

In this issue (full contents on next page):

A BOOK THAT MADE A DIFFERENCE

- Ruth Page, *God and the Web of Creation* (1996) 13**
Article by Peter Colyer

REVIEW ARTICLE

- Ian Markham, *Against Atheism: Why Dawkins, Hitchens, and Harris are fundamentally wrong.* 16**
Review article by Richard Skinner

REVIEWS

- Neil Spurway (ed.), *Theology, Evolution and the Mind.* 27**
Reviewed by Bethany Sollereder
- Andrew Robinson, *God and the World of Signs: Trinity, Evolution and the Metaphysical Semiotics of C.S. Peirce.* 31**
Reviewed by Keith Ward
- Margaret Barker, *Creation: A biblical vision for the environment.* 35**
Reviewed by Sjoerd L. Bonting
- Ian Tattersall, *Paleontology: A Brief History of Life.* 37**
Reviewed by Andrew Robinson

REVIEWS REPRODUCED FROM ELSEWHERE

- Russell Stannard, *The End of Discovery.* 43**
Review by Bryan Appleyard (New Statesman 18th October 2010)
- Stephen Hawking and Leonard Mlodinow, *The Grand Design: New Answers to the Ultimate Questions of Life.* 47**
Review by Russell Stannard (New Statesman 11th October 2010)

SHORT REVIEWS BY THE EDITOR

- Christopher Preston, *Saving Creation: Nature and Faith in the Life of Holmes Rolston III* 51**
- Holmes Rolston, III, *Three Big Bangs: Matter-Energy, Life, Mind* 51**
- Denis Edwards, *How God Acts: Creation, Redemption and Special Divine Action* 52**

CONTENTS

NOTES ON CONTRIBUTORS	3
EDITORIAL	4
IN MEMORIAM: ERNAN MACMULLIN	7
DETAILS OF THE 2011 CONFERENCE	9
THE PEACOCKE ESSAY PRIZE	11
A BOOK THAT MADE A DIFFERENCE	13
REVIEW ARTICLE	16
REVIEWS	27
REVIEWS REPRODUCED FROM ELSEWHERE	43
SHORT REVIEWS BY THE EDITOR	51
BOOKS RECEIVED FOR REVIEW	53

NOTES ON CONTRIBUTORS

Sjoerd Bonting is an Anglican priest-theologian and emeritus professor of biochemistry, Radboud University, Nijmegen, the Netherlands.

Peter Colyer is the former Secretary of the Science and Religion Forum and a Research Fellow at the Centre for Christianity and Culture at Regent's Park College, Oxford.

Andrew Robinson, the Technical Editor of this journal, is a general practitioner in Devon, and the author of *God and the World of Signs* (Brill).

Richard Skinner a poet, counsellor and family therapist, is currently completing a PhD on the relation between spirituality and evolutionary psychology at the University of Exeter.

Bethany Sollereeder holds a Masters degree in Theology from Regent College, Vancouver.

Keith Ward is the former Regius Professor of Divinity of the University of Oxford.

EDITORIAL

This is my last editorial for *Reviews* - my five-year term ends with this issue. However I am delighted to be able to announce that Dr Louise Hickman, Senior Lecturer in Philosophy and Ethics at Newman University College Birmingham, will take over from the next issue. Louise has served on the Committee of the Science and Religion Forum for the last two years. She is a young scholar of considerable ability and a thoughtful contributor to the science-religion debate, to which she brings her specialist knowledge of Platonism (especially of the 'Cambridge Platonists' of the 17th and 18th Centuries). I am delighted to recall that it was as an undergraduate at Exeter that she first encountered the debate, and I have followed her career with interest ever since. Louise and I will share the preparations for the next issue, after which she'll be 'on her own' - though I hope with the enthusiastic support of Forum members and others who may wish to contribute reviews.

In this issue we mark the death of Ernan MacMullin, one of the wisest, and in my brief experience also one of the nicest, of the major intellects writing in this area. Peter Colyer contributes the second of our 'books that made a difference' - recollections by experienced contributors of key books in the development of their thinking. Although this is a fast-moving and quickly expanding field, and tracks both major movements in

theology and the extraordinarily rapid evolution of the natural sciences, my sense is that there are still books written some time ago that richly repay revisiting. Many cite Ian Barbour's *Issues in Science and Religion* (1966) in this regard; Kenneth Wilson pointed in our last issue to Charles Coulson's *Science and Christian Belief* (1953). I revisit quite surprisingly often Arthur Peacocke's Bampton Lectures *Creation and the World of Science* (1979). Here Peter talks us through what I think is a really neglected and original piece of theological writing in Ruth Page's *God and the Web of Creation* (1996).

I like to think that in future Andrew Robinson's *God and the World of Signs* will feature among books that made a difference; I am delighted that one of Britain's most eminent philosophical theologians, Keith Ward, contributes a review. Also very good to hear from another very distinguished contributor to the debate, Russell Stannard - a review by him and one of his are reproduced from *The New Statesman*. Which reminds me to say on Louise's behalf that though *Reviews* has moved now much more to publishing original reviews, the journal is still open to reproducing, with permission, important reviews published elsewhere - readers are welcome to suggest such reviews by emailing Louise at l.hickman@newman.ac.uk.

Among the other books reviewed here is the second of the collections of papers from a Forum conference to be published by Cambridge Scholars Press. For this and other delights - read on!!!

PS I am delighted to report that the textbook on which the Forum worked at our 2010 workshop, the 3rd edition of *God, Humanity and the Cosmos*, is in proof and should be published at the end of September. It contains new chapters on the new atheism and the challenge of climate change, and substantially toned-up versions of other chapters, together with a fully updated bibliography. Thanks once again to those Forum members who contributed to the planning for this.

IN MEMORIAM: ERNAN MACMULLIN (1924-2011)

Ernan was a Roman Catholic priest, and a very distinguished philosopher and historian of science, with a particular interest in the Galileo Affair. He taught for many years at Notre Dame, and served for a while as President of the American Philosophy of Science Association. His contributions to the science-religion conversation were very extensive; perhaps the one most familiar to those entering the debate is his use of the term 'consonance' to describe the relationship between the disciplines when it is at its most congenial. The application of the term is of course properly contested like everything else in the taxonomy of this relationship - for more on this see Willem B. Drees' book reviewed in the previous issue - but the wisdom of the term has always seemed to me considerable. It does not claim too much, but it does suggest that for 'those with ears to hear' a pleasing sounding-together can sometimes be perceptible. (Which is not to say that - as Robert J. Russell has pointed out - the voices of the disciplines may not sometimes be in dissonance.)

I last encountered Ernan MacMullin at the conference in Cambridge in 2009 at which the International Society for Science and Religion celebrated the Darwin anniversary. He gave a marvellous paper on how if theology had only been more faithful to its traditions (for instance to Augustine's insights into hermeneutics and the theology of creation) much of the fear of and

antagonism towards evolutionary theory might have been avoided. That quality of learning and breadth of perspective, and the twinkle in his eye as he communicated it, constituted a rare elixir and a great gift to the field. I know he will be much missed.

Christopher Southgate

THE 2011 CONFERENCE: INSPIRATION IN SCIENCE AND RELIGION

Jointly with Cumberland Lodge,
Windsor, 25-27 September 2011.

