

## Book Reviews

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**Joan Roughgarden**

*Evolution and Christian Faith*

Washington: Island Press, 2006. 168pp.  
pb. \$15.95. ISBN 1-59726-098-3

Joan Roughgarden is a respected evolutionary biologist and Professor of Biological Sciences and Geophysics at Stanford University. Her main areas of expertise are in the evolution of island lizards and coastal ecology. This book is a small, informally written dialogue between her and the reader about the issues that she faces as a Christian caught between two factions in contemporary America. These factions will be familiar to many as those who take polar opposite views in the science versus religion debate and where the discussion is often acrimonious. On one side are those scientists within the biological sciences who reject any notion of theism and on the other are biblical literalists who see evolution (let alone evolutionism) as a toxic erosion of the country's morals. Is there a position in between? Can you marry a biblical faith with a belief in evolution? These questions are the main thrust of the book and they read partly as a testimony between the author and others within her culture and partly as a means to educate the reader in science and her particular biblical interpretation.

Here, perhaps, is the first point. The book is written by someone living in the USA addressing her fellow citizens, and it would have been better to assert that earlier in the book. As a consequence much of the discussion about society's attitudes to the apparent conflict between 'science and biblical literalism' is specific and often is presented as far more polarised than is the case in some other countries.

The book begins with a gathering of thoughts concerning the appropriation of a biblical argument to support evolution. Here the book is a bit hit and miss. On

the one hand there are good arguments for God's creating the universe in such a way that it permits organic evolution and these are made clearly. On the other hand there is the requisition of Bible stories to underpin a particular way of thinking that I cannot imagine being in the mind of the biblical author. For example, the extension of Paul's metaphor of the church being like the parts of a human body (I Corinthians) does not, in my opinion, help to validate the idea of there being a single tree of life in which all living things are related. I can see her point: she writes of 'a diverse community as one organic body' as a theme common to Paul's teaching and to both ecology and evolutionary biology. Perhaps Paul would have used this had he known about it, but it seems to me that the argument that all of life is akin to a single body because of its common descent (and deriving a conservation ethic from it), interesting and laudable as it is, is an extension of Paul's teaching and should be taken with care.

While discussing the notion of species changing, Roughgarden also looks at the difference between the biblical notion of 'kinds' in relation to our modern conception of classification. She rejects the immutability of species by examining Jacob's goat, sheep and cattle breeding experiences in Genesis 30. Later in the book she discusses how six-day creationists and adherents to the theory of intelligent design (ID), born from different presuppositions and with different agendas, can be challenged and appraised. She ably introduces science as a method of investigation as opposed to a collection of facts in order to reject ID as a scientific endeavour. This, she claims, should be taught as philosophy or religion. While happy with the idea of 'teaching the controversy', she offers proponents of ID four areas of research to conduct which would validate the idea as a scientific one.

Roughgarden does not spare evolutionary biology from criticism either. She replaces the term 'natural selection' with natural breeding. This, she states, is primarily to enshrine the concept in a more modern notion of the process but also to distance it from survival of the fittest as, she claims, both 'selection' and 'fitness' have broader meanings now than they did when originally coined. She describes the science well and links the idea of natural breeding with the allegory that Jesus uses about the vine (John 15) and the fortunes of the 'random mutation' with the sower who went out to sow seed on varied ground (Matthew 13) in order to give examples of how breeding was well understood in the culture of the New Testament.

She then devotes a whole chapter to her perceived shortcomings in Darwin's idea of sexual selection. In this chapter are descriptions of sexual selection that I did not recognise or rather that I had interpreted in a different way from the author. In place of sexual selection she offers 'social selection' which seems to me to drift precariously close to the theory of group selection. This is where an individual may do something for the good of the group and receive no benefit from it and was widely discredited in the 1970s and 80s.

This declaration that sexual selection is broken beyond repair stems from her views that it cannot readily explain the preponderance of homosexuality and the multiplicity of 'genders' found in many animal species, including humans (i.e. that human genders form a continuum from completely heterosexual to completely homosexual). Coupled with this is the idea that this part of the theory was born out of the Victorian values from the world in which Darwin lived. She also claims that too much stress has been placed on the competitive (and deceptive) side of gender relations at the expense of the collaborative effort between the sexes as they reproduce. This would include, in the former, the notion that there are

some very historically specific gender stereotypes in the Victorian world-view that do not do justice either to the multiplicity of human experience or to the observations made in the animal world. Too much attention is focused on, say, the cryptic ovulation of women, i.e. that their biology deceives men, as men should only be interested in mating when there was a chance of conception.

Sexual selection, to my understanding, has never been defined as the biology of deception, but as an explanation of how mate choice influences the appearance and behaviour of different animals. This ranges from the hard-to-distinguish male and female albatrosses that practise life-long monogamy, to the extremely sexually dimorphic and polygamous peacocks, lions, etc. Sexual selection also offers explanations for extreme practices such as the male worm that swims up into the cloaca of the female and degenerates into a pair of testes embedded in her flesh and the geometrid moths where the female emerges from her chrysalis, but never develops a head or legs but sits on her leaf as a bloated ovary. The albatrosses offer a case for a shared, cooperative, equal venture between the sexes; the others show a range of other tactics, all with the desired end result of maximising reproductive success.

Sometimes, to my mind, she offers up a solution to what is a semantic problem rather than a biological one. She uses the term gender where another biologist may use 'mating type' or 'alternative mating tactics'. This is used when more than one sort of male or female appears in a population. Some male fish, for example, compete for female attention by being large and showy whereas others (often termed sneakers) are small and drab but obtain reproductive success by waiting for the big males to complete their courtship and then sneaking into the spawning area and shedding their sperm in the hope that some of them will fertilise the female's eggs. This is normally called a type of mating strategy, different solu-

tions to the problem of siring offspring. In other fish, better reproductive success occurs when the females are of a relatively large size. Fish, with simple reproductive 'plumbing', get by this by changing sex at a certain point, i.e. they are sequential hermaphrodites. Many of these examples were unknown to Darwin so it seems a bit unfair to burden him with the end statement on this subject. Roughgarden seems to advance her arguments to replace sexual selection as a vanguard for a plea for tolerance in human societies. Indeed this chapter also surveys the biblical teaching on homosexuality and gender issues and uses well reasoned though controversial arguments for why these scriptures must be reinterpreted in light of our current understanding. How you take this depends on the presuppositions that you bring to bear when reading the Bible. To discuss such a topic obviously requires more than one short chapter to justify her conviction (indeed she has written another book devoted to the subject), but I remain unconvinced that she offers a radically different alternative to the theory offered by Darwin and extended by successive scientists.

