

## Reviews

---

**Sir John Houghton with Gill Tavner**

*In the Eye of the Storm: The Autobiography of Sir John Houghton*

Oxford: Lion Hudson, 2013. 303pp. pb.  
 £9.99. ISBN 978 0 7459 5584 1

‘You know, John, you have been able to do things I wouldn’t have thought you capable of.’ (263) So Sir John remembers the words of his doctoral supervisor, Alan Brewer, reflecting upon his remarkable ‘scientific story’ (9) shared in *In the Eye of the Storm*. From a young researcher at Oxford involved in airborne radiometric measurements of the atmosphere and the first computational line-by-line spectral calculations; through early NASA programmes pioneering the use of satellites that have transformed the science of weather prediction and environmental monitoring; to roles shaping national scientific policy, and international roles in the field of climate change.

The title of the book is inspired by the October storm of 1987, when Sir John was Chief Executive of the Met Office. Yet it also captures his involvement in the IPCC processes, which together with reflections upon the issue of Climate Change take up more than half of the book. The first chair of IPCC Working Group I, its 1990 report was shaped by his insistence that it be ‘a scientific document ... not ... influenced by political motivation of any kind’ (172). Given increasing political pressure over the next ten years, this might appear naive. By the time of the third assessment report ten years later, Sir John admits he ‘was less naive about the possibility of interested parties trying to cause trouble’ (199). Yet his strength of vision was surely pivotal in securing the credibility of reports produced. It also highlights a theme that is woven throughout his

story – the search for truth, whether scientific, personal or spiritual.

His description of his autobiography as his ‘scientific story’ (9) shapes much of the book’s content. While there are glimpses of family and personal life, these are not primary. It is more a personal reflection on the evolution of atmospheric and environmental science through the second half of the twentieth century and beyond. Those with a general interest in these areas will find his telling of this story accessible, engaging and informative. Any whose own scientific story intercepted Sir John’s will find his insights giving a broader, if personal, view of events. Yet part of this journey, which may be new to some, has been one of faith, and here the search for truth again emerges: ‘The big picture for which I have always been searching ... has to include the truth about everything ... it has to include science and ... God’. (262ff.)

Through his early years at Oxford, when his faith was both reshaped and re-owned, he came to see ‘science ... the exploration of the world ... did not create the world, and therefore does not negate a creator’. (26) In several brief appendices he sketches out views on evolution and healing – personal issues raised by discussions with his father and the illness of his first wife who sadly died of cancer. He sketches a theology of ‘creation care’ in a further appendix, and while again brief and not unique, given his engagement with environmental matters, it has the credibility of insight and wide experience.

While science and faith are both a part of his story, he is careful not to give the impression that ‘faith has influenced his science in any improper way’. (264) In this, he may be seen as stressing that these two ways of searching for truth do not overlap. However, in his ‘scientific

story' a person of integrity is found; one who is generous to those who opposed him and those who are hurting; a person desiring to bring people together in the search for truth, with an insistence upon honesty. Such qualities are greatly shaped by his Christian belief, and appear equally as significant as his scientific abilities in his wide and effective influence. In these things, it might be said that his faith has influenced his scientific story in a proper way!

With Alan Brewer, one wonders if at the beginning Sir John could have dreamed of the paths that his life would take. There are still regrets, a feeling that he could have done more to 'persuade the world to address (Climate Change) ... perhaps I haven't been shouting loud enough'. (260) Yet this is balanced by his recollection of the final line of a song his wife often sings – 'You raise me up to more than I can be'. (264) Sir John summarises his story as 'trying to find a way to work in partnership with (God) in everything I do, including my work.' (263) It is a story that will not only inform its readers of the development of environmental science through the past fifty years, one in which he has played no small part. It will also inspire those whose own scientific story is one shared with the story of faith.