Inspiration is twofold: on the one hand it is a sense of purpose which permeates everyday activities. On the other hand it refers to a moment of clarity, a moment in which some internal struggle becomes resolved or some inchoate idea becomes formed. But where does inspiration come from and what is its status in different areas of human endeavour?

Artists are used to talking about inspiration; they are notorious for seeking it and channelling it. It must be the case, though – or is it? – that inspiration is central to scientific endeavour and religious experience. Scientists often have a strong sense that the purpose of their work is to reveal the truth about the way things are. Equally, ‘eureka’ moments are not uncommon in scientific work. Religious people of all persuasions often refer to the inspiration which guides their life, perhaps as ‘a calling’. They, too, have the other kind of inspiration, the moment of clarity; epitomised by the road to Damascus experience.

This conference seeks to address an ambitious set of questions: to what extent is inspiration a feature common to science and religion? Are they categorically different forms of inspiration insofar as they are derived from

different sources? What is the status and role of inspiration in these different fields? Can inspiration be defined in neurophysiological terms or is it quintessentially ineffable? Is inspiration somehow an intrinsic part of all pursuits of truth and knowledge? If so, is our educational system fostering inspiration or stifling it?

Speakers

John Hedley Brooke, former Andreas Idreos Professor of Science and Religion, University of Oxford.

Michael Reiss, Professor of Science Education, Institute of Education.

Pauline Rudd, Professor of Glycan Biology at University College Dublin.

Christopher Southgate Research Fellow, University of Exeter.

Lord Winston, Professor of Science and Society, Imperial College, London.

Linda Woodhead, Professor of the Sociology of Religion, Lancaster University.

For a registration form please go to the Cumberland Lodge website (www.cumberlandlodge.ac.uk) and see the 'Forthcoming Programme' list on the right hand side of the Home page.

PEACOCKE ESSAY PRIZE

In memory of its founding President and former Chair, the Revd Dr Arthur Peacocke, the Science and Religion Forum offers a prize for an essay directly relevant to the theme of its annual conference. This year's conference (25th-27th September 2011 at Cumberland Lodge, Windsor) is themed 'Inspiration in Science and Religion' (see above for details).

The prize is open to those who, on the closing date for submission, are matriculated students (full-time or part time, undergraduate or postgraduate). The prize will consist of a cash award of £100, free membership of the Forum for one year, and the UK travel and accommodation costs (or equivalent of) of the winner's participation in the Forum's 2011 conference.

The essay should not exceed 5000 words in length, including footnotes but excluding references. It should be preceded by an abstract of no more than 250 words, and should be submitted as an email attachment in Word, no later than 31st July 2011 to Dr Louise Hickman: l.hickman@newman.ac.uk. Dr Hickman will answer any questions about the prize. All submissions will be acknowledged within 1 week of receipt.

The essay should be the original work of the applicant – unacknowledged quotation from the work of others will automatically disqualify the entry. Copyright in the essay will remain with the author. Each submission should be accompanied by a statement from the author's

Supervisor or Head of Department, confirming the author's student status and indicating awareness that the essay has been submitted. The adjudicators reserve the right not to award the Prize if no entry of sufficient standard is received. Their decision will be final, and no correspondence about it will be entered into.

A BOOK THAT MADE A DIFFERENCE

Ruth Page, *God and the Web of Creation*; SCM Press. 1996; pp. 212, paperback, ISBN 970-0334026532, £15-99.

REVIEWED BY PETER COLYER

This series is intended to remind readers of books that are not new, and may even be out of print, but played an important role in the thinking of the reviewers about the relationship between science and religion. The reviews will therefore be more personal in tone than is customary. I will first describe my own circumstances at the time I encountered Ruth Page's book, then summarise the themes of the book itself, and finally comment on its impact on my subsequent activities.

In a rare moment of relaxation in my busy London office, I leaned back in my chair and wondered what I would do when I could retire. The answer came to me in a flash (of inspiration? Cue for the Forum's conference in September): I would like to return to university to conduct postgraduate work in science and Christianity, thus bringing together two principles that had guided my life since teenage. I then researched university options, and having negotiated my eventual withdrawal from my employment, my reading on the commuter train migrated from the newspaper and its crossword to the literature of science and religion. It was probably on the train between Oxford and Paddington that Ruth Page's words sank into my thinking.

Two themes of the book were particularly striking. First, if the billions of years of the universe's existence are taken seriously, creation has to say something about the whole of existence, not just about humanity. In my notes at the time, I wrote that this was the "first [theological] book I have found which takes account of the enormous span of time before man's appearance." Page describes humanity as "homo-come-lately" (p. 163), and she bemoans the anthropocentric nature of most theology. The "notion that the non-human world receives its significance from humans can scarcely survive the knowledge that human beings arrived in the last moment of evolutionary time, unless one is also prepared to say that the preceding aeons were empty as far as value to God is concerned" (p. 126). Of the more anthropocentric versions of the anthropic principle, Page writes that "the anthropic principle in most of its forms is an extreme case of human hubris whose adoption into theology would eliminate all sense of creaturely interrelationship, or of divine value in the non-human world" (p. 80).

Page therefore explores the relationship God has had, and continues to have, with the non-human world. Drawing on Heidegger's concept of divine *Mitsein*, Page invents the term *pansyntheism*, God with everything, surely a better concept than the more ambiguous panentheism which has become more popularised. Thus God relates to, is alongside, all that exists. "God knows as an ant knows ... God knows as a fish knows" (pp. 70-71). I used to ask the minister of my church, "What was God

doing during the Jurassic Period?" – without expecting or ever receiving a reply.

A second theme of Page's book was even more striking. If Big Bang cosmology and biological evolution are genuinely accepted, it is difficult to find any locus for divine activity not adequately explained otherwise. Another Heidegger term becomes useful as a description of divine creativity: *Gelassenheit*, letting-be. God created *possibility*, which Page describes as "more creative and supportive than mere permission, but not determining in the way that causation is normally understood" (p. 7). There were no divine blueprints, no shaping or directing hand, not even on the pathway to human evolution (pp. 8, 54). "God let be, and did not design any of it" (p. 30, my emphasis). Here was a theologian prepared to accept the well-established findings of science, including evolution's apparently wayward course through unimaginable time, and reach theistic conclusions without use of double explanations or pious overruling.

Later in my reading I encountered Ian Barbour's nine models of God's relationship to the world (*Religion and Science*, SCM Press, 1998, pp. 305-329), including three traditional and six modern alternatives. I was drawn most strongly to the kenotic model of divine self-limitation, and the theme of divine kenosis became the focus of my postgraduate work. The early encounter with Ruth Page's book had made a difference that steered me through several years of most satisfying study.

REVIEW ARTICLE

Ian Markham, *Against Atheism: Why Dawkins, Hitchens, and Harris are fundamentally wrong.*

Wiley-Blackwell, 2010; pp. 162, paperback, ISBN 978-1405189637, £16.99.