In general, however, I liked this book and found it to be well written and interesting. The descriptions on the back and the title runner 'what Jesus and Darwin have in common' neither do it justice nor represent the ideas within nor the spirit in which they are submitted. I noticed a couple of errors (e.g. human chromosome counts), but the review copy was an uncorrected proof. The contents of this book represent the reflections of a biblical and committed Christian who is also an evolutionary biologist. For some they will be too liberal and for others too conservative. They are, however, a reasoned and careful contribution to an increasingly (sadly) polarised debate. This book should be welcomed as a testimony to how this scientist harmonises a biblical faith with her interpretation of the evidence for evolution. I found it stimulating and an enjoyable read. I can imagine

that the book will generate a certain amount of heat and Roughgarden notes that in the nineteenth century public arguments were often carried out with an element of cordiality and humility. Quite near to the beginning of the book Roughgarden states that she doesn't want to argue with other Christians, but rather to share with them the love and fellowship of Jesus. How pleasant it would be if all people within God's church shared this attitude.

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**Sujit Sivasundaram**

***Nature and the Godly Empire: Science and Evangelical Mission in the Pacific, 1795-1850***

Cambridge: Cambridge University Press, 2005. 244 pp. hb. £50.  
ISBN 13 978-0-521-84836-7

Protestant missionaries in the early nineteenth century were men of science. This conclusion of Sujit Sivasundaram may surprise readers who have supposed missionaries in this period to be people of fanatical zeal but little brain. It is, however, a verdict that is largely warranted. The eighteenth-century evangelical revival that gave birth to the Protestant missionary movement was, as much recent scholarship has shown, more profoundly influenced by the intellectual currents of the Enlightenment than was hitherto imagined. Evangelicals believed in the harmony of revelation and reason. Scripture and nature spoke with one voice, and the eye of faith was able to perceive 'wonderful analogies' between the created world and the spiritual one. The emissaries of the London Missionary Society to Tahiti who are the primary object of this study did not simply communicate a message of Christian redemption to the south Pacific. They also transmitted knowledge of the natu-

ral world in both directions. They took with them to the South Sea islands a gospel of agricultural improvement which sought to reduce the unbridled luxuriance of Pacific vegetation to productive cultivated order; while they conveyed to Britain graphic images of the islands, collected natural historical specimens for exhibition in the Society's London museum, and even assembled human trophies in the form of some sixteen islanders who were transported to Britain during this period to be 'put on display' as living exhibits before the Christian public.

Science in this period was not a professional discipline with established boundaries and recognised channels of dissemination. As modern scholarship has demonstrated, nineteenth-century science and Christian theology were not two opposing bodies of knowledge, but rather intersecting spheres. Sivasundaram does not supply many examples of missionaries engaging in physical experiments or even advancing new theories of science, though he notes that John Williams, the most famous of all the South Sea missionaries, questioned the explanations of Lyall and Buckland on how coral was formed, and was an important first-hand source for Charles Darwin's *The Structure and Distribution of Coral Reefs* (1842). Sivasundaram's emphasis is rather on how central to missionary encounters in the Pacific was a contest between two divergent theologies of nature: the islanders' cosmology blurred the boundary between God and creation by depicting deities in the form of birds, animals or fish, whereas evangelical Christianity adhered to a 'modern' scientific view of nature as an object, not of veneration, but of rational investigation. Natural theology required a degree of distance between God and his world.

This is a fine book that deserves to be read by all interested in the history of science as well as by historians of Christian missions. Its weakness lies in an intermittent tendency to push the argu-

ment further than the evidence permits. Imaginative historical analysis sometimes crosses the boundary into speculative representational theory, particularly where Sivasundaram is interpreting the images reproduced in missionary publications. Deep symbolic significance, for example, is attached to an engraving in the *Evangelical Magazine* of the head and shoulders of the Polynesian Temoteitei, showing him unclothed, despite the fact that Polynesians at the time would normally have been naked above the waist anyway. Similarly an analysis of George Baxter's famous print of the martyrdom of John Williams in 1839 (137-144) makes repeated use of the verbs 'could' and 'might' in suggesting the hidden meanings that may (or may not) lie behind Baxter's re-working of the physical landscape from the original representation of the scene painted by an eyewitness. The fact that Sivasundaram in his most theoretical vein falls short of total conviction, does not however, place in question the essential validity of his thesis. Evangelicals believed that the Adamic responsibility to 'subdue the earth' would be discharged only through the proclamation of the gospel of Christ. The missionary movement was not simply about the salvation of souls, but was thought to be integral to the divine purpose for the renewal of the created order. In this respect, his book has a valuable message for contemporary environmentalism.

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**Christopher Southgate (ed.)**  
***God, Humanity and the Cosmos –***  
***Second Edition Revised and Expanded***  
***as a Companion to the Science-***  
***Religion Debate***

London & New York: T&T Clark  
International, 2005. 472pp. Pb. £25.  
ISBN 0-567-03016-4

The book states that it 'is intended as a companion to the debate for the general reader and as a resource for teachers and students on undergraduate-level courses.' (xvii) Despite its textbook-like nature I found it a good read and thought provoking on many topics. It is a revision of the original published in 1999 and, judging by the reference list, the book seems to have been reasonably thoroughly updated – at least up to 2004.

The book's fifteen chapters are written by eleven contributors and deal with a range of topics, with the authors writing from a specifically Christian perspective. The usual issues are well covered – cosmology, evolution, psychology, ecology, biotechnology, history of the debate, truth and reason – with plenty of suggestions for further reading. One chapter, 'A test case: divine action,' draws together the material in the book to examine the specific issue of God's action – past, present and future – in the universe. The book makes few direct references to Jesus and the New Testament, but then little of the literature on science and religion does either. Perhaps more critically the book does not address in any depth the important topic of climate change and global warming – a current issue of major ethical significance and one which should be of concern to all Christians.