**David Gregory is Senior Minister of Croxley Green Baptist Church in Hertfordshire, having previously worked in Weather Prediction and Climate Research.**

**J. Wentzel van Huyssteen and Erik P. Wiebe (eds.)**  
***In Search of Self: Interdisciplinary Perspectives on Personhood***

Grand Rapids: Eerdmans, 2011. 387pp.  
pb. £29.99. ISBN 978-0-8028-6386-7

The timeliness of this anthology cannot be overstated. From a wide spectrum of disciplines, both in the humanities

and in the sciences, there is today an awareness of the need to bring together the insights for many disciplines in order to understand better the nature of personhood. In their introduction the editors flag up their own primary interest. They write, 'the interesting question for us, as interdisciplinary theologians, is whether the multiple perspectives might afford some degree of convergence on the intriguing and multilayered question of what it means to be human' (18). Their declared aim is, 'to add to the current interdisciplinary dialogue' (18), and in doing this we are indebted to them. To help the reader the editors group the eighteen contributions into four sets: The Self and Origins, The Self as a Multiplicity, The Self and Identity, and The Self and Emergence.

Inevitably in an anthology of this kind there is considerable variation in the length and quality of the contributions. For this reviewer, writing as a scientist who has benefited from sustained involvement with philosophers and theologians on topics of mutual interest over many years, it remains the case that language so familiar to some philosophers and theologians, remains difficult to understand without considerable help. For example, in their Introduction the editors, reviewing Part Three on The Self and Identity and introducing the contribution of Calvin O. Schrag on 'The Quest for Self-Identity', write:

This praxis-oriented and life-experiencing self announces its presence more like an event than like an object for inspection; an event of speaking that does not originate language but always speaks *from* a language. Arguing against foundationalist epistemic principles and irreducible traits of mind (either mentalist or materialist), this hermeneutical self is implicated in its discourse and action and appears on the scene of experience as an *emergent* from the history of communicative praxis

rather than impermeable *foundation* of it. Thus the ego descends as an avatar into lived time and space and is revealed as an incarnation in a lived body that bridges the chasm between mind and matter, culture and nature. (25)

I am still not sure that I know what that means though I have read it many times.

The Parts of the anthology in which most of the contributions are from scientists – whether archaeologists, prehistorians, evolutionary biologists, evolutionary psychologists, neuroscientists or anthropologists – and that includes Part One on The Self and Origins, hang together in a coherent way. But even there, at times, the authors seem to move too easily, for this reviewer at least, from reasonably well grounded evidence to personal philosophical views which sound strange to some of us. For example, Barbara King, in her chapter ‘Are Apes and Elephants Persons?’, reviews some of the evidence in this field succinctly but asks on a more speculative note, ‘Why should animals who look to us to have distinct relational selves be more entitled to our care than animals who do not?’ And she goes on, ‘Let me speak to this point with an example. I don’t know if spiders have distinct relational selves. I suspect they do not. But even if I am right about that or even if I never find out, I still won’t kill spiders (in our house, we usher spiders outdoors and set them free)’. For many readers of this journal such a statement inevitably prompts further questions about what is the basis on which such views are founded? Is there any biblical warrant for them, for example?

As one reads on through the anthology one feels increasingly how much some of the earlier contributions would have benefited had they been able to read and apply some of the later contributions. For example the philosopher Roger Scruton, in his chapter on Neurononsense and the Soul, highlights,

though not quite in these terms, the need for semantic hygiene, especially in any volume where the contributors may be using the same or similar words and coming from quite different backgrounds. Specifically in his chapter he is underlining the need to differentiate between brains and persons. His justified critique of what he calls ‘neurobabble’ could helpfully have been applied more widely in the anthology in a sustained attempt to ensure that some genuine interdisciplinary sharing of views was taking place. Instead, sadly, so many of the contributions seem to be stand-alone and indicate little attempt to make meaningful links with contributions from other authors.