REVIEWED BY RICHARD SKINNER

Over the past few years a small library of books has been published that critique the atheist arguments of Richard Dawkins, Sam Harris, Christopher Hitchens *et al*, and Ian Markham's *Against Atheism* is a very welcome addition. Markham, Dean and President of Virginia Theological Seminary and Professor of Theology and Ethics, is an intelligent and clear writer who tackles *The God Delusion* by Dawkins, *God Is Not Great* by Hitchens, and *The End of Faith* by Harris. The subject of these books is, in Markham's terminology, 'fundamentalist atheism', a description which, he is at pains to stress, is "not meant as a term of abuse" but which designates an "assertion of a worldview in which the authors are entirely confident they are right" (p. 7), paralleling the absolute conviction of the early twentieth century authors of *The Fundamentals*, the Christian tracts which gave rise to the term 'fundamentalism'.

Markham adopts the methodology of his hero, Thomas Aquinas, by presenting the strongest arguments of his opponents (and even strengthening them) before moving on to counter them – a version of theological judo. This approach, he contends, "contrasts markedly

with [that of] Christian fundamentalists and atheist fundamentalists" (p. 8).

In chapter 1 he identifies seven key topics which between them the three authors advance. These concern: 1) the (in)coherence of the concept of God, 2) faith and the lack of reasons, 3) arguments for atheism, 4) atheism as providing a healthy and well-balanced worldview, 5) Islam as being especially misguided, 6) Christianity and Judaism as especially problematic, and 7) bringing up children in a faith as an act of child abuse. Within these topics there are more specific issues, with, for example, the problem of evil and the Christian doctrine of the Trinity being elements of the (alleged) incoherence of the concept of God.

A brief example of Markham seeking to express clearly the *strengths* of the atheist argument, and indeed to enhance them, is his quoting Dawkins' contention that according to the Abrahamic understanding, "[God] is a *personal* God, dwelling within [the universe], or perhaps outside it (whatever that may mean)." First pointing out that "Dawkins should have developed the bracket 'whatever that might mean.' Christians have had enormous problems explaining the relationship of God to the universe" (p. 10), Markham proceeds to develop that argument more than Dawkins himself had done, highlighting, for example, the fact that "It looks like Christians are simultaneously affirming 'a perfect changeless God' and at the same time 'a God who acts and therefore changes' How can we affirm both of these assertions simultaneously?" (pp. 10-11)

But as well as acknowledging that many of the points made by the three authors are valid and well-argued, Markham also considers that "[t]here are aspects of these books that display a shocking ignorance and a basic lack of willingness to research" (p. 24), a criticism he is not alone in making (notably Terry Eagleton in *Lunging, Flailing, Mispunching*: his review of *The God Delusion* in the London Review of Books, 19th October 2006), though this is a charge not applicable, I consider, to Harris. Markham also describes the atheism portrayed by these authors as being "middle-class university atheism" when compared with the "real atheism" of Nietzsche; for its purveyors do not face the full implications of their worldview.

Markham then proceeds to do what the three authors have not done by exploring the logical consequences of a full-bloodied atheism exemplified by Nietzsche, whose philosophy is "a radical challenge to truth and morality as traditionally understood" (p. 30), and entails grasping that, "knowledge is difficult; truth is fiction; morality must now be invented" (p. 31). Markham takes Nietzsche's position to be that, following the Darwinian revolution, we are committed to accepting that the human mind is a product of nature, and "if the human mind is simply a result of nature, then all the thoughts in the human mind must be a result of nature, which implies that all morality, art, religion, and even the quest for truth are chance inventions of nature. We have eliminated God, yet not faced up to the implications" (p. 33). Markham continues by drawing out those

implications which he believes have not been fully grasped by the trio of atheists he is considering.

It is a bold man who seeks to summarize Nietzsche in a chapter, and I do not have the expertise to pronounce on how accurate or otherwise Markham has been – yet that is not crucial since what is important is that Nietzsche, or Markham, or Markham's Nietzsche, unpacks what real atheism entails. The two principle consequences are in the understanding of truth, and the understanding of morality. Atheism has a radical impact on moral discourse, dispensing, as it does, with the notion of a “transcendent life that determines our moral code of behaviour” (p. 34); whereas “the great advantage of religion is that external and universal aspects of morality are explained: God explains the mysterious ‘ought’ pressing down on our lives, and God explains the universal nature of the moral claim” (p. 34). If God is dead, then “traditional morality must go, and moral words need new meanings” (p. 35). Later Markham warns that “... there is a danger here. Although it might be prudent to affirm religion as a basis for moral values, this is not an argument for the truth of religion” (p. 59) – that is, the theist cannot validly argue that 1) for morality to be justified, it needs a grounding; 2) God provides just such a grounding; and 3) therefore God must exist. Markham is clearly not offering this argument, but emphasising that nevertheless the atheism of Dawkins *et al*, taken to its logical conclusion, has considerable consequences concerning moral discourse which have not been explicitly acknowledged. “On what basis can

the external and universal character of morality be explained? And what would Dawkins say to the modern Nietzschean character who doesn't believe in morality?" (p. 35)

Markham concludes in a summary that "Nietzsche's great achievement is that he understood what theism entailed. It is not ... an optional extra on life. He understood completely that God was the safeguard of much that people treat as normal. I concur entirely with Nietzsche that much is at stake once one decides that theism is false. Nietzsche moves from the truth about evolution, to the resulting anthropology, to the centrality of psychology; and concludes that therefore rationality is unreliable. In a universe that God intends, then understanding and rationality are intended; in a purposeless universe, understanding and rationality become accidents that might or might not be justified" (p. 45)

Moving on to his response to the atheistic position, Markham argues for the reality of a spiritual dimension to humanity. Just as we have an innate capacity for acquiring a language, we also have an innate capacity for awareness of the divine. And just as it is necessary for our innate language capacity to be activated (by exposure to a language-using community) and nurtured if we are actually to *acquire* a language, so our innate sense of the divine, our spiritual sense, also needs to be activated and nurtured. Although Markham does not make this further point, it could be postulated that, in the same way that children who are not exposed to language during the

sensitive early years will lose the capacity to acquire a fully grammatical language, so children deprived of a 'spiritual language' during their developmental years might be equivalently disadvantaged. This postulation of an innate spiritual sense (similar to Calvin's concept of the *Sensus Divinitatis*) is an approach with which I have a great deal of sympathy, a version of which I am currently attempting to develop. And regarding the trio of atheists, Markham suggests that "[although] Dawkins, Hitchens and ... Harris ... do have an appreciation of the power of love and a sense of morality, [they] have a complete inability to even start to understand the sense of the divine that the vast majority of humans around the world (both historically and today) enjoy" (p. 53). To support the contention that we have such an innate spiritual sense, Markham draws on the work of Alister Hardy and David Hay, and on the arguments from aesthetics developed by George Steiner in his book *Real Presences*.

