author, but also because he believes that, by analogy, they can throw much light on the details of human evolution. This chapter introduces the concept of 'the ecomorph'. To quote: 'Each ecological niche tends to require creatures of a particular body form—a particular ecomorph—and every lineage that aspire to exploit that niche must adopt that form'. Thus for homoiothermic land animals, 'gravity and thermodynamics between them determine that, on land, body size, shape, and lifestyle are bound to be intimately linked'. The earliest mammals were all small, with a primitive, generalized, ecomorph; but the orders that produced the large forms became highly specialized (e.g., whales, seals, land carnivores, horses, cattle, elephants, bats). The exception is the primates, which anatomically remained unspecialized, with a 'general-purpose' ecomorph. This equipped the primates with a versatility that achieved its zenith in man.

The next three chapters discuss the phylogeny of *Homo sapiens*, correlating this with ecological changes and adaptations, the enlargement of the brain, the development of language, the predatory mode of life, the use of fire, and finally farming (the argument for the latter utilizing game theory). It is in these chapters that arguments from analogy with other species are frequently utilized, and their value demonstrated.

Hitherto, the impact of ecology on human evolution has been stressed; but in the next chapter the impact of human evolution on ecology is the theme. It is a well-known fact that, starting with the late Pleistocene and continuing to modern times, there has been a great extinction of animal species. This fact is discussed, with respect to all the continents and many islands; and the balance of evidence in each case incriminates *Homo sapiens*, rather than the commonly-suggested alternative, climatic change. Modern man is a very dangerous species.

The final chapter attempts to extrapolate from the past to the future. It is obvious that the future of our planet as a habitation for man and beast depends very largely upon human behaviour. Tudge discusses the generally-recognized means for stabilizing human population growth over the next few centuries at a level that the earth could maintain with good agricultural practice; and then considers the economic and political policies that might facilitate long-term conservation of the maximum number of species (over the next million years?). But why should we care anyway? He gives several reasons. The materialistic argument is that we should conserve as many species as possible as a genetic resource of possible value to us in the future. (A corollary of this could be that, in practice, we might conserve only those of obvious use, without concern for others.) The aesthetic argument is that

we should care for other species because of their beauty and the consequent pleasure they provide. (But what about the ugly and revolting?) The ethical argument is that it is right for us, as the world's most powerful species, to care for others. (But this lacks philosophical foundation.) In fact, Tudge recognizes that philosophy, in principle, cannot solve the ethical problem: and he concludes with 'the best story', which is virtually the Christian principle that man is the steward of God's creation.

In this book, Tudge displays his outstanding skill as a science writer. He handles his subject matter in a manner that does full justice to the material, whether factual or speculative, without burdening the reader with technical jargon. Where he has to use technical terms, he explains them well, often with humour, for the benefit of the non-specialist. He mentions, by name, hundreds of genera or species, both fossil and living; but describes them adequately for the layman to understand his argument. A pleasing feature of the book is that his use of Biblical quotations demonstrates a respect for Scripture as a witness, that is so often lacking in the writings of others who attempt this literary genre.

**Gordon E. Barnes**

**Dr Barnes is a retired Zoologist, London University and former chairman of the Victoria Institute.**

**John F. Haught**

***The Promise of Nature: Ecology and Cosmic Purpose***

Paulist Press, Fowler Wright Books,  
1993, pb £7.95 156 pp.  
(0-8091-3396-2)

Yet another volume has been added to the burgeoning list of books offering a religious perspective on the environmental crisis. Like so many others,

this book accepts that the crisis has more to do with human attitudes (and thus, ultimately, with religious beliefs) than particular technologies. Haught argues our need for a cosmological myth that is both ecologically positive and scientifically credible.

In the light of this need, the first two chapters call into question some of the dominant assumptions of modern western culture in regard to the natural world. Specifically he questions whether the profound cosmological pessimism of scientific materialism is capable of being ecologically positive. He argues that the anthropocentrism often cited by environmentalists as a root of the current crisis is, in fact, a symptom 'of a more fundamental pathology, that of feeling that we are "lost in the cosmos"' (p. 41).

Haught's own constructive response is an environmental perspective built upon the insights of process theology. In keeping with his starting point, he views the environmental crisis as a failure of religion. Chapter 3 sketches the contours of a religious perspective which would encourage ecological integrity. According to Haught, such a perspective must maintain a balance between the sacramental, mystical, silent and active dimensions of religion.

Turning specifically to Christianity, Haught outlines various responses to the environmental crisis. He dismisses the apologetic approach (of seeking a basis for Christian environmentalism within Scripture and tradition) as too little, too late. A more radical response is what Haught calls the sacramental approach (more commonly called creation spirituality). He is clearly sympathetic to the work of Thomas Berry and Matthew Fox but he is not uncritical. His concern for eschatology and notions of cosmic purpose make him draw back from the passivism of creation spirituality. It is not enough to celebrate the natural world as a fully satisfying revela-

tion of the divine. There is more: at best, this present world has the status of divine promise. Thus we must move from a sacramental to an eschatological view of nature.

This emphasis on eschatology offers a starting point for a concluding chapter on ecology and human destiny. And it is at this point that the influence of process thought comes across most clearly. He points out that the promissory character of creation contradicts both the secularist's faith in the ultimate dissolution of all things and any other-worldly concept of immortality. His solution is the process one of objective immortality: all creatures live on, in the sense that they find a permanent place in the divine memory. However, being 'remembered by God' is a very attenuated concept of immortality. In the last few pages he seems to draw back from this solution, suggesting that somehow these memories are personally related to God: that immortality is not merely objective.

I agree with many of the positive insights in this book. However, it would have benefited from a clearer exposition of the ways in which a radically revised view of personal immortality helps address the present environmental crisis. My other reservation is about his endorsement of process theology. Presumably he opts for this approach because of its reputation for scientific credibility. The difficulty is that precisely to the extent that it has achieved scientific credibility the process perspective may have endangered its ecological integrity. In fact, relatively little of what Haught has to say is really dependent on process theology. A similar Christian environmentalism could be derived from contemporary trinitarian theology (with the advantage that such a starting point would more easily cohere with Christian orthodoxy).

**Lawrence Osborn**

**Dr Osborn is Templeton Fellow in Science and Religion, Ridley Hall, Cambridge.**

**Robina Coker**

***Alternative Medicine: Helpful or Harmful?***

Monarch. 1995. pp. 141. PB £4.99.  
ISBN 1 85424 324 1

As people become disenchanted with Science and high technology, realizing their inability to solve the world's problems, there is a move towards more 'natural' and even psychological strategies. Alternative medicine is becoming widely used either in place of, or in conjunction with, orthodox medicine. Christians often feel confused as to how they should view this retreat from scientific materialism and wonder what attitudes they should take to the alternative therapies. In some churches homeopathy has been a well established tradition and yet some alternative systems have nuances of New Age and occult philosophies.