The editors in bringing together this anthology have very usefully set the scene and illustrated vividly the difficult task that lies ahead in bringing together the many and diverse approaches to the understanding of the human person today. Perhaps their next task is to bring the contributors together for a sustained period of time in order to begin to move towards some sort of a coherent and unified view of their many different answers to a common problem. We are indebted to them for bringing together in a preliminary way some of the necessary building blocks required in building a unified picture of the origins of personhood. In any further venture it would be helpful to include the contributions of scholars who would look not only to the origins of personhood but to the issues of the continuation and future of persons beyond this current scene, surely a reasonable part of the agenda of editors who describe themselves as ‘interdisciplinary theologians’.

**Malcolm Jeeves, past Editor-in-Chief of Neuropsychologia, is President of Christians in Science.**

**Rodney Holder**

***Big Bang, Big God: A Universe Designed for Life?***

Oxford: Lion Hudson, 2013. 208 pp. pb.  
\$8.99. ISBN 978-0-7459-5626-8

*Big Bang, Big God* has a scope that addresses cosmology, theology and philosophy and is a welcome addition to the literature of science and religion. Throughout, Rodney Holder, an Anglican priest as well as a trained astrophysicist, is careful to present balance in a thorough account of prevalent theories and ideas. He highlights, through reference to anecdote, historical evidences and academic scientific literature the complexities and intellectual problems and challenges of differing cosmological and metaphysical ideas associated with origins. The reader is skilfully led through the theistic hypothesis to the closely argued and clearly presented conclusion that an understanding of the universe is entirely compatible with a creator God.

In a book of this scope the general reader may, with reason, fear becoming lost in obscure or complex mathematical detail. However, Holder and Lion, the publishers, have clearly made significant efforts to make this book accessible. There are notes, an appendix that explains, for example, Bayes's theorem, a very accessible glossary of terms (183-189), a reference section (190-202) and ideas for further reading. This book is more accessible than many in this topic area. With this accessibility, an important bridge has been established, and with authority and calm reflection, Holder provides a window on a subject matter that many may find fascinating, but otherwise, potentially impenetrable.

Holder offers insight into the contributions made by scientists, theologians and philosophers over the period of time that modern cosmology has developed and since the origins of the Big Bang theory. For example, he intriguingly comments on discourse between the

Vatican and Georges Lemaître in the face of atheistic assertion by Fred Hoyle, but goes on to reference and explore the views of many contemporary physicists and mathematicians involved with string theory and the more generalised M-theory. Holder summarises and contrasts assertion and counter assertion of theorists from different perspectives, including the work of Roger Penrose.

Holder is not shy of considered, but critical comment and he alludes to a lamentable confusion and complex network of improbable ideas. He draws a distinction between a discordant confusion of metaphysical ideas and physics as more evidence based approaches appear to have been abandoned. In making these points he does so without devaluing metaphysical discussion. Hence, Holder uses careful argument and logical assertion, remaining alert to unlimited philosophical speculation and unhindered mathematical conjecture. His discerning approach may be particularly useful to the general reader who might otherwise miss the significant thrust of pertinent conjecture and counter claim amongst other detail.

Having clearly explained the Christian doctrine of creation in chapter 4, Holder draws the reader in chapters 9 and 10 to the conclusion that theism and more particularly Christian theism presents a coherent and highly credible alternative to atheistic claims. He highlights many tangible problems and inconsistencies when explaining fine-tuning, the origin of the universe and life without reference to a divine creator of particular character. Hence, Holder presents a strong and coherent case for the existence of God.

This book addresses many important themes in the field of modern cosmology and relates these to theology and philosophy. Readers with an interest, but without expert knowledge in these fields, may find in this book a very

helpful and honest assessment of the interplay of thought in this area. I thoroughly recommend this book.