In terms of personal impact, I found the chapter on technology, though brief, particularly stimulating and challenging. This is a topic that is often overlooked in the science and religion debate, but arguably is more immediately relevant to the 'general reader' living in a so-called technological society than are the somewhat more esoteric discussions of cosmology.

In addition, the two chapters on 'Resources from outside the Christian tradition' and 'Islam and science' provide interesting perspectives. The former covers (briefly) Judaism, Hinduism, Taoism, Buddhism and the Gaia Hypothesis.

As a text for undergraduates the book suffers from being somewhat uneven in its presentation of topics; some chapters are longer and treat their subject in greater depth than others. Similarly, the exercises provided for the reader vary and some chapters have no exercises at all. Students from a non-science background may struggle with some of the scientific subject matter. Despite this, it is still a useful text for teaching the basics of the debate.

It is a pity that the book was published in 2005 and so the writers were unable to engage with some recent publications, both in theology (such as, Middleton J.R. (2005) 'The liberating image: the *Imago Dei* in Genesis 1', Brazos Press, Grand Rapids, Michigan, 304pp) and in science (for example, Harnik R., Kribs G.D. & Perez G (2006) 'A universe without weak interactions', *Physical Review D*, 74, 035006). The former is a key resource in understanding what it means to be human in biblical terms. The latter work suggests that a universe without weak interactions may still be able to exist for billions of years and sustain life – thus posing a challenge to the fine-tuning argument. Both these publications are very relevant to the material covered in the book. No doubt discussion of them will be included in the next revision. As with any textbook, inevitably, the discussion will not be as up-to-date as one might wish, but this does not detract from the value of this book.

Overall, I found the book a useful survey of many of the key issues in the science-religion debate and good introduction to the literature on the topic. Therefore, I am very happy to recommend it to readers of this journal.

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**John Polkinghorne**

*Exploring Reality. The Intertwining of  
Science and Religion*

London: SPCK, 2005. 208pp. pb. £13.99.  
ISBN 0281057230

'All my life I have been trying to explain reality,' (ix) writes the author who for many years has been giving us refreshing new ways of envisioning our faith as a scientist-theologian. This book has that same economy of style and clarity of thought that is the hallmark of all his writing. It is written for the general reader rather than for the specialist but the depth of thought is no shallower for that. In his 181 pages and ten chapters he covers ground he 'has visited before' – the historical Jesus, the physical nature of reality, the Trinity and the nature of time, the spirit, evil and ethical issues. Polkinghorne makes clear, however, that his aim is 'to offer additional insights' so that we enjoy a good read as we travel over old familiar territory, but with some new sights to see on the way.

I dived in at random and this was not too difficult to do as the chapters are relatively self contained. In his chapter on human nature, Polkinghorne tells us that, in evolutionary epistemology, 'one encounters a half truth' (51), Darwin's 'horrid doubt' that our thoughts, being those of the beast, can hardly be 'of any value or are trustworthy'. If this is true it would undermine human dignity, but is falsified by the 'fact' of science and its achievements, which is evidence that humans are made 'in the image of their Creator' (53). Whereas cognitive ethologists such as Frans de Waal wish to demonstrate our commonality with all other creatures, Polkinghorne, priest and theoretical physicist, is convinced theologically of our unique place in the cosmos.

In his discussion of the historical Jesus (chapter 4) there are perhaps fewer 'hands on' insights than those he brings from his mastery of theoretical physics, but his discussion is balanced and insightful. Here he 'concentrates on a search for historically motivated considerations' (88) but is nevertheless convinced that we must, in this search, be prepared to go beyond the confines of secular thought (83). The physical resurrection of Jesus is central to his theology, in support of which he gives the classical arguments, conscious however that 'how one weights the evidence will depend upon one's world view of the nature of reality' (87).

But when we have exhausted our search of history where do we turn next? His longest chapter is on the causal nexus of the world where there is a fascinating discussion of the relation between classical, quantum and chaotic physical systems in our exploration of reality and where he affirms his belief in a God who can 'act causally within the openness of the created order' (36). Next we enter the realms of metaphysics. Whether we choose the Bohr or the Bohm interpretation of quantum reality, for example, requires us to go beyond empirical science as we consider matters of 'economy, elegance and lack of contrivance' – 'acts of metaphysical assessment' (14) which help make the science-theology debate such an interesting possibility.

Polkinghorne (chapter 6) belongs to the stream of thought flowing from ancient Greece (Heraclitus) where we live in a 'continually unfolding process of a world of true becoming', rather than that of Parmenides (and Plato) in which the 'true physical reality is the atemporal totality of the spacetime continuum' (113) of eternal verities. Its modern advocates are physicists such as Chris Isham who believe in a 'Block Universe' which is just 'there' past, present and future. Theologically it is the choice between temporal knowledge and a God (as in process theology) who engages in a relationship with

his creation (natural theology) and in unfolding personal encounters. This is 'a theology that takes temporality seriously' and has 'narrative at its heart' in 'the unfolding story of historical disclosure' (120); this is in contrast to those 'timeless moments of illumination' (ibid) of the beatific vision where time stands still and we are bathed in the eternal presence of the mystical as we break free of chronos into the eschatological realms of kairos.

This takes us into a consideration of divine reality (chapter 5) where, for Polkinghorne, the trinitarian nature of God is the key to help unlock its mysteries. We are treated to a sophistry (sophistication) of word and concept to deepen our insights – for example 'The "simultaneous" event of intra-trinitarian forsakenness at Calvary' (100), almost a taste of Teilhard de Chardin. And he finds a physical analogy to the 'paradoxical conception of united separation and separated unity' of the trinitarian Cappadocian Church Fathers in the quantum phenomenon of non-local entanglement. (106).

Polkinghorne's insights from theoretical physics open up many new avenues of biblical interpretation and this most recent work is no disappointment in this respect. Even when he allows himself a postscript of 'naive speculation' where he 'wrestles with eschatological issues' (171) with the help of superstring theory and the concept of universes as multidimensional membranes (branes), we realise that the imaginative insights of science are a good match for those of theology!