Robina Coker's book is sponsored by the Christian Medical Fellowship and it provides factual information in an easy-to-read, down-to-earth manner. The author is a qualified doctor with a degree in pharmacy so she has the necessary background knowledge, but this does mean that she writes from the standpoint of the medical establishment, as does your reviewer.

The early pages of Part 1 trace the history of orthodox medicine from the days of Abraham through to today's electronic age. The very success of our current techniques is to some extent responsible for the trend to alternative medicine. This is partly to compensate for the over-emphasis on the scientific approach and sometimes because of disillusionment and unrealistic expectations. The need for the Christian virtues of compassion, integrity and truthfulness has never been greater.

Part 2 starts by detailing the complications that can arise from various herbal medicines and physical treatments. There seem to be many but as there are no data on the frequency with which these regimes are used, it is impossible to evaluate the importance of the side effects but the message 'natural does not mean harmless' comes over strongly. A further chapter reviews some of the therapies in a scientific manner and makes some suggestions for their future regulation. The final part of this section indicates ways in which a Christian should evaluate any given alternative therapy including an assessment of the therapist's world view and the spiritual forces invoked. Finally Part 3 provides a brief sketch of 30 alternative therapies and a suggested model for their assessment. The book is indexed and referenced.

Overall it can be recommended as a useful guide for all those who value a logical approach to this confusing subject.

**Caroline Berry**

**Dr Berry is Consultant Medical Geneticist, Guy's Hospital, London.**

**Edward Moss**

***The Grammar of Consciousness. An Exploration of Tacit Knowing***

St Martin's Press, 195, xii + 162 pp.,  
hb £35, ISBN 0 333 62533 1

This is Dr Edward Moss's third monograph taking an holistic approach to human psychology. He co-edited readings from William Law. This book on problems about consciousness has no specifically religious basis but does conclude with a brief reference to T. F. Torrance's work on theology and science and mentions of the human need for God in Christ and our participation in the Creator's activity.

About half the book expounds a view of what Michael Polanyi's

approach to knowledge by human beings has to contribute to the understanding of consciousness (hence the book's subtitle). Moss also discusses briefly the recent books by Daniel Dennett and Gerald Edelman.

Moss's thesis, so far as I can see, is about the structure of consciousness. In a two-page Appendix, Moss explains that he uses the term 'grammar' in the traditional sense, as a system of relationships, rules and roles. He seems to suggest that the context of consciousness is like the subject of a sentence and the workings of consciousness are like its predicate. A problem with this is that any system might be (and many have been) said to have a 'grammar' and so it is difficult to see what such an account tells us about consciousness in particular. In any case, there are good grounds for doubting that there is only one 'thing' called consciousness. Nevertheless, it would be salutary for participants in the current flurry of discussion in this area to address at least the level of complexity to which Moss points.

Solving the problems of consciousness will likely need decades more than the optimists expect, to carry out sufficiently philosophically informed empirical research into the outlines and details of mental performance processes, their neurophysiological engineering and their social roots. Moss rightly questions whether we are even asking appropriate questions yet. Those who know something of the writers whom Moss reviews will resonate with his criticisms of the vagueness of Dennett's and Edelman's deployments of very different concepts of quasi-biological evolution and will be interested by his use of Polanyi's distinction between focal and peripheral awareness, although it should be noted that the unconscious operates on the foreground of attention, not only over its horizon.

**D. A. Booth**

**David Booth is a Professor of Psychology at the University of Birmingham.**

**Daniel C. Dennett**  
***Darwin's Dangerous Idea—***  
***Evolution and the Meanings of***  
***Life***

Simon & Schuster, 1995, 586 pp. hb,  
U.S. \$30.00. ISBN 0 684 80290 2

Daniel Dennett thinks that Darwin's theory of natural selection is far more dangerous than we, poor unsuspecting readers, have yet realised. To expound this thesis Dennett has written an entertaining although ultimately frustrating book, often informative, occasionally silly, excessively long-winded in places, and suffering from a tendency to degenerate into an extended commentary on the views of Richard Dawkins. However, if Dennett's thesis in the end fails to convince, at least he provides plenty of interesting reading material along the way.

Part 1 of the book ('Starting in the Middle'—a quote from Quine) begins with a Sunday School song about God making 'the stars to shine' and the 'ivy twine' which 'still brings a lump' to Dennett's throat. Can 'so sweet, so innocent, so reassuring a vision of life' survive the ravages of Darwinian theory? Can any version of the attitude of wonder and purpose be sustained in the face of Darwinism? This is the topic that Dennett seeks to address, and it is introduced with much beating of warning drums as if some Dreaded Secret about Darwinian evolution is about to be revealed that no one had yet thought about. In the end, though, no such secrets are revealed, and instead Dennett proceeds to provide in Part 1 a straightforward and non controversial popular account of natural selection.

Why, then, all the beating of the drums? Perhaps it has something to

do with the fact that Dennett is writing within a nation in which (according to a 1993 Gallup poll) 47% of adult Americans believe that *Homo sapiens* is a species created by God less than ten thousand years ago. If half one's potential readership disbelieves the theory of evolution, then clearly there is scope for some controversy, but in the European context the drum-beating falls rather flat. *Darwin's Dangerous Idea* sometimes reads as if it were a manual written to warn a nation of car-users, already accustomed to driving cars for the past century, about the terrible dangers of car-driving. The best sales-pitch under such circumstances is to exaggerate.

Dennett therefore maintains that Darwinism is like a 'universal acid' which 'leaves in its wake a revolutionised world-view, with most of the old land-marks still recognisable, but transformed in fundamental ways' (p. 63). Before Darwin, philosophers like John Locke emphasised the primacy of mind in the universe, Locke's identification of God with Mind representing a modified version of the Aristotelian concept of God as the Unmoved Mover. But after Darwin such a world-view became untenable. Evolution may be thought of as a highly complex series of individual algorithms. 'An algorithm is a certain sort of formal process that can be counted on—logically—to yield a certain sort of result whenever it is "run" or instantiated' (p. 50). Algorithms are characterised by substrate neutrality, underlying mindlessness and guaranteed results (pp. 50–51). 'Here, then, is Darwin's dangerous idea: the algorithmic level is the level that best accounts for the speed of the antelope, the wing of the eagle . . . and all the other occasions for wonder in the world of nature' (p. 59). Evolution, therefore, comprises 'a set of individually mindless steps'. 'Can it really be the outcome of nothing but a cascade of algorithmic processes feeding on

chance? And if so, who designed that cascade? Nobody. It is itself the product of a blind, algorithmic process' (p. 59). Therefore Locke must be wrong and we are not living in a universe characterised by the primacy of Mind. Instead it is 'blind, algorithmic processes' which are primary, and everything else emerges from them.