**John Ling is Education Secretary, CiS, and organiser of ‘God and the Big Bang’ schools conference at The King’s School, Canterbury, 2008, and contributor to The Wonder Project, BETT finalist, 2010.**

**Jonathan Moo & Robert White**  
*Hope in an Age of Despair: The Gospel and the Future of Life on Earth*

Nottingham: IVP, 2013. 219 pp. pb. £11.99. ISBN 978-1-84474-877-8

There have been many books on environment and Christian faith in recent years, so the first question on receiving Dr Moo and Prof. White’s contribution, is to ask whether it says something fresh or communicates more clearly and authoritatively than others. The answer is in the affirmative on both counts, as I will explain shortly. This is an excellent addition to the literature and I hope will be widely read.

On a second key question, ‘who is the audience?’ I found myself less certain. Moo and White are, respectively, a theologian and qualified scientist lecturing in an American University, and an eminent geologist and Director of the Faraday Institute. Both write with great knowledge and authority, and the book is seamless stylistically. It is rare to find writing where the quality of the scientific detail and the theological understanding are as equally matched as this. Yet, whilst *Hope in an Age of Despair* is not an academic treatise, it assumes a level of knowledge and interest beyond that of casual readers. I would happily give it to a church leader or an intelligent but open sceptic, but it’s not where I’d start for the average

Christian in the pew or the pub – which is where most remain to be convinced of the urgency of the subject. Having said that, I would particularly recommend those with theological training to read the scientific chapters (2-4) and scientists to read the theological ones (5-8), although either will benefit from both!

*Hope in an Age of Despair* begins by looking at the range of responses to current ecological crises, from ‘ignorance-is-blissers’ to ‘despairers’ (17-18). Determined to avoid rhetoric and scaremongering, the book encourages readers ‘to assess the evidence for themselves’ (15). The second chapter looks at a wide range of issues including biodiversity loss, water stress, nitrogen depletion, food and land use, before a single chapter devoted to anthropogenic climate change (due to its complexity and severity). The science in these chapters is current, balanced and detailed, including for instance, a good summary of the issues surrounding ‘fracking’ (54-55), emphasising the lack of regulatory oversight in this area. Inevitably the scientific detail will quickly seem dated; the fifth IPCC report has already overtaken some of the material on climate change, but the arguments remain valid. There are some excellent theological observations scattered amongst these chapters, including on the economic valuation of nature (39), the eucharistic nature of eating (46), and the place of Sabbath and Jubilee in relation to land use (57-58).

The theological heart of the book, chapters 4-8 is, for me, its most original contribution. Rather than giving an overview of creation theology it focuses in detail on the nature of Christian gospel and future hope. In a closely-argued section (chap.4), the gospel is seen to be good news not just for people but for the whole creation. Moo and White were both present at the Lausanne Consultation on Creation Care & the Environment (Jamaica 2012), and its conclusion, following the Cape Town Commitment, that creation care is

indeed a 'gospel issue within the lordship of Christ' (CTC 1.7.A), matches their own. The eschatological orientation of Christian hope then makes up most of chapters 5-8, including close analysis of Romans 8, 2 Peter 3, Luke 12 and sections of Revelation. There is no simplistic proof-texting but a thorough demonstration that the ultimate renewal of the whole created order is central to God's purposes in Christ, and that this is the greatest motivation for a radically new Christian ethics. As the conclusion puts it, 'Biblical hope is not a promise of 'pie in the sky when you die,' (188) but of faithful, righteous living.

So, in conclusion, excellent on the science, superb on the theology, and overall a very good read. I would, however, have liked to see more on the practical, ethical, implications for Christian living. Although the authors understandably state 'we do not wish to be prescriptive' (193), it is sadly my observation, having been active in this field for twenty years, that many Christians are convinced intellectually of the theological importance and scientific urgency of creation care, but not yet in their hearts, wills, pockets and everyday lifestyles. Whilst contexts differ, inspirational examples and stories can connect theory to practice. Maybe we need a sequel ... 'Living out Hope in an Age of Despair.'