Markham also engages with science in a fruitful way, considering in particular the 'fine-tuning' argument which has made more than one physicist admit that it seems the universe was waiting for us: "[T]he mathematics of the universe ... is so remarkable that it seems to suggest that an agent was underpinning the chain (although not breaking into the chain)" (p. 69). This fine-tuning phenomenon has given rise to the Anthropic Principle (if the fundamental constants were other than what they are, we wouldn't be here to be amazed at their finely-tuned values, so it's not surprising we observe the constants to be finely-tuned in our favour); and the

postulation of a multiverse (a huge, possibly infinite, manifold of individual universes each with different values for the necessary fundamental constants, one of which was logically bound to have just the right fine-tuning to allow the formation of stars, the emergence of life [as we know it, Jim] and the evolution of human beings); all without having to postulate an agent ('God') to account for the fundamental constants in *our* universe being exactly what they are. Markham takes on this non-theistic explanation of fine-tuning with vigour, employing, *inter alia*, Ockham's razor to trim what one might call (though Markham regrettably doesn't) the Ockham beard of proliferating universes. "The skeptic," he points out, "now has a view of the world that makes the Christian picture of heaven (the other major universe that Christians postulate) seem rather unimaginative" (p. 72). Moreover, "It is odd that Dawkins is so enthusiastic about the multiverse theory. It does not look like a scientific explanation. Indeed, it has a certain similarity to forms of creationism that Dawkins abhors so much" (p. 73). The failure of the combined forces of the Anthropic Principle and the multiverse proposal to offer a satisfactory and plausible explanation for the fine-tuning phenomenon leads Markham to conclude that far from science being antithetical to religion, "modern physics is definitely faith-friendly" (p. 78).

Having drawn arguments from philosophy, the arts, and science, Markham in the second half of his book moves on to religion itself and theological discourse. There is not room to summarise this here, but it

complements well the first half, addressing the issues of the nature of scripture and revelation, the specifically Christian doctrines of Incarnation and the Trinity, and the existence of evil and suffering.

This is an intelligent, thoughtful book that does justice (I believe) to the arguments of Dawkins *et al* and providing counter arguments. There are, however, one or two places in which I would take issue with the author. In his introduction he introduces the characters of Fred (“an energetic atheist”) and Natalie (an “intelligent, thoughtful believer”) as a device for putting forward the initial theistic and atheistic positions. These characters reappear from time to time, but I found it a slightly irritating device which adds nothing to straightforward authorial statements about the issues under consideration. Others, however may well disagree. More problematic is a brief interlude offering what is meant to be God’s perspective. The God he invokes is not simply the Abrahamic God, but (not surprisingly, maybe, given the author’s particular religious affiliation) the specifically Christian Trinitarian God, and later on he argues for the truth of a Trinitarian doctrine: this, I think, strays too far from the general *theistic* position and will lose some otherwise supporters of his general arguments, for his Trinitarian arguments are not applicable to theism *per se*.

Moreover, Markham makes factually-sounding statements which are really hypothetical – for example, in considering the history of the universe from the Big Bang onwards, he asserts that, “All through this process God

was using the remarkable structure of the universe (at the sub-atomic level) to progress, guide, and organize the project" (p. 48). Oh yes? Well, that *might* be the case, but it is highly speculative, since the notion of God intervening to guide processes at the sub-atomic level sounds suspiciously like a 'God-of-the-tiniest-gaps' approach. And he claims that, "God allowed human history to start" and "God allowed different forms of humans to emerge" (p. 48). Well, yes, again maybe, but the immediate riposte from Dawkins *et al* would probably, and validly, be along the lines of "And God allowed smallpox to evolve; God allowed bubonic plague to evolve; God allowed an asteroid to hit the earth causing mass destruction of the species"

Next, when discussing ethics and morality, he doesn't give sufficient space or credence to accounts that have been developed by evolutionary thinkers. He asserts that "The obligations to care for family, strive to do good, and build communities of hope are not simply human constructs. Perhaps moral discourse does not simply depend on religion for intelligibility, but our moral intuitions are grounded in the transcendent. We feel so strongly because we are created in the Image of God" (p. 59). But this does not take into account that there are strong and plausible arguments that our moral sense is a product of evolution. It can be cogently argued that "we feel strongly" because we have evolved to feel strongly: proto-humans who felt strongly had greater survival / reproductive success; within-group altruism and co-operation gave the group or tribe better survival chances

than groups lacking such virtues, and so forth. Our moral feelings could well be a result of evolution, not simply a direct consequence of being “made in the Image of God” (whatever that may mean). Of course, this evolutionary explanation does not in itself explain the *absolute* nature of ethical demands (if indeed they are absolutes), but it does offer a functional, rather than transcendent, explanation of why we respond to ethical demands as we do.

He also expresses the fear that atheists will “start thinking and cease using moral categories” because the consequence of their atheism is that there is no rational justification for moral thinking in the absence of an objective God. This is an unwarranted fear: we behave more or less morally not because we are rationally thinking about, say, being altruistic; we are moral creatures because *evolution has created in us a moral sense* – and the products of evolution cannot be gainsaid simply by intellectual knowledge of their origin. Our evolutionary responses are too powerful for that – witness how we shy away when an express train appears to come straight at us on the cinema screen, even though we know full well it is a two dimensional image and cannot harm us. Our evolved instincts kick-in. Likewise, knowledge that our moral sense is a product of evolution could not result in our choosing no longer to have a moral sense, any more than knowing that our sexual response is a product of evolution stops us having a sexual response. Even if the atheists are right, and there is

no transcendental grounding for morality, that in itself will not destroy ethical discourse or the moral sense.

These are, of course, issues that will long continue to be debated, and rightly so. Ian Markham has performed an admirable task in presenting them with clarity and profundity, enabling the reader to see exactly what is at stake, and opening up rather than closing down the debate. For this I thank him and commend his book.

REVIEWS

Neil Spurway (ed.), *Theology, Evolution and the Mind*. Cambridge Scholars Publishing, 2009; pp. 245, index, hardcover, ISBN: 1443801976, £39.99.

REVIEWED BY BETHANY SOLLEREDER

What happens when you take three of the most complex, difficult, and controversial subjects, and then find seventeen experts who radically disagree with each other, and mix it all together into one book? One might expect that the complexity would reduce the conversation to dry jargon, the difficulty would lead people to talk past each other, and the controversy would add more heat than light. *Theology, Evolution and the Mind* instead provides a fantastically engaging, helpful, and downright fascinating read. Emerging from the 2007 Science and Religion Forum in Canterbury, the book engages different issues in archeology, epistemology, evolutionary psychology, theology, and more with remarkable lucidity.

Part one of the book opens with three essays that engage with the evolutionary origin of religion. Stephen Mithen outlines the archeological evidence for religious belief in early hominids, and claims to see no reason not to attribute the development of religion to purely natural causes. Celia Deane-Drummond responds by questioning Mithen's dichotomy of "God did it" or "Evolution did it", and reminds the reader that "the

possibility that religion might have a natural basis in evolutionary terms is ... not threatening to contemporary theology" (33). She goes on to suggest different ways this might be possible, including differentiating between two-dimensional and three-dimensional mental processes, which allow emergence without divine intervention. The section is closed by Lluís Oviedo who forwards several different paths for advancing the origin of religion discussion beyond its rigidly biological foundation. Possibilities include linking consciousness to religious experience and recognizing the role that emotions and communication play in religious formation.