Probably not since Jacques Monod's *Chance and Necessity*, with its claim that because of the insights of molecular biology 'Man knows now that he is like a gypsy camping on the edge of the universe where he must live. The universe is deaf to his music, indifferent to his hopes, as to his suffering or his crimes', has there been such a vigorous attempt to extract metaphysics from biology. But it is doubtful that Dennett's logic fares any better than that of Monod. For a start, if one begins with naturalistic presuppositions then it is hardly surprising if one arrives at naturalistic conclusions. For example, the repeated labelling of the processes of natural selection as 'mindless', 'blind' and even 'pointless' really adds nothing to the biological understanding of such processes and their frequent presence in the text appears to have more to do with the author's personal ideology than with science. When terms like 'blind' and 'mindless' are used to describe the processes whereby random mutations in DNA generate phenotypes which are then selected according to their reproductive success, who on earth thinks that biological mechanisms are 'visual' or 'mindful' and, if not, then what can it possibly mean to call them 'blind' and 'mindless'? The terms are redundant. However, the fact that any mechanism, by definition, is 'mindless' in the sense that it lacks self-awareness, does not exclude the possibility that it has a meaning and purpose defined by its incorporation into the larger scheme of things. The fact that the operations of pistons, spark plugs and carburettors in a car engine are 'mind-

less' does not imply that the car-driver has no chosen destination.

Unfortunately Dennett never makes clear why he thinks that an understanding of the mechanistic processes underlying evolution should have any bearing on the status of metaphysical questions regarding the possibility that there is a Mind which lies behind the coherence of the natural order. It is commonplace to view such differing perspectives about reality as being complementary rather than mutually contradictory. Why should it not be the case *both* that there is a universal Mind *and* that evolution works by a long series of algorithms? Of course Christian theists will want to restate the question in somewhat less Lockean terms: why should there not be a God who is continually upholding and sustaining the universe who has chosen to generate biological diversity by a series of complex evolutionary algorithms? Dennett fails to elucidate why an understanding of biological mechanisms at a scientific level should have atheistic implications. Such would only be the case if it were maintained that 'god' was the explanation for a particular piece of design in the natural world, in which case natural selection would indeed become a valid rival explanation, but such a Paleyan concept of God is very far from biblical theism. Dennett, however, appears unaware of the standard theological formulations of the Christian doctrine of creation, and therefore from a Christian perspective his book never really moves beyond tilting at windmills. Indeed, there is a certain irony in his citation of a quotation from Stephen Jay Gould which stands as a heading to Chapter 10:

Scientists have power by virtue of the respect commanded by the discipline. We may therefore be sorely tempted to misuse that power in furthering a personal prejudice or social goal—why not provide that extra 'oomph' by

extending the umbrella of science over a personal preference in ethics or politics? But we cannot, lest we lose the very respect that tempted us in the first place.

One cannot help feeling that in the present case the temptation to try and extract a personal ideology from a scientific theory has once again proved too strong. As Dennett himself remarks in another section 'Probably no area of scientific research is driven by more hidden agendas than evolutionary theory . . .' (p. 190). However, to be fair on Dennett, it is also possible that his theological illiteracy runs so deep that he is genuinely unaware of the extensive literature describing alternative ways of relating scientific mechanism to theistic world-views. Dennett's frequent critical references to the suggestion of 'miraculous interventions' in the 'design process' suggests that his theology has been informed largely from creationist sources, and he appears ignorant of the biblical understanding of the generation and sustaining of the whole universe in all its aspects as one 'seamless cloth' of God's activity.

Well aware that he will be accused of being a reductionist, Dennett helpfully distinguishes two types of reductionism, that which is good and necessary in order to carry out science, and the bad 'greedy reductionism' which believes that its particular level of explanation is the only valid one. The term 'skyhook' is introduced to refer to all types of 'miraculous intervention' which are wrongly invoked to explain difficult feats of engineering in nature, whereas 'cranes' are those valid operations whereby complex feats of natural engineering are in fact achieved. 'Greedy reductionists' think that everything can be explained without cranes (viz without invoking explanatory levels different from their own), whereas 'good reductionists' think that everything can be explained without skyhooks (p. 82). It is intriguing that

Dennett uses 'skyhook' in a sense very similar to the Christian apologetic use of the term 'god-of-the-gaps'. Work through *Darwin's Dangerous Idea*, substitute 'god-of-the-gaps' for the word 'skyhook' every time you meet it, and you will suddenly have in your hand a commendable work of apologetics attacking the deistic ideas implicit in much natural theology. To explain his understanding of reductionism, Dennett also uses the useful analogy of the relationship between computer software and hardware to illustrate the way in which different perspectives are necessary to provide a complete picture of a single physical phenomenon (p. 298). Given such an understanding of the role of reductionism in scientific enquiry, it might seem only a small step to the understanding that the complete biological world might have a 'meaning level' quite distinct from the individual algorithms responsible for the generation of its diversity. Indeed, Dennett states that 'Real meaning, the sort of meaning our words and ideas have, is itself an emergent product of originally meaningless processes ...' (p. 427). Is it really such a big step from the concept of emergent properties to the insight that the complete natural order of things may have a meaning which is best understood, is most coherent, within a theistic framework? Dennett appears to resist the logic of his own arguments at this point, preferring to take the intellectually lazy stratagem of consigning the 'why is there anything at all?' question to an unsatisfactory footnote (p. 180). But most people will not be fobbed off the 'ultimate why' questions quite so easily.

Part 2 of *Darwin's Dangerous Idea* comprises a discussion of 'Darwinian Thinking in Biology'. Much of this section is taken up with a prolonged attack on Stephen Jay Gould for whom the author appears to have a particular antipathy; in particular Gould's critique of gradualism and

adaptationism in evolutionary biology comes under heavy fire. Dennett even portrays Gould as a sixth columnist within the evolutionary camp, unwilling to admit that Darwinian evolution has dangerous philosophical implications and smuggling hidden religious yearnings into the secular Darwinian shrine (p. 309). Perhaps it is this which arouses Dennett to make such a sustained attack, for Gould has indeed been largely consistent in denying that biological evolution has any particular implications for religion or philosophy, so undermining Dennett's central thesis that Darwinism is 'dangerous'.

One of the problems with enthusiasts for Darwinism is that they frequently let their enthusiasm carry them away to such an extent that they start labelling all kinds of phenomena 'Darwinian' which have little or nothing to do with biological evolution. Dennett is no exception in this respect. For example, he assures us that '... all the achievements of human culture—language, art, religion, ethics, science itself—are themselves artifacts ... of the same fundamental process that developed the bacteria, the mammals, and *Homo sapiens*' (p. 144). Now if all Dennett wishes to affirm is that because of evolution we are here, and therefore there are such human artifacts as art and religious belief, then his statement becomes a truism, albeit a rather trivial one. However if, as appears to be the case, Dennett is suggesting that the 'fundamental (Darwinian) process' which led to the emergence of bacteria and mammals is *identical* to the process which led to the emergence of art, science and religion, then the statement becomes one which even the most ardent sociobiologist might have a problem in affirming. In a further piece of wild extrapolation from biological evolution, Dennett also suggests that as 'a positive Darwinian alternative to the hypothesis that our laws are a gift from God',

'there has been an evolution of worlds (in the sense of whole universes), and the world we find ourselves in is simply one among countless others that have existed through eternity' (p. 177). This comment is then used as a launching pad to speculate on whether there might have been some sort of 'differential reproduction' and consequent selection of such universes. Now when someone starts being profligate with universes, especially those engaged in reproduction, one cannot help thinking that the argument has become a little desperate, but in this instance it is in any case not at all clear why the existence of a multiplicity of universes should be incompatible with the idea that the laws of any particular universe are a 'gift from God'. Furthermore, it is difficult to see in what way this strange idea is 'Darwinian'. Darwinian evolution has a well-established meaning which refers to the process whereby biological diversity has come into being through a process of natural selection. Quite what this mundane and down-to-earth theory has to do with wild speculations about multiple universes is not elucidated. One cannot help thinking that genuine Darwinian theory is brought into disrepute by attaching the term 'Darwinian' to matters which have nothing to do with biological evolution.