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**Roger S. Gottlieb**  
***A Greener Faith: Religious Environmentalism and Our Planet's Future***

Oxford: Oxford University Press, 2006.  
288 pp. hb. £15.75, ISBN 0-19-517648-0

This book provides a valuable review of religious engagement with the environment, with special reference to practical outworking of that faith. It provides an important resource for those who might on the one hand be sceptical that religion has anything of significance to say to secular environmentalism, or, on the other hand, believe that theologians who engage with environmentalism are simply giving a religious gloss to politically motivated ideals. This book is written in a lively style, airing counter arguments followed by replies to such arguments in a way that helps build up the position the author is trying to make.

The author approaches different theological beliefs in terms of phenomena to be noticed and appreciated, rather than criticised in terms of content. Those expecting an analytical approach to different versions of ecotheology will be disappointed, but this is not the central task of the book. In other words, for the author it is relatively unimportant how far particular viewpoints cohere or diverge with established religious traditions or not, rather, the most important aspect is what this view adds or might add to secular approaches to the environment. He is therefore happy to discuss general aspects of religious environmentalism in terms of 'gift' to the secular community, perhaps by its specific use of language, including, for example, sin, and its assessment of the environmental crisis in spiritual, as well as material terms. In this respect he seeks to challenge the 'thoughtless technological innovation', as well as 'compulsive consumerism' that seems embedded in 'our culture', that is, presumably, Western culture, not just American culture. A central theme of the book is the idea that religions are not simply private matters,

but can and do help inculcate public values as well. He is also aware of the importance of religious institutions and how far both the institutions and grass roots movements that may or may not be associated with those institutions have committed themselves to environmental causes. Above all, he is interested in the assessment of the contribution that religion can make towards social change, in this case, change to greener lifestyles.

One aspect that Gottlieb notes in the discussion of ecotheology is the important role of science in its discourse. Often science is the starting point of such discussion, often using its discoveries to outline the perceived severity of environmental problems. While debates continue to exist as to the extent, for example, of global warming, there are few scientists today who would deny the importance of anthropogenic impacts on climate and habitats of other species. Gottlieb is helpful in so far as explaining not so much which ecotheology is valid, but why we need ecotheologies at all, what purpose they serve in the human community, namely, a way of thinking religiously about the environment. He highlights the common ground across different ecotheologies, such as their valuing of nature and the breakdown of boundaries between the human and non-human worlds. The eclectic nature of this book becomes more apparent as he explores different facets of not just Judaism and Christianity, but also Islam and Buddhism as well. He does give more attention to Christianity compared with the other religious traditions, mostly because of his belief in its importance in Western culture. He includes in his analysis a philosophical discussion of the human/nature relation that is aired in much religious discourse about the natural world. His belief, in common with many other critics of Western culture, that science culture simply leaves out a sense of awe and mystery is somewhat simplistic, though it is fair to say that this is often how science is portrayed. More surprising, perhaps, is his state-

ment that science points to 'a miraculous totality' (41), where evolution shows examples of death and birth.

A whole chapter is devoted to arguing for the importance of religion in public life, in other words, that religion needs to be married to political well being, rather than being divorced from it. Gottlieb's dialogue partners here are influential writers such as John Rawls, who believed that religion is essentially undemocratic. Other cases he considers are, for example, that religion is irrational or peripheral to environmentalism. The answers that he gives to these proposals are carefully and thoughtfully argued. Those who believe that environmentalism should be shaped purely by science, rather than faith, ignore, he believes, common underlying attitudes towards nature that helps shape both scientific practices and leads to destructive tendencies towards the natural world. In other words, he argues that religions remind science of its tendency towards reductionist philosophies. He also believes that we need to ask questions about who is making decisions in shaping science. He is also acutely aware of the intricacy of Western society in its reliance on unsustainable technologies in a way that every citizen contributes to environmental destruction.

He devotes considerable attention to the way prominent religious leaders have incorporated environmentalism into their message, more specifically, for example, the legacy of Pope John Paul II. He is also helpful in his illustrations of very practical environmental projects that are attempting to shift lifestyles in the direction of sustainability. Some groups, such as the Cornwell Declaration of the Interfaith Council on Environmental Stewardship, stop short of questioning modern economy and politics in a way that he finds problematic, though it provides an interesting counterfoil to the views emanating from the World Council of Churches. A full chapter is also devoted to a discussion of religious environmentalism, providing lively and provocative



accounts of direct action. Of particular note was the request in 1990 by thirty four internationally recognised scientists who appealed to religious leaders to provide a 'religious dimension' and a 'sense of the sacred'; leading to a Summit on the Environment in 1991 (127). His chapter on environmentalism as spirituality attempts to weave together different religious traditions in so far as they represent 'a vision in which all forms of life have their place and receive respect and care' (169). In other words, the theological dimension serves an ethical one, and issues in practical shifts in attitudes towards the environment. He also offers a very short chapter on ritual aspects of environmentalism, that is more illustrative than comprehensive, though it does give a good idea of how changes in religious practices may be influenced and informed by environmental concerns.

Towards the end of the book Gottlieb interviews five religious environmentalists and asks for their comments on how the two are meshed together in their own personal experience. These personal stories add to the discussion by providing more evidence for the position that Gottlieb has argued for in this book, namely, that it makes a difference to secular environmental perspectives. His final chapter on prospects and hope lays out what he sees might be the possibilities for societal change. In this he puts his cards firmly on the table, 'we are religious environmentalists because we just cannot live any other way' (243). This clarion call will resonate with those who share his views. Those engaged in environmental care will hope that it convinces others as well.