The next cluster of essays discuss, broadly, the legacy of Darwinism. Fraser Watts argues that Darwinism helps us to better understand the Bible, creation, human nature, salvation history, and the evolution of religion. Anthony Freeman disagrees, pointing to incompatibilities between Darwinism and each of the categories Watts discussed, and brings up the intractable problem of evil. Next, Neil Spurway and Derek Stanesby enter the lists together to battle over the what the evolved mind can really know. Interestingly, both authors draw on Karl Popper and Peter Munz, but in radically different ways. Spurway defends the unknowability of the world, and advocates following the *Via Negativa* when discussing the divine. Stanesby argues that the flights of human fancy can be trusted to take us beyond the information given—beyond the realms of science into metaphysics.

Chapters eight and nine revisit the old debate about the composition of human nature with fresh ideas. Roger

Trigg defends the traditional dualist concept of humanity, that we are body and soul. For Trigg, the contemporary suspicion of dualism is often taken too far, to lengths that would eventually make any concept of God impossible. Anne Runehov responds with a three-fold concept of personhood, based on trinitarian analogy.

In chapter ten, Jeremy Law proposes an intriguing trinitarian theology of creation based on the analogy of conversation. The power to speak language is a unique human characteristic, and Law builds this recognition into theological reflections of the Word becoming flesh. The incarnation, by taking on human voice, invites humanity into the ongoing conversation of the triune God. Finally, Law intertwines the concepts of contingency and directionality in evolution and uses his theological reflection to give meaning to the evolution of, what he terms, "the human brain/mind." Roger Knight responds to Law by pointing out the often paradoxical relationship in Scripture between freewill and divine sovereignty, and asks how this reflects on Law's views of contingency and order.

Roger Paul ends the first part of the book by responding to a variety of the previous essays, and drawing together the themes of meaning, evolutionary directionality, the development of mind, and theology of creation. It serves as an excellent capstone to the book, summarizing the arguments already presented and opening up new questions for discussion.

The second part of the book is composed of five short essays that engage with other topics of interest to the

science/religion dialogue. Gavin Hitchcock speaks of the necessity of mathematics and problem solving for true human flourishing, especially in relation to social problems such as we see in Africa. Richard Vane-Wright's contribution suggests that cosmology, evolution, and systems theory have brought a new morality of nature through understanding the ecological crisis. That new understandings can develop moral sense, he argues, makes morality a flexible, non-essentialist notion. Ron Choong explores the morass of moral evil and evolutionary development, and argues that a traditional view of sin is not overwhelmed by neurobiology. Jeremy Swayne reflects on the evolution and the healing process of the human person. Finally, Sjoerd Bonting wrap up with a revisiting and extension of the themes discussed thus far: the evolutionary development of the mind and religious feeling, the biblical views of mind and body, and the implications of neuroscience and psychology for our understanding of ourselves.

Theology, Evolution and the Mind is an incredible read that covers vast swathes of topics of interest while remaining startlingly jargon-free and accessible to laypeople in both science and theology. The book is laid out in a coherent and logical manner, and the discussions are engaging, thoughtful, and relevant. If you are interested in—or would like to enter the discussion of—contemporary issues at the intersection of neuroscience, evolutionary development, and creational theology, this book is an excellent start.

Andrew Robinson, *God and the World of Signs: Trinity, Evolution and the Metaphysical Semiotics of C.S. Peirce.* Brill, 2010; pp. 381, hardcover, ISBN 978-9004187993, £98-00.

REVIEWED BY KEITH WARD

This is a very ambitious volume that undertakes to expound the thought of the American philosopher C. S. Peirce, and advocate it as a new and better way of thinking about the Trinity, evolution, and metaphysics. It contains many clear and thoughtful expositions of Christian doctrinal controversies, and gives a most interesting and helpful outline of Peirce's thought. The author argues that the application of this thought, both in Christian theology and in evolutionary biology, will lead to new and better insights.

After showing what semiotics (the theory of signs) is, and giving an excellent account of Peirce's theory, the author develops a 'semiotic model' of the Trinity. He argues that such a theory possesses marked advantages over more classical formulations, and spells out what these advantages are.

Peirce's philosophy is metaphysics in the grand manner, and owes much to Hegel, though it is radically different from the Hegelian model. Peirce seeks to formulate the ultimate and most general, indeed universal and *a priori*, categories of human thought, and finds them in three categories that he names Firstness, Secondness, and Thirdness. He argues that these are the only ultimate categories there are, and that 'no further

categories are required ... in order to encompass all the observed characters of experience' (104).

I have to say that I am not, despite the author's repeated attempts at clarification, sure of exactly what these categories are. And I am by no means convinced that three, and no more than three, are required to cover all experience. 'Firstness' is said to be 'that whose being is simply in itself, not referring to anything nor lying behind anything' (22). It is 'present and immediate', 'fresh and new', 'original, spontaneous, and free', 'vivid and conscious'. My problem is that I cannot even conceive of such a thing, which is conscious and yet has no reference to a subject of object of consciousness, or to any other conscious state. It is described as 'airy-nothingness', and yet it is 'a quality of feeling' – Peirce cites an odour as an example. Firstness sounds like a pure sense-datum, perhaps. Yet such things have being and actuality, and are never wholly unrelated to other data. They are brute facts, if anything is.

Being a brute actuality is, however, for Peirce an instance of 'Secondness'. This is described as 'relation, compulsion, effect, dependence, independence, negation, occurrence, reality, result' (22). I do not see how all these very different things can be lumped under one all-embracing concept. Perhaps the basic thought is that there are things 'over-against' us, but they are over-against in many different ways. To be specific, there is a crucial difference between being acted upon and acting in response, so that there appear to be two categories at work here, namely, stimulus and response, which break

the alleged primal unity of experience into a subject-object relation.

'Thirdness' is said to establish relationships, to be concerned with discerning causal connections. Again, it seems to me that there are significantly different sort of relationship, especially differences between nomological causes (as in natural science) and teleological causes (as in personal agency). Putting these under the one heading of 'mediation' disguises important conceptual distinctions. So we do not have just three categories. We have many categories, and Peirce's three blurs distinctions between conscious and non-conscious realities, and confuses logical and experiential factors.

In short, I find Peirce's selection of ultimate categories arbitrary and, like Kant's attempt to set up a table of conceptual categories, almost wholly Procrustean. It is possible, however, that I have just misunderstood the whole thing. The author will surely be disappointed by this, since he wants to use Peircean categories to stimulate fresh ways of thinking in theology and science. But I hope he will not be too disappointed, because this is the clearest account of Peirce I have read, and it is of great intrinsic interest. And it does suggest new perspectives on some major questions in science and religion which are worthy of consideration. It is just that I cannot see much hope of Peirce's very idiosyncratic neologisms being widely adopted.

Out of the very rich array of material in the book, I would pick out five themes as of particular importance – the claim that the Trinity can be understood in terms of

semiotic theory; the claim that Jesus can most adequately be seen as 'an iconic qualisign' (a typical Peirceanism) of the very quality of the being of God; the related claim that the universe shows genuine vestiges (real qualitative likenesses) of the Trinitarian being of God; the claim that semiotics gives a fruitful way of accounting for the emergence of modern humans; and the claim that evolutionary biology can sustain one sort of purposive (biosemiotic) causation.