Part 3 is entitled 'Mind, Meaning, Mathematics, and Morality' and introduces the term 'cultural evolution', unfortunately without definition (does the term 'cultural evolution' mean anything different from 'cultural change?' If not, why not call it 'cultural change?'). Dennett then pursues Dawkins' silly meme analogy and even accuses Dawkins of backsliding about his faith in meme theory (p. 361). There are none so purist as those who follow immediately after the master. Memes, suggests Dennett, can be as diverse as a 'wheel', 'wearing clothes', 'chess', 'impressionism',

'deconstructionism', (p. 344), 'tolerance', 'faith' (p. 349) or even the 'theory of relativity' (p. 355)! Memes 'infest' brains like viruses, and 'the human mind is itself an artifact created when memes restructure a human brain in order to make it a better habitat for memes' (p. 365). Dennett asks rhetorically: 'Why . . . is the meme meme so little discussed eighteen years after *The Selfish Gene* appeared?' (p. 361). The answer, I would suggest, is that the meme analogy is so vacuous that it has no explanatory power, and so has been discarded. Ideas are not like genes. They have no neatly packaged 'essence' which is 'inherited' as a discrete unit. Ideas blend with each other, genes do not. Ideas do not replicate like genes. Even less do they 'infest' brains in a manner analogous to the way viruses infect cells. In short, the meme analogy is misleading and seems to have been invented for the sole purpose of being dismissive about views different from one's own. In the final analysis, the meme analogy self-destructs—since rational analysis of ideas is implicitly denied by referring to them as 'infestations', upon what basis can we be sure that the meme meme is worth believing? The question, of course, is unanswerable if the meme analogy is correct. Dennett himself gives the game away by presenting his book as a series of rational arguments with which he hopes to persuade people of the truth of his secular humanist world-view. Presumably secular humanism is not a meme which is passively absorbed by our brain cells. Or is it?

Given all the drum-beating at the start of *Darwin's Dangerous Idea*, and the 'dangerous acid' of Darwinism seeping through all of human thought and life, one might have expected that Part 3 would end with some radical views about human nature and morality. But the book closes with a whimper rather than a bang, and we find that Dennett is a good old-fashioned

American liberal after all, who pays his taxes, loves the King James version of the Bible (p. 515) and thinks that 'this world is sacred' (p. 520). Dennett takes care to distance himself from the arch greedy reductionists, like Skinner, as much as from the more extreme of the sociobiologists. Sparks might be expected from a chapter headed 'Redesigning Morality' (chapter 17), but it turns out that far from redesigning morality Dennett only wishes to defend the *status quo*, namely the liberal humanist tradition of Judaeo-Christian ethics without its religious base. Quite how such a moral system might be logically derived from 'blind algorithms' is left to the imagination of the reader. Dennett ends the book by printing the music and words of his 'lump-in-the-throat' Sunday school song about creation, and one cannot help being reminded of T. H. Huxley singing hymns round the piano with his humanist friends in late-Victorian England.

What, then, should we make of *Darwin's Dangerous Idea*? As a popular exposition of evolution it reads well, is illustrated with some useful analogies and 'thought-experiments' which clarify the mechanism of natural selection, and in this sense is very much in the same genre as *The Blind Watchmaker*. But apart from some of the wilder extrapolations out of Darwinian theory, already criticised, I cannot think of a single point at which the biological science presented is to the slightest degree inconsistent with the traditional biblical understanding of God as creator. From the perspective of philosophy and religion, however, *Darwin's Dangerous Idea* is strikingly inadequate; Dennett appears to be under the illusion that his own personal ideology (secular humanism) is implied by Darwinian theory, and that therefore Darwinism is dangerous to anyone who is not a secular humanist. This attempt to utilise the prestige of a scientific

theory to prop up personal ideology is a familiar stratagem in the history of ideas, as a reading of the late-Victorian literature on science and religion will quickly verify. In this reviewer's opinion, Darwinism *per se* is about as dangerous as a wobbly pink blancmange, but if authors insist on using it for campaigns of personal ideology, then that really *is* dangerous and should be resisted. Perhaps the final word should be given to Dennett's *bête-noir*, Stephen Jay Gould, whose pronouncements on these matters are, I would suggest, so much more sensible than Dennett's:

I am convinced that comparisons between biological evolution and human cultural or technological change have done vastly more harm than good—and examples abound of this most common of intellectual traps... Biological evolution is powered by natural selection, cultural evolution by a different set of principles that I understand but dimly.

Denis Alexander

Denis Alexander is at the Dept. of Immunology, The Babraham Institute, Cambridge, CB2 4AT, UK.

**Amit Goswami**  
***The Self-Aware Universe: How Consciousness Creates the Material World***

Simon & Schuster, 1993, 319 pp,  
£9.99 (0-671-71287-X)

This book claims to be a devastating assault on scientific materialism. At one point Goswami summarises his alternative thus: 'the universe exists as formless potentia in myriad possible branches in the transcendent domain and becomes manifest only when observed by conscious beings' (p. 141). In other words, he opts for an explicitly idealistic form of the Copenhagen interpretation in quan-

tum mechanics. Unfortunately his presentation of both idealism and dualism (which he regards as the only possible alternative) is extremely crude. He shows no sign of understanding that dualism can take several different forms (ontological, epistemological, etc) and that not all are necessarily vicious. He does not consider that there might be other options (e.g., the ontological pluralism of Whitehead's process philosophy). He assumes that all idealism is monistic (an entirely unwarranted assumption in view of the strong idealistic tradition within Christian theology).

Again the book claims to be the fruit of many years' research. It has to be said that this is not apparent. Goswami has certainly not availed himself of the existing traditions of idealism within the philosophy of science. He appears to be ignorant of the views of distinguished physicists such as Eddington, Jeans and Milne. Nor has he engaged with the work of Henry (the neutron was invented in 1932) Margenau. I suspect that their writings might have enabled him to approach his thesis in a more sophisticated manner.

This is little more than a large-scale deployment of 'pop' physics and psychology in order to bolster up the New Age myth that we create our own realities. It certainly does not deserve to be treated as a serious contribution to contemporary discussions on the nature of reality.