**Dave Bookless is Director of Theology for A Rocha International, author of *Planetwise* and *God Doesn't do Waste*, and studying part-time for a PhD on theology and conservation at Cambridge University.**

**John Doody, Adam Goldstein & Kim Paffenroth (eds.)**  
***Augustine and Science***

Lanham, MD & Plymouth, UK: Lexington Books, 2013. 233 pp. hb. \$65.00 & £39.95. ISBN 978-0-7391-7434-0

St Augustine of Hippo has been a major figure as a theologian and philosopher in the development of Western European thought. He wrote three commentaries on Genesis, the last and best known being *The Literal Meaning of Genesis*, written between AD 401-415. He also wrote about Genesis and creation in Books 11-13 of his *Confessions* (AD 397-401) and Book 11 of *The City of God* (AD 417/418). In the late nineteenth and early twentieth century there was an extensive debate among Roman Catholic scholars about the claim that Augustine had foreshadowed Darwin's ideas about the evolution of life-forms. The debate was revived in the late 1980s and has continued since with evangelical Protestants as well as Roman Catholics taking part. This collection of twelve essays, some of them reprints of published papers, provides an interesting and helpful survey of, and contribution to, that debate.

Two important contributors to the debate have been the Roman Catholic philosopher and historian of science Ernan McMullin and the Protestant philosopher Alvin Plantinga. The opening essay in the collection, by Paul L. Allen, is an analysis of McMullin's use of theological and philosophical themes from Augustine to develop his argument that the ideal relationship between Christian faith and natural science should be one of 'consonance'. This article does provide an introduction to key aspects of Augustine's thought. However, readers who know little about Augustine would do better to start with the fourth essay in the book, a reprint of Davis A. Young's 1988 article, 'The Contemporary Relevance of Augustine's View of Creation'. Allen briefly analyses the debate between McMullin and Plantinga;

Plantinga speaks for himself in a reprint of a 1996 article 'Science: Augustinian or Duhemian'. He makes some pertinent criticisms of McMullin's arguments for 'consonance' but uses some weak arguments to support his preference for a version of 'special creationism' rather than 'theistic evolution'. For example, he claims that the Bible shows us that God has frequently intervened in special ways and so we should expect this to be so in the history of life forms. However, given that the biblical record spans nearly 2,000 years from Abraham to the early church, it records very few special interventions. McMullin points out that it records such interventions as part of *salvation history* in which they make good theological sense. This does not provide a basis for expecting them in *natural history*. Plantinga's claims about scientific weaknesses in the evidence for evolution were a bit dated in 1996. They are even more so now. His claim that the fossil evidence has not improved since Darwin's day is contradicted by the extensive evidence in D. R. Prothero, *Evolution: What the Fossils Say and Why It Matters* (Columbia UP, 2007) which shows that the fossil evidence now strongly supports evolution. Plantinga rests heavily on Behe's idea of 'irreducible complexity', which has faced strong scientific criticism, for example in M. Young and T. Edis, *Why Intelligent Design Fails* (Rutgers UP, 2004).

Two essays are entitled, 'An Augustinian Perspective on Creation and Evolution'. Rodney D. Holder's discusses how Augustine's concept of God implanting 'seed-like principles' in the creation to produce new life-forms down through history can be helpful for a Christian approach to evolution. Patrick Richmond's surveys how Augustine's ideas about animal suffering, human free will and original sin can, or cannot, be related to current scientific understandings of nature. The other essays all make interesting reading, though it is hard to see why Pannenberg's 1988 paper on

'The Doctrine of Creation and Modern Science' is included in this volume since it contains only one brief reference to Augustine.

What is the value of this debate? First, it shows that a figurative reading (a 'literal' reading in Augustine's terms if intended by the author) of Genesis, based on thought-out principles of biblical interpretation, though also influenced by philosophical ideas, has a long history in Christian tradition. In fact it pre-dates Augustine. Secondly, Augustine does provide ideas which are fruitful for discussion of current issues relating to science and faith. Thirdly, engagement with the ideas of a great thinker of the past does help sharpen up our thinking about issues today.