It is impossible to discuss these claims in a short review, so I will just say that they are well worth reading for the many insights they contain. The book expounds a rich and complex theology of nature, in which the insights of modern biology and of theology are brought into creative relationship. In the end, while it is fascinating to learn about Peirce, I think that Robinson's account stands on its own, and that if he could devise a vocabulary less opaque than Peirce's this would be of great benefit to scholarly discussion. Then perhaps his most distinctive and provocative claim would be that 'the created order is such as to be capable of actualising the very quality of the being of God' (141). The claim is provocative because Robinson's God is essentially Trinitarian, and this would leave deists and Unitarian monotheists with a deficient account of nature. The exact respects in which God – perfect beauty – and the universe – riven by catastrophe and chance – are qualitatively alike would have to be spelled out with great care. I do not think Peirce has done it, nor would he have thought that he had. I would like to see Robinson try.

Margaret Barker, *Creation: A biblical vision for the environment*. T&T Clark, 2010; pp. 344, paperback, ISBN 978-0567015471, £16-99.

REVIEWED BY SJOERD L. BONTING

The main title “Creation”, the subtitle “A biblical vision for the environment” and the fact that the author is an Old Testament scholar made me expect a thorough exegesis of the biblical view of creation set over against a clear exposition of our understanding of the environment, particularly the climate crisis. Unfortunately, my expectations were not fulfilled.

For example, in chapter 1, Vision of Creation, the author mentions as the explanation of the six days of creation and one day of rest only that “Many, including biblical scholars, had long accepted that the six days were not to be understood literally, that they represented long periods of time.” She neglects to mention the much likelier explanation that the Priestly author of Gen. 1:1-2:4a intended to provide a foundation for the sabbath law in these words.

Another example is the term ‘dominion’ in Gen. 1:26, 28. The author appears to soften the meaning of this word somewhat on p. 215, but she doesn’t mention that nowadays many who are concerned with our maltreatment of the environment read the word ‘stewardship’ in this place (on p. 199 she rejects this interpretation). This is how we should have treated the

environment, but we haven't, and the text does not speak about stewardship. Dominion was needed and understandable in the early days of the Jewish people, when the earth was thinly populated and wild animals threatened their flocks and droughts harmed their harvests.

The author usually comments on texts without giving any arguments for her statements. An example is on p. 216, where she writes: "*at the end of the sixth day, the creation was 'very good'.*" However, the meaning of the Hebrew word '*tov*' is not good in actuality, but good for the purpose, in this case for the purpose the Creator has in mind. We live in an unfinished creation that is not yet perfected, witness physical disasters and diseases for which on the whole we are not responsible. She rarely refers to a contemporary biblical theologian, while she often quotes from apocryphal and rabbinical writings.

Environmental problems are brought in from time to time in the form of a quote from another author. For example, on p. 44 she gives two opposing quotes about the environmental economics but without stating her conclusion. The growing problem of providing sufficient water for a growing world population is handled in a few lines about the Deuteronomic laws and a single quote (p. 62). This means that nowhere does a coherent description of our manifold environmental problems appear.

Any reader who expects to find in this book 'a biblical vision for the environment', as promised in the subtitle, will be disappointed, I am afraid. I can only recommend the book to theologically trained readers, who may find

interesting points in the author's extensive treatment of creation theology.

Ian Tattersall, *Paleontology: A Brief History of Life.*

Templeton Press, 2010; pp. 232, paperback, ISBN

978-1599473420, £10-14.

REVIEWED BY ANDREW ROBINSON

Paleontology, as the opening page of this book states, is 'the study of past life' (3). I confess, though, that I tend to think of paleontology more narrowly as the science that studies fossils, and indeed a few pages later (7) Tattersall describes it as just that. Perhaps it doesn't matter much - after all, much of what we know about past life inevitably comes from the study of fossils. But to explain Tattersall's approach it is important to emphasise that this is very much a book about past life in a broad sense; it is not (as the title initially conjured up for me) a technical tome about old bones.

The book, then, offers a brief and very clearly written tour through the history of life. The first chapter gives a non-technical introduction to how fossils form and how they are dated. The following chapter outlines the basics of evolutionary theory, from the *Origin of Species* to the latest developments in genomics. It is illustrative of Tattersall's lightness of touch that he can move within the space of a few pages from an explanation of the basics of natural selection to an overview of the complexities of gene regulation. (I was particularly pleased to learn here

that I share 40% of my genome with a banana.) A further brief chapter covers the principles of taxonomy and cladistics: the question of how to reconstruct the tree of life. Chapter 4 touches on the question of the origin of life before introducing us to the earliest direct evidence of life on Earth, the appearance of layered sedimentary mats (stromatolites) about 3.5 billion years ago.

We have to wait until around 600 million years ago, in the Ediacaran period, for the emergence of complex life forms. Immediately before that the Earth was subject to a series of episodes of global cooling which seem to have been caused by loss of greenhouse gases from the atmosphere, apparently related to the coalescing of the world's great landmasses into one supercontinent. Fortunately the Earth became more of a slushball than a snowball, so life was able to survive. And then at last (Chapter 5) we reach the Cambrian explosion, the subject of Stephen Jay Gould's beautiful book *Wonderful Life*. And from there to the evocative sounding periods of the Paleozoic era - the Ordovician, the Silurian, the Devonian, the Carboniferous, and the Permian - periods populated by exotic creatures that nevertheless have recognisable body-plans. Tattersall's enthusiasm is infectious. I found myself appreciating his affection for *Tiktaalik*, something like a mixture of fish and crocodile, and almost able to empathise with his disappointment that after *Tiktaalik*, 'alas, the fossil record falls silent for 8 million years' (64).

These periods were punctuated by a miscellany of half-understood catastrophes resulting in various degrees

of annihilation of life's fragile branches: a cosmic blast of gamma rays destroying the ozone layer at the end of the Ordovician resulting in the loss of 60% of marine genera; the loss of 96% of marine species in the 'great dying' at the end of the Permian. Suspects in the latter case include a massive bolide collision, release of toxic gases from volcanic activity, and global warming. Tattersall suggests that in the end, as in Agatha Christie's *Murder on the Orient Express*, it may turn out that everybody did it (79).

After the great dying we reach Steven Spielberg territory - the Triassic, Jurassic, and Cretaceous: the era dominated by the dinosaurs. Tattersall discusses the expected range of subjects: How did they move? What did they eat? Were they endothermic or ectothermic (warm or cold blooded)? Were they social? Why did they die out? Or rather, why did they only leave one group of descendants (i.e., birds)? Here, as elsewhere in the book, I found myself longing for more in the way of illustrations - something to help me tell my *Corythosaurus* from my *Parasaurolophus*. Anyway, the famous K/T boundary event 65 million years ago saw off the dinosaurs, giving way to the Age of the Mammals. Of course mammals had been around for a long time. Indeed, one of the more extraordinary sets of fossil finds described by Tattersall are those from around 200 million years ago demonstrating the stages of evolution of the arrangement of the bones of the inner ear, these having originated as part of the jaw. With the demise of the dinosaurs the mammals underwent a dramatic adaptive radiation. Tattersall spends one chapter giving an overview and a

second one concentrating on two 'extreme' versions of the mammalian life-way: whales and primates. Which brings us to the last two chapters which are devoted to human evolution.