**Lawrence Osborn**

**Dr Osborn is Templeton Fellow in Science and Religion, Ridley Hall, Cambridge.**

**Colin A. Russell**  
***The Earth, Humanity and God***  
University College, London, Press,  
1994, 193pp. PB £9.95.  
ISBN 1 85728 146 2

This book arises from the second series of Templeton lectures delivered in Cambridge in 1992. In the book

Russell's aim is '... to go ... behind the scenes and to examine changing attitudes to the Earth and to ask why they are changing, and what are the implications for humanity ...' (p. 2). Unlike many other books that have tackled the same issues, he outlines clearly what shapes his views: commitment to the scientific enterprise, the Judeo-Christian view of God as Creator and Upholder of the Universe and to scholarly historical inquiry. There are no axes quietly being ground behind the words on the page. He then proceeds to examine different views of the Earth from a variety of perspectives, the fragility of the Earth, damage that has been done to the environment. He patiently and clearly expounds the variety of views that have shaped humanity's interaction with the created order and the prospects for the future.

It is the depth of historical perspective that Russell brings to bear on these complex issues that is most impressive. How thinkers have viewed the Earth has obviously altered over time. He tracks these developments from Babylonian flat Earthers through Aristotelian spheres to the more recent ideas of a small (insignificant?) globe suspended in the immensity of our solar system, galaxy and universe. He charts the demythologising of the Earth from deity to organism to mechanism. The rise of the Christian world view has been given much of the credit, or blame for, this transformation. In the later chapters he charts the reemergence of the older views of the Earth with the development of the Gaia hypothesis and the arrival of the New Age movement.

A clear notion of one's view of the Earth is vital because it will shape the sort of interactions that are deemed to be acceptable. In discussing the 'Foes of the Earth' (Ch 6) Russell examines, very helpfully in my view, the charge that the Christian world view has actually led to environmental damage. Russell poses the question 'has any of

Christian theology actually favoured a "dominion" view of nature and thus been responsible for the environmental crisis of today?" (p. 87). Using 'all the available apparatus of historical enquiry' he shows that to conclude that 'the Church . . . taught unrestrained plunder of Earth's resources is to fall into the most elementary trap of selective reading' (p. 88). Indeed a soundly-based understanding of the Earth as God's, and a 'well-articulated theology of nature' are probably absolutely necessary as a corrective to competing world views (such as Marxism) which may have encouraged over-exploitation of the environment.

The view of 'Mother Earth' and the Gaia hypothesis are also explored in some detail (Chs 7 & 8). The roots of the Mother Earth idea lie very deep and can be traced back at least as far as ancient Mesopotamia. However it was very prevalent in Europe throughout the Middle Ages and with the death of alchemy was little more than 'a pleasant metaphor' when with 'the coming of modern science the terminology was largely laid to rest' (p. 104). Russell continues 'But to many it is exceedingly strange that towards the end of the 20th century not merely the phrase but also many of the associated ideas are reappearing.'. This would perhaps be easy to dismiss if some of the impetus was not coming from within science itself with the appearance of James Lovelock's Gaia hypothesis. As with many of the views, claims and ideas discussed, the Gaia hypothesis is difficult to tie down. Russell finds three versions of it from the writing of Lovelock alone. The weakest, which Russell describes as a scientific metaphor, claims there is 'a complex entity involving the Earth's biosphere, atmosphere, oceans and soil' which is self regulating, a complex web of feedback loops. The strong form 'supposes the Earth to be alive'; this brings with it both metaphysical and theological

baggage. There is also a 'final' form which is 'thoroughly teleological in context'. While the weak form may have its uses in stimulating further investigation and might therefore be 'properly described . . . as a scientific theory . . . in the form of a conceptual "model"' in the strong form the 'hypothesis reverts to myth' (p. 121). Theologically the Gaia theory carries with it the dangers of both pan- and panen-theism.

Views of the Earth also condition views of the future, and Russell explores these in the final two chapters. If only the laws of physics apply then the Earth will end with destruction by the sun's expansion as it cools, in perhaps 5,000 million years from now. If Gaia mechanisms are taken into account, the Earth should survive all other catastrophes up to this point. The great unknown is of course the effects of human activity. What Russell counsels very clearly is that the abandonment of science and technology now would have very severe consequences, and this is why a re-deification, perhaps encouraged by a Gaia view, is to be avoided.

The Christian can of course look to the Bible to get a sense of what will happen to the Earth in the future and this is where Russell looks finally. He draws out a series of propositions 'grounds for optimism' about the Earth's future and sets out 'to see whether . . . they may still be valid in our own age of science.' (p. 143). He doesn't duck Biblical eschatology, but rather explores it and finds no fundamental difficulty with either the return of Christ or the new creation. And it is very clearly in the Biblical view that real hope is to be found. Indeed he concludes ' . . . at the very heart of Christianity lies that ringing message of imperishable hope' (p. 157).

In this book, Russell is fair to science, to Scripture and to history. He exposes some of the dangers in the reemergence of a deified Earth both

practical and theological. This is an excellent exploration of the relationships between the Earth, Humanity and God and it will be of value to anyone with an interest in any or all of the three.

P. C. Knox

**Dr Knox is Vision Research Fellow, Laboratory for Neuroscience, University of Edinburgh.**

**Michael Poole**  
***Beliefs and Values in Science Education***

Open University Press. 1995. 146 pp.  
£12.99. Paperback.  
ISBN 0 335 156452

The teaching of moral and spiritual values in schools have generally been considered the preserve of the Religious Education department. However in recent years both the National Curriculum Council and the Office for Standards in Education (OFSTED) have rightly insisted that, 'The promotion of pupils' spiritual, moral, social and cultural development is a "whole school" issue.' The National Curriculum Council's 1993 publication, which is quoted by the author, says that, 'In most aspects of the curriculum pupils should encounter questions about the origin of the universe, the purpose of life, the nature of proof, the uniqueness of humanity and the meaning of truth. They should be encouraged to reflect on the possibility of certainty, to question the often-exaggerated view of the infallibility of science as the only means of understanding the world, and the equally-exaggerated view of the inadequacy of religion and philosophy.' For most science teachers this must seem a daunting prospect and it is to assist them in this task that Michael Poole has written this book.

The first two chapters sketch out the theoretical basis for his enterprise.

The author sets the discussion in the context of moral theory and is rightly critical of the subjectivism too often found among those who treat all moral and belief systems as relativist. While emphasizing the significance of choice and tolerance in a pluralist society he, nevertheless, stresses the importance of intelligibility, orderliness and uniformity in nature as the basis for scientific research. He argues, against the society of knowledge school, that reality exists independent of the observer.

There are valuable chapters on the use of metaphor and models in science. Poole points out the danger inherent in using models where they have the tendency to take on a life of their own. He instances the use made by Darwin of natural selection and Dawkins' use of the metaphor of the 'selfish gene' and suggests that pupils be asked to assess the claims that the propagation of DNA is the sole reason for man's existence and whether Dawkins has a claim to some sort of privileged insight.