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**Ulf Görman, Willem B. Drees and Hubert Meisinger (eds.)**

***Creative Creatures: Values and Ethical Issues in Theology, Science and Technology***

London & New York: Continuum International Publishing Group – T&T Clark, 2005. 191 pp. pb. £25. ISBN 0 567 03089 X

Theology has often been paired with science, and technology with ethics, but these comparisons have led to the disregard of others. This anthology provides groundbreaking explorations of some neglected territory, with a particular focus upon technology. It originates from a European science-and-theology conference (ESSSAT) in 2002 and is focused on three main themes: (I) technology's impact on our world-view; (II) morality, nature, and culture, and (III) morality in a technological society. Thirteen essays have been selected and revised on the basis of quality. An excellent introduction is provided by Willem Drees, emphasising that technology is more than materials and devices but involves *infrastructures*, a *social system*, *specific attitudes* and a *culture*. Rather than a god-of-the-gaps attitude – prayer beginning when the doctor, engineer, etc. can do no more – he recommends thanksgiving to God for human endowment with knowledge and gifts to serve our neighbour 'with all our heart, soul, strength and mind'. He indicates our frequent disinclination to embrace some strategies for human improvement under the misguided influence of a natural theology that views the world as already optimal because 'intelligently designed'. Attempts at such improvement are frequently denigrated as 'playing God'. But what if that is precisely our calling, as *co-creators* under God?

Part I elucidates how technology has impacted our world-view and our images of 'nature' and of the truly 'human'. These include innovations so well established that we now hardly consider them as technology, such as alphabetic writing,

blank spaces between words in written or printed texts, musical scores and linear perspective in art. Phonography and photography, along with writing, have generated a degree of personal, though not bodily immortality. However, understanding and preservation of DNA texts generates additional possibilities. The achievements of ICT in global communication are patent to all. Several technologies, such as AI, robotics and genetic modification are rather widely feared because of their supposed 'Frankenstein' potentials. The latter aspect is tackled directly by Taede Smedes in an essay on *cyborgs*, defined positively however as: 'the whole that is formed by the human person and the technological extension of that person in whatever form'. As a biomaterials scientist I heartily concur with this upbeat definition! This updates the venerable designation: 'man the toolmaker'. The surgeon with her scalpel, as digital extension, and the blind person with their stick – probe external reality with focal awareness through such cyborg means. And there is little intrinsically different when smart materials and photonic or electronic devices are implanted. Our cognitive awareness is capable of transcending the boundaries of our organic bodies. Philosophically this suggests the holistic combination of mind, body and world along with the irreducibility of mind. Further ethical and epistemological implications ensue.

Part II commences with the primate expert, Frans de Waal, contending that the origins of morality can be traced back into the animal kingdom. Thus nature and culture differ in degree rather than kind and so are not opposed, as asserted by Huxley, Hobbes and Dawkins. Nancey Murphy uses de Waal's work to argue for two theses: (i) the ontological (and ultimately theological) basis for morality; and (ii) the relevance of an Anabaptist theology that sees nature's travail in relation to the sufferings of Christ. God identifies with the prey rather than the predator. Lluís Oviedo concludes that the theological concept of original sin cannot

be fully assimilated to scientific terms and thus theology has its own distinctive contribution here.

Part III turns towards moral issues that arise in technological culture. These include ethical questions in combined biotechnology and information processing, addressed authoritatively by Margaret Boden. Ulf Görman demonstrates the diversity of responses to biotechnologies amongst Judaism, Christianity and Islam. Jan-Olav Henriksen gives an outstanding discussion of why *therapeutic* cloning is compatible with a Christian perspective on human personhood, while *reproductive* cloning is not!

All the contributions to this volume exemplify distilled wisdom and sit well together. Each is well documented as a basis for further study and reflection. A full index is provided. Highly recommended!

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**David M. Lodge & Christopher Hamlin (eds.)**

***Religion and the New Ecology: Environmental Responsibility in a World in Flux***

Notre Dame, In.: University of Notre Dame Press, 2006. 325 pp. pb. \$40.00  
ISBN 0-268-03404-4

This collection of essays explores the relationships between religious and moral values, and recent developments in ecology, in particular current understanding concerning the flux and unpredictability of nature. Its self-stated aim is to promote rigorous dialogue among specialists from a wide range of disciplines which will contribute to 'a sustainable ethic for a sustainable environment' (xii). The book is the result of a conference at Notre Dame University in 2002 entitled 'Ecology, Theology, and Judeo-Christian

Environmental Ethics', and although aimed at US university educators, provides stimulating and perceptive material for reflection in a broader context.

After an introduction by the editors, the book is loosely divided into three sections, written respectively by historians (chs. 1-3), ecologists (chs. 4-6), and philosophers or theologians (chs. 7-9). Each chapter reflects its author's own intellectual approach, raises its own questions and suggests its own, often tentative responses. There is no attempt to reach a definitive single conclusion.

Lynn White is critiqued for the oversimplifications in his thesis in chapter 1. Chapters 2 and 3 discuss the development of ecology and environmentalism in the USA and highlight the loss of moral and social awareness as ecology has become more individualistic and systems-based. An empirical study of the attitudes towards biodiversity among various US church groups (ch. 4) suggests the need for a more rigorous engagement between theologians and ecologists. Chapter 5 explores the environmental awareness of the biblical writers, and speculates that known environmental conditions may be behind biblical events such as the Flood. The effect of localised human activity on large scale biodiversity is explored in chapter 6, in a discussion of environmental ethics without a specific religious slant. Chapter 7 discusses the extent to which scientific models of nature should form the basis for ethics, and chapters 8 and 9 examine a number of theological approaches towards environmental ethics.

A collection of essays which cover such a wide range of material from a number of disciplines is extremely difficult to summarise and even more so to review. What is apparent in a number of contributions is the tendency to over-simplification and/or generalisation (exactly the charge levelled at Lynn White!). For example, Stoll is rather too positive regarding Calvin's influence on modern ideas of stewardship (ch. 2), and

Belovsky's comments on the biblical texts include much that is conjecture, as well as some downright misleading statements (ch 5). This seems particularly apparent where a contributor is speaking outside his/her field of expertise (as with Belovsky). However perhaps such oversimplification is an inevitable part of the need to condense a vast amount of material into short chapters.

I found the theological chapters thought provoking, as they moved beyond the more traditional theologies of environmental concern to explore areas such as mysticism and sacramentalism. However there is a notable lack of biblical focus in these chapters and some readers may be uncomfortable with the tentative and abstract nature of the discussion. This book encourages thinking 'outside the box' and represents an important contribution to discussions of a moral and religious basis for environmental concern. It avoids (on the whole) dogmatic assertions and asks more questions than it answers, which in view of the growing complexity in environmental ethics is to be welcomed.