Human evolution is Tattersall's speciality and his account is succinct and clear. An important lesson is that new behaviours tend to precede, rather than coincide with, the appearance of new species. Thus the appearance of stone tools, associated with Australopithecine species around 2.5 million years ago, precedes the appearance of the first human species (*Homo*) by at least half a million years. Anatomically modern humans first appear in the fossil record perhaps 195 000 years ago, which is consistent with the evidence available from current DNA diversity in human populations. But so-called 'symbolic' behaviours (painting, engraving, sculpture, etc.) do not appear until around 35 000 years ago in Europe, with some evidence of an earlier appearance (70 000 years ago) in Southern Africa.

Tattersall suggests that the most likely explanation of the gap between the appearance of anatomically modern humans and the explosion of cultural richness in the Upper Palaeolithic is the development of language. In other words, Tattersall regards language as a relatively late development. I am unconvinced by this. It seems to me that an anatomically modern vocal tract (which we may suppose, on the basis of indirect evidence, to have been possessed by the earliest anatomically modern *Homo sapiens*) suggests selection pressure for articulate speech. I suspect, therefore, that language had been

evolving for some time before the appearance of *Homo sapiens* - another example of a behaviour preceding rather than coinciding with the appearance of the species that will most effectively exploit that behaviour. What those ancient ancestors were saying to each other is another matter - unlike their bones their words have of course vanished without trace.

In the final few pages Tattersall considers 'the origin of Spirituality.' He regards spirituality as a 'co-product' of the turn to 'symbolic' modes of cognition - ways of thinking that allow we humans to imagine worlds beyond our own. Spirituality and its 'cousin', religion, serve 'the vital function of explaining and giving coherence to the world around us' (202). Tattersall acknowledges that the basic underpinnings of human morality and religion may be traced to our primate past, and perhaps further. But as far as I can tell he tends to regard religion as a product of our biological capabilities, rather than as part of the explanation of the origin of those capabilities. His instinct is to see scientific and religious forms of knowledge as distinct but complementary domains. On the final page he offers a way of visualising this on analogy with a two-stage rocket: science is like the first stage of the rocket, taking us as far as the limits of testable knowledge. After that we may choose to travel further by 'igniting the spiritual stage' and being 'transported to the limits of the human ability to understand' (204).

It is hard to fault this book for what it is: namely, a clearly written, succinct, and sometimes entertaining

summary of the history of life. It would provide an excellent primer for someone intending to study paleontology. In this regard the notes at the end of the book on key references relating to each chapter look especially helpful. I would have valued a lot more help in the form of more diagrams and illustrations, but that would have made it a different book with a different price-tag. I occasionally found myself feeling as if I was reading the script of a 10-part TV spectacular narrated by Tattersall. I would very happily watch the film of the book.

REVIEWS REPRODUCED FROM ELSEWHERE

We thank the editor of the *New Statesman* for permission to reproduce these reviews.

Russell Stannard, *The End of Discovery*. Oxford University Press, 2010; pp. 240, hardcover, ISBN 987-0199585243, £14.99

REVIEW BY BRYAN APPELYARD (*NEW STATESMAN* 18TH OCTOBER 2010)

During the recent protest march against the Pope in London, I noticed one sign which read "I believe in science". This made no sense. The point about science is you don't have to believe in it. Perhaps the bearer of the sign meant he believed in the power of science to make him happy or fulfilled. Or perhaps he just meant he didn't believe in God.

Nonsensical posturing about science has become commonplace. This is caused, I think, by the triumphalist tone of the wave, now abating, of popular science books started by Stephen Hawking's *A Brief History of Time*. Physicists used to crow they were on the verge of a "Theory of Everything", biologists said they had cracked the code of life and neuroscientists, accompanied by certain philosophers, claimed the mystery of consciousness would soon yield.

None of these things was, or is, true. They are not true because all these problems have proved far more

complex than anybody expected. But are they also not true for a more profound reason? Are they not true because they are insoluble, because the human mind is incapable of understanding the world fully?

The physicist Russell Stannard thinks this may be the case. He believes that science will eventually come to an end, and that we are living in a "transient age of human development" in which scientific discoveries can be made. But science won't end because we know everything; it will end because we know everything we can know.

Science, he says, may well not crack, among other things, the problems of consciousness and free will, the ultimate divisibility of space and time, and the true status of mathematics. It may not even be able to establish the existence of the world. An extreme interpretation of quantum theory says that because all we know of the world is obtained by our acts of observation, and because these determine the world we see, we cannot be sure of the existence of anything between those observations. In fact, strictly speaking, the world ceases to exist in this gap.

This, therefore, is an anti-triumphalist book. The more of it you read, the less you discover we know. Stannard argues that there are certain to be limits to science. This raises the further question: are these ultimate limits, or just the limits of the human mind? In other words, could a superior intelligence solve the problems? That is doubly unknowable.

But the idea of limits is important. Ever since Galileo looked through a telescope in 1609, failed to see what the Church's cosmology said he should see, and thereby established the scientific method, the march of science has been spectacular and seemingly unstoppable.

From the mid-19th century onwards, it became increasingly respectable to say that science had invalidated all other forms of knowledge - religion, philosophy and so on. As a result of the scientistic wave that began in the 1980s, this idea is not merely commonplace, it is the orthodoxy by which we live. And behind it lies a faith in the omnicompetence and omniscience of science. But, as Wittgenstein saw, this is a delusion. Even when all the problems of science have been solved, he pointed out, the problems of human life will remain untouched. In a world where shampoos have to be validated by science, people naturally find this hard to understand.

Stannard makes the idea of a limited science more accessible simply by pointing out its actual rather than its conceptual limitations. He pinpoints, for example, the critical difficulty of contemporary neuroscience - that researchers must still rely on the subjective reports of its subjects to match the pictures of the brain seen with fMRI machines with mental events. "There is nothing about these physical patterns of behaviour that in [itself informs] us that they are accompanied by someone having a mental experience."

This is a very profound problem indeed, and one that, in the current blaze of neuroscience propaganda, is easily

overlooked. It is also indirectly linked to another of Stannard's potential unknowables: "the problem of understanding things-in-themselves." Kant pointed out we have no access to the noumenon, the thing itself, uncoloured by our perceptual apparatus. In physics, this leads to a fundamental crisis. Are all these elaborate mathematical models pictures of the world as it is, or merely of how we see the world?

We may suppose that because the models are internally consistent they must be true externally. However, that may be because we work so hard to make them consistent that we rig them. The standard model of particle physics, for example, is rightly seen as a great triumph of modern thought, but it requires no fewer than 19 adjustable parameters to make it work. We don't know why these figures are what they are and the model does not include gravity; as such, we can only say that it works incredibly well, not that it is true, in the sense of corresponding to anything in the world.

This is, I hardly need add, a book worth reading. Lucid and provocative, it is a very polite corrective to both the superstitions of the layman ("I believe in science") and the triumphalism of the experts.

Stephen Hawking and Leonard Mlodinow, *The Grand Design: New Answers to the Ultimate Questions of Life.*

Bantam Press, 2010; pp. 208, hardcover, ISBN

978-0593058299, £18.99.

REVIEW BY RUSSELL STANNARD (*NEW STATESMAN* 11TH OCTOBER 2010)

This book has already caused a stir. You might have seen the front-page banner headline in the *Times*: "Hawking: God did not create the universe." The article went on: "Did the universe need a creator? The answer given by Britain's most eminent scientist is a resounding no." So, what was the fuss about?