Much of the book is taken up with the wider issue of the relationship between science and religion. Over the years there has been a growing antipathy towards religion by young people who have tended to view science as the god of the age and to endow it with an omniscience that it does not have. Such optimistic views of the scientific quest have been fuelled by the popularist statements of the likes of Stephen Hawking, Richard Dawkins and Peter Atkins. Dawkins has encapsulated this view in the words, 'What has "theology" said that is of the smallest use to anybody? When has "theology" ever said anything that is demonstratively true and is not obvious?' Atkins likewise has claimed that 'Historically, the unstopped flow of science gives us reason to believe that it is omniscient . . . Science's cautious, publicly monitored gnawing at the

cosmic bun is a far more honest approach to universal competence than religion's universal but empty gulping and the verbal flatulence that passes for theistic exposition'. Poole takes these critics to task and shows that this is not science but scientism just as the claim that evolution explains everything is not science but evolutionism. Of all the chapters, probably the most valuable are those that take specific issues like cosmology, the Galileo affair and the Darwinian controversy and discuss them in their historical contexts. In each case he gives teachers examples of the type of exercises that pupils can be set to help them understand what is being discussed.

Michael is well known to readers of this journal as someone who takes both his science and his Christian faith seriously. He is well qualified for the task in hand having spent his early years in school-teaching and his latter years in teaching and researching the history of science and science education at tertiary level. The book is primarily written for science teachers and should prove a boon to them. Perhaps it could be used in conjunction with his 'Guide to Science and Belief', which is written specifically for school pupils, and covers virtually the same ground. However it is a volume that should have a much wider readership. All those involved in teaching religious education would benefit from it. As it is written with such clarity and lack of scientific jargon it should prove profitable reading for anyone, hopefully all the readers of this review, who are interested in the relationship between science and religion.

**R. S. Luhman**

**Reg Luhman is Head of Religious Studies in an Essex grammar school.**

**Don Cupitt**

***The Sea of Faith***

SCM, 1994, 291 pp. Pbk £12.50

**Don Cupitt**

***After All***

SCM, 1994, 121 pp. Pbk £9.95

Of all theologians Don Cupitt raises the most hackles. To many it is a mystery how one can remain in Holy Orders and claim God does not exist in an objective sense. It is ten years since his manifesto was televised as the beautifully produced 'The Sea of Faith' (after a line in Matthew Arnold's poem *Dover Beach*). Today there is a Sea of Faith network, with an annual conference and many books expounding a 'non-realist' faith. One priest, Anthony Freeman, hit the headlines for being dismissed from his diocesan post for his non-realist book 'God in Us'.

'The Sea of Faith' is the most important 'non-realist' work, partly as the non-realist Manifesto, and mostly because of its claim that historical developments have ineluctably eroded away a 'literalist' realist view of Christianity, thus necessitating the stark non-realism which is synonymous with Don Cupitt.

Cupitt gives a broad survey of thought over the last half-millennium dealing with philosophy, science and the rise of critical theology. Cupitt always writes in an engaging and persuasive style and one is easily swept along by his presentation. Cupitt polarises science and religion, 'religion promotes an accepting and acquiescent temper of mind, whereas science promotes and requires analytical and critical habits of mind.' (p. 88) and similarly critical thinking and religion 'critical thinking on principle cannot accept dogmas at all, but must invariably question and undermine them . . .' (p. 7) This polarisation underlies most of the book, presenting every argument as an extreme Either/Or. It is an excellent example of what Basil Mitchell called Theological

Ping-pong, only allowing two possible positions, his own and the one rejected. As a result he has to shoehorn his historical section to fit his schemata. This he does with Descartes and Pascal concluding in a statement which is a summary of Cupitt's position, 'Either you can claim to have an objective God, like Descartes, or you can have an authentic Christian faith, like Pascal. It is one or the other: take your pick.' Pascal has been reinvented as the father of non-realism, and in one fell swoop the classical experiential and objective faith of the last two millennia (four when we include the Old Testament) is rubbished. The best one can say is that Cupitt's exposition is rather idiosyncratic.

The next chapter 'The Historical Animal' presents the rise of geology and evolution with considerable inaccuracy, dealing with William Smith, the founder of English Geology, Hugh Miller and Darwin. Cupitt's portrayal of Smith is inaccurate, though he has corrected several of the mistakes from the first edition. Cupitt's section on the self-taught evangelical geologist, Hugh Miller, defies belief. He denigrates Miller's *Footprints of the Creator* (1847) as 'a veritable dinosaur of a book, the last major work of biblical geology.' The work is sound science for its day, with only a few pages on theological arguments against evolution and a *footnote* on Genesis. If this (or Miller's other even more excellent books) is a dinosaur then it must be a Velociraptor, notorious in *Jurassic Park* for being fleet of foot and claw, disembowelling all with a flick of a foot. Even Cupitt's arch-hero Darwin had a great regard for Miller. As much as he reveres Darwin, Cupitt seems strangely unaware of recent Darwin scholarship and the massive availability of his writings and letters. Instead, Cupitt presents an out-dated and hackneyed Darwin. After an equally lop-sided history of Biblical criticism Cupitt leads us on to his inescapable conclusion that because of the histor-

ical development of science we must hold a non-realist view of God. This he does after expositions of Freud, Jung (convincing in showing that Jung has a non-realist view of God) and later, Nietzsche, Schopenhauer and Wittgenstein. The breadth of Cupitt's survey is impressive. When he comes to the end of his historical survey he shows on p. 197 how the cumulative effect of chapters 2 to 6 leads inexorably to conclude that God is not real. However a cumulative argument depends on the validity of the intervening steps and the sum of zeros is zero. Cupitt is unreliable both in his history and conclusions, he simply has dropped too many bricks on Dover Beach, and used too much straw from his straw men to make them.

*After All* is billed as 'may be the first textbook of post-Christianity.' This is a strange and bleak book and will appeal to those who have begun the non-realist way and offend others. Yet Cupitt has an important message as he presents a post-Christianity to parallel post-Modernism, claiming that Christianity tipped over into post-Christianity in 1980. At first I thought that absurd, but on reflection could see his point. My suspicion is that much apparent orthodoxy is built on a post-Modernist foundation, with no 'Absolute Truths' to guide us. Cupitt bursts the bubble of much apparent orthodoxy. *After All* does not contain the perceptive challenges of *The Sea of Faith* and is marred by dogmatism and scathing dismissals of 'realist' Christianity.

The key argument is over language and metaphor. Cupitt maintains that religious language is metaphor and is not realistic. His use of metaphor excludes the metaphor relating to *something*, and although he avoids the scylla of the crude literalism of fundamentalism, he ends up with a charybdis of a metaphor which points to nothing. Far more satisfactory is the use of religious language initiated by

I. T. Ramsay and the Critical Realism of Arthur Peacocke and Stephen White, who reject both crude realism and non-realism in favour of 'Critical Realism', which seems to be another name for Calvin's 'accommodation'. Cupitt has laid bare the need for hard thinking over religious language.