**Hilary Marlow is a Research Associate at the Faraday Institute, researching the anthropology of the Old Testament and its relevance to contemporary environmental issues.**

**Owen Gingerich**  
***God's Universe***

London: The Belknap Press of Harvard University Press, 2006. 139 pp. hb.  
ISBN 13 978 0 674 02370 3

This is a concise book both in size and content providing a very interesting read. Owen Gingerich is an astronomer, author and a Christian. As Professor of astronomy at Harvard University he has seen events unfolding that have eventually explained some of the Universe's past. Owen's style is informative and accessible. Accepting the great age of the

universe Gingerich posits the findings of the scientific exploration of the stars. It is the skilful handling of important facets in these discoveries that makes a fascinating story. The author takes us on a pilgrimage through the ages.

The subject of cosmology is of topical interest. Gingerich discusses the milestones leading to the present understanding of the intricacies of the cosmos. The author believes the cosmos shows both intention and purpose; he is therefore an advocate of intelligent design (lower case). He also says that science and religion have never been at odds and assents to the truth in both. There is no ammunition here for either godless scientists or devout creationists to discharge broadsides at each other.

The approach to his discipline by this world authority reveals a brilliant picture of nature and fills a gap in the literature. The author carefully explains that because scientists work with physics their naturalistic explanations of science do not need an intervention by God because the latter postulate involves metaphysics that explores the realm of the divine. Miracles can play no part in scientific explanations.

The book is divided into three sections. In the first of these Gingerich explores the concept of Copernican mediocrity, that the earth is not at the centre of the universe. The author's erudite understanding of the postulates of Copernicus and, later, of Galileo allows a valid link with subsequent confirmatory observations of others. Continually we have the impression of a super-intelligent Creator existing beyond and within the cosmos. Gingerich comments on the intricate complexity of the human brain and implies that the emergence of *Homo sapiens sapiens* may not have been inevitable.

In the second section the author explores a postulate as to whether a scientist dare believe in design. The implications of relatedness throughout nature

shown by DNA studies do reflect the work of God. A fascinating part of this discussion concerns the probable significance of the Allende meteorite, the oldest known macroscopic object on earth. The author explains lucidly the synthesis of the elements in the fiery furnaces in the stars. We are made of this stardust. This science is persuasive in the coherent picture it presents showing that the universe is purposeful and congenial to intelligent life.

In the final part of the book the author travels through unfamiliar territory when he mulls over questions without answers. Here Owen, both as historian and philosopher shows some of his collection of pearls of wisdom acquired over many years. There follows a brief bibliography and Index.

This book is highly recommended. The author provides an overview of cosmology in a brief, readable book. This small volume will repay rich dividends as the discoveries of science and truth are shown to be consistent with and reflect the work of God. Gingerich therefore answers the postulate 'Dare a scientist believe in design?' with a positive affirmative.

**Ken Mickleson is a paediatrician with an interest in God's books of nature and biblical revelation.**

### **Victor J. Stenger**

#### ***God the Failed Hypothesis: How Science Shows That God Does Not Exist***

Prometheus Books, New York, 2007. 294 pp. Hb. \$28.00. ISBN 978-1-59102-481-1

The author summarises the aims of this book in the following two extracts: '... science has advanced sufficiently to be able to make a definitive statement on the existence or nonexistence of a God having the attributes that are traditionally associated with the Judeo-Christian-Islamic God'. (p 11) and 'Evaluating the

arguments that science has uncovered evidence for God is only part of my task, which was largely completed in *Has Science Found God?* My primary concern here will be to evaluate the less familiar arguments in which science provides evidence against the existence of God.' (p 17) My impression (based only on reading some extracts) is that in his earlier book *Has Science Found God?* Stenger deals in a more substantial and attractive way with, for example, arguments from the apparent fine tuning of the laws of physics. In the present work he covers a much wider field of arguments at a more superficial level. The kind of evidence the author is considering is indicated by this further extract: 'Existing scientific models contain no place where God is included as an ingredient to explain observations. Thus, if God exists, he must appear somewhere within the gaps or errors of scientific methods.' (p13) Some of the arguments presented by the Intelligent Design movement may fall into this category, and this book may be partly a response to that movement.

In his review, Richard Dawkins writes as follows:

Darwin chased God out of his old haunts in biology, and he scurried for safety down the rabbit hole of physics. The laws and constants of the universe, we were told, are too good to be true: a setup, carefully tuned to allow the eventual evolution of life. It needed a good physicist to show us the fallacy, and Victor Stenger lucidly does so. The faithful won't change their minds, of course (that is what faith means), but Victor Stenger drives a pack of energetic ferrets down the last major bolt hole and God is running out of refuges in which to hide. I learned an enormous amount from this splendid book.

My judgement is that Dawkins is too easily impressed. Contrary to the impression given by Dawkins' comments, there is only one chapter dealing with what might be called 'anthropic arguments',

and it did not seem to me that it dealt at all adequately with the issues. For example, in discussing Hoyle's investigation of the production of heavy elements inside stars, and the prediction of an excited nuclear state in carbon, he does not make it clear that beryllium-8 is unstable, which is the crucial problem, does not mention the existence of a similar resonance in oxygen, which could have had such a serious effect on carbon production, and comes to the astonishing conclusion that 'in short, no fine-tuning is necessary for the production of carbon, oxygen, and the other basic elements of life. They are in fact the elements that are among the easiest to form by common nuclear reactions.' I am reminded of the marginal comment supposedly found in a lecturer's notes: 'argument weak – speak louder!' I was looking for a serious attempt to deal with apparent fine tuning, as may be found for example in the writings of Leonard Susskind and Paul Davies, and was disappointed.