**The Revd Dr Ernest C. Lucas, is Vice-Principal Emeritus, Bristol Baptist College and an Honorary Research Fellow in Theology and Religion in the University of Bristol.**

**Robert N. McCauley**  
***Why Religion is Natural and Science is Not***

New York: Oxford University Press, 2011.  
335 pp. pb. \$29.95. ISBN 978-0-19-982726-8

McCauley is clear that by religion he means *popular* religion (popular is almost always italicised in the text to underscore this point). He is not addressing theology or other critical and reflective religious projects but rather 'the cognitive status of *popular* understandings about religious belief' (211-212, also 212-213). Popular religion comes naturally to human beings, or so the argument goes. It is the direct expression of what he calls 'maturationally natural cognitions'. These are the '(similar) immediate, intuitive views that pop into mind in domains where they [*homo sapiens*] may have had little or no experience and no instruction' (5). While he (wisely) sidesteps the issue of

whether such cognitions are in some sense 'innate,' he strongly insists that they are common to the species, not attributable to culture or training, occur spontaneously in young children, and primarily operate unconsciously.

The key to the argument is the insistence that 'Religion in its popular, that is, widespread forms ... employs ideas and forms of thought that are *naturally appealing* to the human mind ...[and] are available to most children by the time they reach school age' (152-154). Being the direct result of humans' virtually inbred, 'maturationally natural' cognitions accounts for religion's appeal. 'Just as humans find some foods particularly good to eat, they find some representations particularly good to think. Religions, like Rube Goldberg devices, tend to capture and enthrall human minds' (159). Religion, then, comes naturally to human beings, not in the sense that there is a 'religious gene' or a 'God spot' in the brain but rather that our natural cognitive predispositions drive us to think in religious-like ways and make us 'cognitively ready to leap at, swallow, and digest religious stories, actions, symbols, and settings like a hungry frog will leap at, swallow, and (attempt to) digest a ball bearing that flies within reach of its visual field' (220). The maturationally natural cognition that religion primarily relies on is our propensity to see the world in terms of intentional agents (183). And religions, at least 'popular' religions, 'rely overwhelmingly on representations about the states of mind and actions of *agents*' (158). But this is a cognitive mistake; such claims 'are often the results of cognitive false alarms' (158).

While religion is virtually the inevitable result of our 'maturationally natural' cognitions, science does not come naturally but rather is 'cognitively unnatural in the extreme' (286). This is because 'nature does not groom human minds for carrying out the *disciplined criticism of theories* that is the obligation of science' (119). Whereas science

'cuts directly against the grain of our maturationally natural cognitive dispositions' (286), religions play upon them (153).

But there is a deeper difference at work here. Religious explanations 'focus on agent causality and take a narrative form' (104). On the other hand, science 'has, over time, steadily restricted the domains in which appeals to agent causality (of any sort) are any longer deemed legitimate' (117).

McCauley nuances this dichotomy of religion and science in at least three ways. First, he stresses that '*all* of the cognitive differences between science and religion that I explore in this book are differences of degree' (7, italics in original) and that he is only arguing 'for the *comparative* unnaturalness of science' (105, see also p. 147).

Secondly, he shies away from making grandiose claims, such as that his theory has 'explained religion.' Rather he recognises that 'an analysis of the cognitive naturalness of religion...does not provide a comprehensive theory of religious cognition, let alone a comprehensive theory of religion' (147-148).

Thirdly he affirms that there is more to 'religion' than simple appeals to agent causation. Religion too has its critical, intellectual dimension which in many ways parallels science. He writes,

Theologians avail themselves of many of the same tools scientists use. Typically theologians are experts at conceptual analysis and at carrying out the same forms of deductive inference that play such a noteworthy role in science...some religions are fully capable of provoking (and supporting) extended reflection about the complicated logical, conceptual, explanatory, and empirical issues that religious representations reliably engender... that depart substantially from the deliverances of our maturationally natural cognitive systems (152-154).