The Grand Design consists of a potted history of science from the earliest times to the present. To accomplish such a broad sweep in barely 200 pages is a tall order. Beginning with the ancient Greeks, Stephen Hawking, with the assistance of Leonard Mlodinow, works his way in an engaging and leisurely manner through to the emergence, in the 17th century, of the idea that everything that happens in nature is governed by laws of nature. From then on, the treatment becomes patchy, examples of excellent exposition interspersed with passages where the ideas and technical terms come so thick and fast, one wonders what target audience they had in mind.

The culmination of this lightning tour is M-theory. M-theory is based on the notion that the fundamental constituents out of which everything is made are not

point-like particles, as previously assumed, but tiny, vibrating strings. Unfortunately, these strings are expected to be so small that we shall never be able to see them and hence verify that they are indeed strings. They are required to vibrate in ten spatial dimensions, seven of which are curled up too small to be seen. M-theory is believed to be a physical law capable of spontaneously producing, out of nothing, not only this universe, but a large number of other universes - universes we will never be able to see. What does M-theory look like when written down? No one knows; it has yet to be formulated. It is just a gleam in the eye. And yet Hawking hails it as "a candidate for the ultimate theory of everything ... the only candidate."

It is not difficult to understand why the book has caused controversy. On the very first page he declares that "philosophy is dead." Curious, seeing how the book is permeated throughout with philosophy. For example, Hawking claims: "Scientists have become the bearers of the torch of discovery in our quest for knowledge." The assertion that scientists will be able to explain everything and there is no need for other kinds of thinking is itself an expression of the philosophical position known as "scientism". His description of scientific theories as mathematical models of reality is an understanding we owe to professional philosophers of science. And his bald statement that we are "no more than biological machines and free will is just an illusion" is merely a reiteration of one particular stance taken up in the debate about free will and determinism.

Hawking then turns his fire on theology. He claims that the universe arises out of the operation of M-theory, hence there is no need for God. He reached a similar conclusion about God in his earlier book *A Brief History of Time*. There he pointed out that there was no time before the Big Bang, and therefore there could have been no pre-existent cause of the Big Bang. This led to his rhetorical question: "What place then for a creator?" It certainly gets rid of a god who has always existed, and who at some point in time decides to light the blue touchpaper and bring the world into being. But this is just an Aunt Sally. What serious-minded theologian holds such a view of God?

As far back as the 5th century, St Augustine saw that time was a property of the universe and would therefore need to have been created along with the rest of the universe. In effect, Hawking is muddling two words: "origins" and "creation". Though these might be used interchangeably in everyday conversation, in theology they assume distinctive meanings. "Origins" is about how things get started - the Big Bang - but that is of little interest to a theologian. The creation question is quite different: "Why is there something rather than nothing?"

In *The Grand Design*, the authors claim they have taken this objection on board and addressed that question: the answer is M-theory. Hawking and Mlodinow have done nothing of the sort; they have merely given a somewhat different account of how the universe originated. That leaves unanswered the question of where M-theory is supposed to have come

from. M-theory is a physical law - an intelligible physical law. Might it not have required an Intelligence to set it up in the first place?

Hawking claims that invoking God as creator simply raises the question of who created God. This statement is based on what philosophers call "a category mistake". God is not an existent object like a universe. God is the source of existence, or, in the words of the theologian Paul Tillich, the "Ground of All Being".

The last sentence of the book finishes with the phrase "we will have found the grand design." According to my dictionary, a design is something that is planned and has a purpose; it requires a designer. That would seem to imply that God is alive and well, and still in charge. But that hardly makes for an eye-catching newspaper headline.

SHORT REVIEWS BY THE EDITOR

Christopher Preston, *Saving Creation: Nature and Faith in the Life of Holmes Rolston III*. Trinity University Press, 2009; pp. 256, hardcover, ISBN 978-1595340504, £15.99.

This biography starts from the moment when Rolston, as a young Presbyterian pastor, realised that his church were completely disaffected with his insistence on including contemporary science in his preaching. It takes this extraordinary figure, who has been so influential both in environmental ethics and in the science-religion debate, through to the award of his Templeton Prize. A valuable chronicle both of Rolston's life and of the way thinking has shifted in these areas since Rolston's childhood in the Shenandoah Valley in the 1930s.

Holmes Rolston III, *Three Big Bangs: Matter-Energy, Life, Mind*. Columbia University Press, 2010; pp. 256, hardcover, ISBN 978-0231156394, £17.00.

It is not always appreciated that as well as his better-known fascinations with intrinsic value in ecological systems and with evolutionary theodicy Rolston has a keen interest in emergence, particularly in relation to that extraordinary transition from a world of chemistry and physics to one containing the first biological life. Here he surveys that transition and also the origin of matter-

energy in this universe ('the' Big Bang) and the no less remarkable emergence of consciousness. This will be a valuable introduction for students to these endlessly fascinating transitions.

Denis Edwards, *How God Acts: Creation, Redemption and Special Divine Action*. Fortress Press, 2010; pp. 224, paperback, ISBN 978-0800697006, £18.99.

The neo-Thomist view that God's providential action is best understood in terms of primary and secondary causality has not always commended itself to scholars and the science-religion debate. John Polkinghorne famously called it 'theological doublespeak' and others have felt it was regrettably light on the sort of the detailed description that our understanding of a physically indeterministic universe seemed to make possible. However, it may be that the wisdom of not constraining God's action too much in terms of physical descriptions or efficient causation is coming to be realised. In this regard Edwards' book, which provides a lucid new articulation of the neo-Thomist view, may be particularly timely. What is particularly interesting is that Edwards is prepared to part company with Aquinas' own position that miracles are reflections of God's direct action as a primary cause. Edwards prefers to think of them reflecting patterns and laws not yet known to us. A challenging and important read.

BOOKS RECEIVED FOR REVIEW

Mary Katherine Birge, Brian G. Henning, Rodica Stoicoiu, Ryan M. M. Taylor, *Genesis, Evolution and the Search for a Reasoned Faith*. Winona, MN: Anselm Academic, 2010.

Conor Cunningham, *Darwin's Pious Idea: Why the Ultra-Darwinists and Creationists both get it wrong*. Grand Rapids, Mich.: Eerdmans, 2011.

Elaine Howard Ecklund, *Science vs. Religion: What Scientists Really Think*. Oxford: Oxford University Press, 2010.

Charles Foster, *Wired for God: The Biology of Spiritual Experience*. London: Hodder and Stoughton, 2010.

Steve Fuller, *Science: The Art of Living*. Durham: Acumen, 2011.

Alister McGrath, *Science and Religion: A New Introduction*. Oxford: Wiley-Blackwell, 2nd Edition, 2010.

Alister McGrath, *Why God won't go away: Engaging with the New Atheism*. London: SPCK, 2011.

The Editor welcomes offers to review these publications. Please contact her on l.hickman@newman.ac.uk.

Note: Policy of *Reviews*: This Journal aims to publish original and reprinted reviews of books published in the science-and-religion area. The Editor regrets that she is not able to publish, or enter into dialogue on, original articles not tied to a book in the field.