Stenger clearly has a substantial background in experimental particle physics; but it did not seem to me that, even in a book at a popular level, his statements are careful enough (for example in his references to the 'standard model', which is a pretty well defined body of theory). I was also surprised to read, without much qualification, that calculations show (with reference to a quantum origin of the universe from nothing, via a 'no boundary' proposal) that 'the probability for there being something rather than nothing actually can be calculated; it is over 60 per cent'. (p133)

His chapters cover a broad range, from general arguments against God's existence to statistical studies of the efficacy of prayer. My reactions to the different arguments ranged from 'that is plain silly and needs no response' through 'that is a serious objection, but he has misunderstood the situation' to 'I have no real answer to that; it is a problem for me as well.' But overall, I did not feel that he fulfilled his advertised aim of mar-

shalling science in the defence of atheism. I would only recommend reading it if you feel that you must be in a position to discuss it with people who have been impressed by it.

**Paul Wraight has retired from teaching physics and electronics at Aberdeen University and is thinking and writing about design.**

### Margaret Silf

***Roots and Wings: The Human Journey from a Speck of Stardust to a Spark of God***

London: Darton, Longman and Todd,  
2006 162 pp. pb. £10.95,  
ISBN 0-232-52627-3

Among books that bring science and religion together, this is refreshingly different. Its author might not, I suspect, claim particular qualifications in either sphere: the cover describes her as a spiritual writer and ‘an intrepid explorer of the spiritual journey’. Her previous writings include *Landmarks*, *Taste and See*, *Wayfaring* and *At Sea With God* (all published by Darton, Longman and Todd).

The title and subtitle indicate her approach. The ‘roots’ refer to where humans come from – an origin described in terms both of evolutionary biology and God, and the wings which, if properly understood, ‘set us free to fly into all our tomorrows’ (xii).

One of the attractive features of this book is that each chapter is short, anecdotal and reflective. There are questions for contemplation, inviting readers to reflect on their own experience. For example, at the end of a chapter on dark matter, which also describes an inner dark matter: ‘deep unconscious layers of ourselves and of each other guide and steer us in ways we cannot begin to understand’ (12), she asks:

‘Can you also trust that at the core of your being, the essence of your spiri-

tual self, your true identity, you are likewise held by a force even more powerful than that of gravity – more powerful, because it is the wisdom of the universe of which gravity is only one manifestation?’ (13)

The chapters are grouped into five sections. ‘Ancient beginnings’ describes human development in terms of evolutionary biology; ‘A contract with life’ presents the choice between heeding this dark side of our existence, and holding back – being content with brains whose potential is hugely under-utilised while life evolves towards levels of consciousness that we can hardly begin to imagine. In ‘The hinge of history’ Jesus is the one (the ‘Guide’) who leads us forward towards our full potential, which involves not only ‘hominisation’ but also ‘humanisation’ (37ff.).

In ‘Flying lessons’ stories which surround Jesus are retold: the parable of the Good Samaritan and stories told in the gospels (Mary and Martha, the woman caught in adultery and Mary Magdalene’s encounter with the risen Jesus in the garden). Why ‘Flying lessons’? Because we can heed pressures that hold us back from the next stage of our human development; Jesus’ ministry is to lead us onwards and upwards.

In the final section (‘The edge of the nest’) the choices are described in terms of Oscars and red cards (156ff.) – the former incorporating the quest to become more human in the twenty-first century – living environmentally responsible lives, making space for stillness, developing imagination, peace-making, caring for the weak. The red cards include fundamentalism, actions driven by fear, satisfying superficial needs, using the media as a form of voyeurism, and so on.

My chief criticism of this book is a view of God tending towards pantheism. Although it sets out to place religion, especially Christianity, side by side with evolutionary biology, what actually happens is that the evolutionary paradigm

governs, and Christianity is recast into something which may use biblical language but whose meaning is different. Especially in the third section ('The Hinge of History') she is clearly suspicious of orthodox expressions of Christianity (perhaps because of how these can be abused). The incarnation is about transformation, but not about putting right what has gone wrong (70ff.). The concept of the cross as atoning sacrifice is rejected by caricature (88). The resurrection becomes a transformation of matter into 'a wave of pure energy', to be equated with the Holy Spirit (89) so that Christianity collapses into a kind of binitarianism at best.

This means that it is not a book to be put into the hands of a young Christian who does not understand the theological issues involved. But for the discerning reader, this book could be read with profit because of its call to reflection and wonder at who we are, where we have come from, and where we are going.

**Ron Elsdon is rector of St Bartholomew's Church in Belfast, Northern Ireland.**

**Jean Dorricott**

***SCM Studyguide: Science and Religion***

London: SCM, 2005. 251pp. pb. £14.99.  
ISBN 0-334-02975-9

This is intended as an introductory undergraduate textbook. Part one explores current scientific understandings of our place in the universe; part two explores the historical relationship between religion and science/technology.

The first part of the book deals with 'footprints' of religious significance found in science, starting with beginnings in physics and biology. It covers the intelligibility of the universe; evolutionary potential of life; consciousness; ethical predispositions and their origins; and a mainly sociological perspective on religious experience containing both a disap-

pointingly shallow treatment of miracles and a teasingly more interesting glimpse into psychology and parapsychology, which might have benefited from deeper investigation had space and relevance permitted.

The second part proceeds to science/religion interactions in history and their contemporary relationship. A chronological view of the development of religious ideas is helpful and interesting, but a journey originating in prehistory is bound to be occasionally frustratingly sparse at times. Some excellent inclusions (such as the mention of the Maccabees' religious significance) are sadly juxtaposed with theological or historical views which are no longer majority opinions (such as the assumption that early Christians' eschatology relied on an imminent return of Jesus), and an unhelpful caricature of the Constantinian period's irrationality concerning philosophy, which is unnecessarily distracting.

When the historical timeline reaches the development of modern science from the 1400s onwards, it is *mostly* accurate. There are some glaring omissions – it is surely scandalous to include no mention of Huxley, White or Draper in a textbook on science and religion with a section which claims to 'look at the historical development of areas of Christian thought that have created division between science and religious faith' (back cover).

Chapter 7 finally turns to modern interactions between science and religion, but unfortunately pushes a 'God of the Gaps' understanding of God's 'role' diminishing through time. There is a somewhat-lacking one-page treatment of Creationism, which is not even an acceptable definition of many young earth creationists' understanding, and a disappointing summary of laws of nature.