Hasty dismissals of Cupitt are short-sighted as, by his very starkness, he lays bare the problems which Christians face today, and which are often ignored by being traditional in the worst sense. He is right to say 'religious belief and practice have been left looking like a hobby'. (p. 9) and most importantly 'The real and continuing crisis, then, is in the area of doctrine, and it is with this that *The Sea of Faith* is mainly concerned'. (p. 12) Ultimately he sees religion, and in his case Christianity, as giving moral values. This last point is developed by Iris Murdoch in *Metaphysics as a Guide to Morals* which also avows non-realism. To dismiss Cupitt means ignoring the appeal non-realist Christianity has for some today, the cultured doubters of Christianity who like Iris Murdoch want a framework for living and are turned off by simplistic Evangelicalism which is making headway today. Time alone will tell whether Cupitt's non-realism will be an acceptable alternative to Scientific Reductionism and 'Orthodoxy', but we may be sure that it will have considerable impact for some time to come.

To conclude as Cupitt wrote in *The Sea of Faith* (p. 239) 'An honest religious thinker is like tightrope walker; to be honest, you must walk the tightrope; to be religious, you must not fall off it'. The trouble is, Cupitt fell off, but many Christians have yet to take the first step or are hanging on upside down. Cupitt needs to be answered by better history and better philosophy and not dismissed or ignored.

M. B. Roberts

**Michael B. Roberts, (Society of Ordained Scientists) is Vicar of Chirk, Diocese of St Asaph, and a geologist.**

**Robert Cummings Neville**  
***Eternity and Time's Flow***

NY: State University of New York Press, 1993, xxiii + 268 pp. Notes. Index. Paper \$16.95

In our instant gratification society, there exists little popular interest in eternity. Yet, in our religious life, we use phrases such as 'eternal God' and 'eternal life', though they are empty and devoid of significance to the ordinary person. When we think about eternity we use it to mean forever, without beginning or end, going on for all time. Eternal life is life without death, eternal God is God who transcends the limitations of finiteness. Eternity is somehow a state outside of time. For ages, questions such as what is and where is eternity, how it is related to our ordinary life, and where or when we encounter it could not be answered. But Relativity and the new Cosmology theorize precise definitions and bounds for time and space. By specifying these limits and beginnings, they give us the opportunity to rethink eternity and indeed offer us the opportunity to reformulate our understanding of it. We can imagine and model the birth, life and death of God's creation of space-time, giving us a clear, definitive boundary between space-time and everything else. Eternity, now, can be understood distinctively different from time and space. With this hope, this reviewer engaged Robert Cummings Neville's *Eternity and Time's Flow*.

According to the book's jacket, Robert Cummings Neville is Dean of the School of Theology and a professor in the Department of Philosophy at Boston University. He has been president of the Metaphysical Society of America (1989), the Amer-

ican Academy of Religion (1992), and the International Society of Chinese Philosophy (1992). He is the author of a number of books, including *God the Creator: On the Transcendence and Presence of God*, a prerequisite for the current work. The book includes drawings by Beth Neville. Her drawings in the book 'trace the development of human knowledge from Earth's dark interior recesses, then travel outward in space and backward in time to an ever expanding beginning movement.' These drawings provide an artist's view of time's flow and eternity that symbolically reflect various current scientific theories, including black holes, supernovae, and micro radiation.

The central thesis of this work is that eternity is the context for the flow of past, present, and future time. These tenses are together in eternity whereas, temporally, they are separate. Eternity is creation out-of-nothing; time and its flow are part of this creation. God is that which creates out-of-nothing and, thus, is eternal. Within eternity and within God's act of creation, time as a whole in all of its tenses exists together simultaneously (although that temporal word has no context in eternity).

The book is divided into four parts. In *Part One. Eternity and the Time Passion of the Modern World*, the author challenges our passion for present time and sets out to rethink and relook at eternity. In this part, he shows that time and eternity must be considered together. Prior to the discovery of Relativity, science viewed space and time as infinitely extended grounds. Creation occurred within the context of a background of infinite space and infinite time. Eternity took on the sense of everlastingness and questions of what was beyond space and before (or after) time were meaningless. But now with our understanding of finite space-time we can seek meaningful answers to these

questions and distinguish eternity from space-time. Yet, Neville points out that the modern West is preoccupied with the present. We view the present as the only real mode, resulting in our chasing after instant gratification. We lose sight of the fact that gratification results from the past and leads to future consequences. If we fear 'nonbeing' as Tillich suggested and only the present is being, then we regret past acts and worry of future consequences. Neville suggests that this anxiety results from a neglect of the eternal. One's present includes one's past and one's future; one's past includes one's present and future; and one's future includes one's present and past.

In *Part Two. Time's Flow within Eternity*, the author gets to the heart of the matter where he goes into detail about the flow of past, present, and future, and their togetherness in eternity. To do this, he defines essential and conditional features of each mode. An essential feature of one mode is a feature independent of features of any other mode. A conditional feature is a feature conditioned by the relationship of a mode to other modes. This categorization is then used to describe the togetherness of the modes. The past, present, and future are fundamentally different from each other, each with their own distinct essential features. These essential features describe the timelessness of the mode. The present is the moment of becoming, where change and spontaneous creating takes place. The past is fixed objectively in everlastingness. It is immutable. The future provides form to integrate potentiality of the past and present. All the modes are of equal necessity.

But each mode conditions the others. The present is constrained to the actual possibilities opened by the past and the formal possibilities suggested by the future. The past is an integrated history whose context is

defined by the actualizations of previous presents and the structure of the future. The future is given the plurality of possibilities opened by the past, but as the present becomes, the potentiality of the future is transmuted according to the possibility being actuated. From these interactions, time's flow emerges: the present actualizes future possibilities and puts into the past actuality. The past is added to, the future is changed, and the present becomes and perishes. Eternity, then is the togetherness of the temporal modes. Time flows within eternity; eternity is the context within which time flows and within the modes harmonize.

In *Part Three. Divine Eternity*, the author now looks at eternity in the context of the divine: God's being, life, and creative act. In this part, process theology is used to re-evaluate the notion of eternity. From the previous part, we can see that time's flow implies a dynamic of becoming and openness, of change. Eternity as the context of the togetherness of time's modes is also dynamic. Eternity is not the totality of everything and every time that was, is, and will be, for this implies a static time without passage. This notion views time as a spatial, predetermined dimension. Rather, eternity comprehends all past events and all future possibilities that may or may not be realized. If we view God then, not as an individual, but as a process of creating out-of-nothing, then God adds complexity to a given event that revises the eternal comprehensive view. 'The central divine reality, . . . , is the creative act of which the world is the terminus and that itself constitutes God as having the characteristic of being creator (p. 142).' God's character arises from the act of creation. Departing from process theology, Neville proposes that God is the process of creating out-of-nothing and in that fashion is within everything and every time, every actualization and

every potentiality. God is the eternal creating out-of-nothing; this is eternity, the context of time's flow. God is not an individual being apart from creation, since a 'deeper' creator would be needed to have created the 'apartness'. God is the creative act, its source, which is nothingness, and its product. God's eternal life, then, has all the distinction of the temporal modes together within the divine life and within the divine life every temporal mode has an eternal identity.