The final chapter, entitled 'The Samson Effect', constitutes a race through

some issues surrounding modern technologies, although sadly too many for exploration in depth. For instance, the section on cloning would have gained from another religious perspective than the belief that the soul is added at the time of fusing as if it is some constituent part of the conception physicality. The chapter's title refers to the author's understanding that Samson was a suicidal killer driven by fear of Philistine superior technology (motivation which is surely an eisegetical leap, no matter how controversial the story). This opening is never extrapolated, but I assume she is looking for a 'better' way for religion to approach issues of modern technology and the problems associated.

There is much to commend in this book, which is obviously written by someone who appreciates literature, plucking examples and illustrations from the breadth of life and culture. It displays a broad interdisciplinary perspective, and provides over a hundred discussion questions, plus suggestions for further reading.

Unfortunately there is also much to criticise. The first chapter alone is full of condensed material not well strung together, some not very relevant, some vitally important, all mixed up with insufficient unpacking. There is often an odd mix of the childishly simple and the opaquely confusing; the author is explanatorily simplistic and yet often presumes prior knowledge of the areas concerned. The scientific explanations often point to someone who does not fully understand the principles behind her explanations, as if cut-and-pasted from elsewhere without comprehension – a physicist I showed the book to was unimpressed with her science.

There are some annoying habits which make readability unnecessarily difficult – such as confusing chapter sub-headings and sub-sub-headings in the text, which end up quite irritating; without them the book could have been twenty pages shorter! The use throughout of 'Reality'

instead of 'God' grates. Furthermore there is a series of definitions in the text which is inconsistent to say the least: one definition of 'exponential' is far more complicated than the word and requires mathematical confidence, but later in a treatment of prehistoric religious practices, she feels the need to define 'torches'. That might be acceptable in an interdisciplinary textbook which appears to be aimed at students of sociology of religion if she had not also included a complicated formula for the Mandelbrot set without even defining the complex numbers she referred to.

This is intended as a textbook, but ends up not being a textbook I would recommend. Inside are plenty of recommended books (and websites and journals including this one) but *no footnotes*. Poetically styled introductions (undeveloped in the rest of the chapter) become annoying and do not sit well with an academic textbook. There are many discussion questions but too many consist of the instruction: 'read book X and book Y and discuss their comparative insights', which is not so much broad as a little lazy. This book was promising, but in my reading failed to deliver, and I suspect undergraduate courses will continue to use other textbooks instead.

**Richard Dimery is currently a Church of England Curate in west Leeds, having previously trained in natural sciences, theology, history and philosophy of science and the interaction of science and religion.**



**Alvin Dueck and Cameron Lee  
(Editors)**

Contributors: Mari L. Clements,  
Alvin Dueck, Cynthia Neal Kimball,  
Cameron Lee, J. Derek McNeil,  
Alexandra E. Mitchell, Nancey  
Murphy, Kevin Reimer, Frank C.  
Richardson, Brent D. Slife

***Why Psychology Needs Theology: A  
Radical-Reformation Perspective***

Grand Rapids/Cambridge: Eerdmans,  
2005. 226pp. pb. £14.99.  
ISBN 0-8028-2907-4

The first third of this book comprises three chapters by Nancey Murphy based on a series of sponsored lectures given by her in 2003 at Fuller Theological Seminary, where she is Professor of Christian Philosophy. Her theme: 'A radical proposal for integration: Psychology in dialogue with the Anabaptist tradition'. The remainder of the book contains six responses by scholars mostly from other institutions.

The editors' introduction tells of Murphy's doctoral studies with controversial post-Popperian philosopher Paul Feyerabend, and of her second doctorate linking theology to the thought of another post-Popperian, Imre Lakatos. Lakatos is well known for his 'methodology' according to which science advances not merely through the falsification of hypotheses (Popper) but through competition between 'research programmes'. We learn also of Murphy's switch from Roman Catholicism to Anabaptist (or 'Radical Reformation') theology and commitment following her realisation of how the Anabaptists were tortured and killed by other Christians. Both these elements are highly relevant, because Murphy adopts a Lakatosian philosophical framework for her attempt to show that 'all psychological research programs are... theology-laden'. And although this approach is meant to be of general applicability, to flesh it out she takes a specifically Anabaptist theology, and especially its emphasis on self-renunciation and

non-violence, attempting to show how this ethical implication of theology should influence the formulation of theories by Christian psychologists.

I enjoyed reading these chapters, and was moved by Murphy's attempt to use even the cold, abstract tool of Lakatosian methodology to bring the teaching and love of Jesus into secularised psychology. There were, however, a few weaknesses (e.g. lack of discussion of other writings on the links between psychology and theology), and I would have liked to know more about how very diverse branches of psychology can be amenable to Murphy's approach. She seems to have in mind mainly personality theories and theories of social interaction (57), but does mention many other areas ranging from psychotherapeutics to neuropsychology and from theories of social interaction to psychometrics (63). The only areas she actually addresses are research on altruism and on forgiveness. These are intended as examples, since she hopes that Christian psychologists will work out her ideas in their particular realms.

In the middle section of the book, professional psychologists take up this difficult challenge with varying success. Three chapters extend Murphy's approach to family interactions (M.L. Clements and A.E. Mitchell), distorted views of the self and gender-injustice (C.J. Neal Kimball), and the psychological costs of altruism as observed in 'Arche' communities (K. Reimer). A chapter by J.D. McNeil emphasises the need to extend discussion beyond ethnic and cultural boundaries.

The two final chapters have a more critical intent. The respective authors, who both combine philosophical sophistication with an interest in psychotherapy, regret the use of a Lakatosian methodology borrowed from the natural sciences (although Murphy does devote several pages to justifying its extension to psychological and theological research programmes). B. D. Slife complains that although Murphy generally rejects objec-

tivism, materialism and reductionism in her theology, she does not carry this through sufficiently into her Lakatosian methodology. And F.C. Richardson would like to replace this methodology with hermeneutic dialogue as a better antidote to objectivism.

My overall view is that the book breaks

new ground by raising more questions than it answers. It is interesting and worth the attention of those who want to grapple with the implications of theology for psychology.

**Peter G.H. Clarke is a neurobiologist at the University of Lausanne, Switzerland.**

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