In *Part Four. Eternal Life*, the author looks at the implications of eternity for us in our eternal and divine identity, God's presence with us and beyond us. We typically think of eternal life as life everlasting, life without death. Rather we have eternal life now: our whole person is what we were, what we are, and what we will be all at once. Our wholeness transcends the temporality of time. But further our eternal life is also our eternal interconnection with everything in every time in the cosmos. Our immortality comes in this interconnectedness. Our eternal life is part of the divine life as participants in the divine process, bearers of divine creativity, and contingent pointers to the divine freedom.

God as creating out-of-nothing is a process of love, relating us to each other and to creation. In relationship, we are in covenant with this process which is God. Righteousness, justice, piety, faith, and calling are ideals through which we exercise this ontological love. Yet because of free will, we individuals, institutions, and nature have broken this covenant. Thus, every movement is under eternal judgement as past, present, and future acts. Salvation is not attainment of eternal life, which we already have, but is realizing the eternalness of creation and living in that perspective. Resurrection is the victory of wholeness of body and soul eternally. Living in heaven is living now eternally, which is done through Jesus

Christ. Our life, no matter how seemingly small as part of the divine life, is meaningful and significant, part of the glory of God.

The author's text is freighted with philosophical language and notions. It is a dense book and requires attentive, careful reading. The author recognizes this and states that he consciously made the decision to retain the terminology and models of his technical domain. He feels the reader's knowledge can then expand and grow to make up the difference. Indeed, this is a reasonable expectation when the book is used as a college text for students whose 'job' it is to learn. However, the density of the language is a 'put-off' to other readers. It is not necessary or desirable to reduce the language to the lowest common denominator, however; specialized language can be interpreted and specialized models can be cast into more generally understood models to open this important work to a wider audience. As it is the book will be left to those who are dedicated to deep study and the time it takes to unpack the text.

The approach of this work is philosophical with very little interaction with current scientific and mathematical thought. Interesting works on the latter perspective include those by Rudy Rucker<sup>1,2</sup>. These works look at eternity from a geometric point of view. A synthesis of this view-point and Neville's would provide a valuable integrated view of eternity. Many questions are left open from a scientific viewpoint. How do Neville's notions of eternity and time's flow relate to the relativity of simultaneity, to what existed prior to the Big Bang, and to what exists beyond the cosmos. In the relativity of

simultaneity, two objects whose relative velocities differ by a significant percentage of the speed of light will experience the occurrence of two events differently. One may experience them simultaneously; the other successively. Does this imply each other's flow of time is different? How does this enhance our understanding of eternity? Physics cannot tell us what occurred prior to the Big Bang or what is beyond space-time. How can Neville's notions of eternity and the togetherness of the flow of time help us to answer these questions? Can eternity be understood devoid of time's flow? If eternity is the context of the togetherness of time's flow, was there eternity prior to the Big Bang? If so, what was it the context for? Was there another time's flow? For Neville's theology of eternity to be relevant, it needs to be related to these issues. Our modern understanding and context for time is relativity and cosmology. A theology of eternity needs to address this context.

Neville has effectively taken us from the view of eternity as 'out there' to eternity within and among us. The notion of eternity is no longer an out-of-reach state, but part of ourselves. Neville helps us to transcend the temporality of our existence and to view ourselves and the rest of God's creation as eternally together. Not only are we currently interconnected with all of creation now, but with everytime past and future in a web of responsibility and influence that embraces all of space-time. Eternal God is not a distant immortal 'grandfather', but the very constituent of existence. This very constituent draws its substance from the ubiquitous nothingness that permeates our existence. This constituent is the creating out of this substance that is in, outside, above, and over all of creation. Neville lifts us on divine wings to soar in God's life. No matter how unknown or simple our lives, whether we do or be, we are

---

1 Rudy Rucker, *The Fourth Dimension: A Guided Tour of the Higher Universes* (Boston: Houghton Mifflin Company, 1984).

2 Rudy Rucker, *Geometry, Relativity and the Fourth Dimension* (New York: Dover Publications, Inc., 1977).

significant, for God takes us into the divine eternal life.

John A. Mills

**The Rev'd J. A. Mills is a minister of the United Church of Christ, U.S.A., and senior systems engineer, Bell Communications Research. This review is reproduced with permission from CTNS Bulletin Vol. 15 Number 2. Spring 1995.**

**I. B. Cohen and R. S. Westfall (Ed)  
*Newton***

W. W. Norton. 1995. 436 pp. pbk  
£6.95. ISBN 0 393 95902 3

Isaac Newton thought and read about science and Christian belief as deeply as any reader of this journal. John Locke reckoned that Newton's knowledge of the Bible was unsurpassed by anyone he had met. He has left extensive notes from his reading of Origen, Athanasius, Gregory Nazianzen, Justin Martyr, and Augustine. His reading was spurred by a combination of his immense intellectual curiosity and integrity with the requirements of eventual ordination if he was to retain his fellowship at Trinity College Cambridge. Those who claim that the Seventeenth Century pioneers of science as we know it adopted a Christian standpoint because of their society and culture grossly underestimate the extent to which they thought things through for themselves.

Cohen and Westfall have put together a compilation of Newton's writings which give a marvellous flavour of the scientific and intellectual achievements of Pope's celebrated elucidator. There are nine parts, on Natural Philosophy, Scientific Method, Experimental Procedure, Optics, Rational Mechanics, System of the World, Alchemy and Theory of Matter, Theology, and Mathematics.

The passages from Newton's own writings enable one to read at first hand his accounts of topics which one learnt about at school or university, ranging from optical interference to gravity, and discussions about different infinities and how the universe comes to contain discrete bodies rather than a uniform distribution of matter. Each section has a two- or three-page introduction, and the editors have included some splendid selections of other writings about him, such as 'Newton was not the first of the age of reason. He was the last of the magicians ...' (John Maynard Keynes).

Newton began intensive theological study at about the age of thirty, when he was at the height of his intellectual powers. A key essay in the section on his theology is by one of the editors, entitled *Newton and Christianity*. Westfall argues, from a Protestant Christian standpoint, that 'Newton did not find God in nature, ... he imposed God upon nature.' He bases his argument on a wide range of Newton's writings, published and unpublished (including *Observations upon the Prophecies*, 'a work of surpassing tedium, which all but the tiniest handful have been spared the necessity to read'). He presents in some detail Newton's arguments from design. It seems to me that a key question for Christians active in science is whether arguments from design are to be used as arguments to believe in God for those who would otherwise doubt his existence, or as arguments for trust in God by those who would otherwise doubt his competence. The section on theology provides a new opportunity to evaluate Newton's contribution.

G. A. D. Briggs

**Dr Briggs is lecturer in Materials Science, Oxford University.**