In these ways he undermines any strict science-religion dichotomy. Rather 'In some important respects, such theological projects are on a par cognitively with science' (211-212, also 212-213). The difference between theology and science is not deeply methodological (both use reflective cognition) but that in theology 'appeals to agent explanation/causality' are 'unrestricted' while in science they are 'restricted' (231).

I have four concluding reflections. First, given this nuancing of the religion-science distinction, one might be forgiven for wondering how strong the book's conclusion really is. Even among the most secular populations I have often heard expressed a vague 'sense' or 'intuition' that there must be a 'God' or a 'higher power.' That such feelings are common is hard to deny. Likewise no one denies that learning mathematical physics, biochemistry, or statistics is hard work. Is this all the main argument boils down to? And how much interpretative gain really comes from comparing two such disparate human phenomena?

Secondly, if the science-religion distinction is so nuanced (weakened?), what is the point? I think readers must wait till the end to get the book's main thrusts: 'It is atheism, not religion, that humans must work to acquire. Compared with atheism or science, popular religion...make(s) comparatively light cognitive demands on human minds' (221, slightly altered). The subtext: atheists are hard-working intellectuals, religious folk (except perhaps for a few theologians) are intellectually lazy, simply following the cognitive path of least resistance. The other main thrust comes with the title of the book's final section 'Science's continued existence is fragile' (277). And so the book concludes

Humans have produced science so infrequently in their history not only because it does not come to them naturally but because it is incredibly difficult to do and the doing of it

is incredibly difficult to sustain. ... science was once lost and had to be reinvented. One consequence of the position that I have been defending is that nothing about human nature would ever prevent the loss of science again (286).

Writing in an American context, perhaps such an anxiety is justified.

Thirdly, another subtext seems to be that the main (only?) reason people hold 'popular' religious convictions about transcendent agency is that such ideas 'capture and enthrall human minds'. No evidence or argument is offered for this assertion. An implication would seem to be that when adult believers give thought-out reasons for their beliefs, these reasons are mainly rationalisations for the precipitants of implicit, unconscious cognitive tendencies. A person not familiar with the field of evolutionary cognitive psychology would want some evidence or argument to support a claim about whether, or how much, of a role these natural cognitive proclivities play in adult religious life. None is provided here. Put another way, this book appears to assume a familiarity with (if not an acceptance of) the main lines of argument proffered by the evolutionary, cognitive psychology of religion.

Fourthly, science's current preference for impersonal mechanistic models rather than intentional ones is reiterated throughout the text (e.g. 213-214). Despite McCauley's valorisation of the '*disciplined criticism of theories*' science's drive for the impersonal is not critically interrogated at all – as, for example, Erwin Schrödinger did in his essay 'Mind and Matter' where he argues (correctly in my estimation) that the impersonal view of the world is the inevitable result of science's chosen method since Galileo. It is a methodological structure, not a comprehensive, ontological description.

Based on a widely cited paper with a similar title, this book is probably not

for those unfamiliar with evolutionary psychology, appearing instead to assume a familiarity, if not an agreement, with its theories. But for those who want an interesting and relatively nuanced discussion of some of the implications of that paradigm or some thoughtful comments on the relationships between religion and science, this book will serve them well.

**James W. Jones is Distinguished Professor of Religion and Adjunct Professor of Clinical Psychology at Rutgers University, USA.**

**David Hay**

***God's Biologist: A Life of Alister Hardy***

London: Darton, Longman and Todd, 2011. 364 pp. hb. £24.99. ISBN 978-0-232-52847-3

Alister Hardy died seven months before I was born. We lived in very different worlds, not least regarding academic enthusiasm for the scientific study of religion. In the month that Hardy died, Bernard Spilka and his colleagues published *Psychology of Religion: An Empirical Approach*, now established as a classic and currently in its fourth revised edition. Academic journals such as the *International Journal for the Psychology of Religion, Method & Theory in the Study of Religion*, and indeed this publication, *Science & Christian Belief*, were inaugurated in the years directly after Hardy's death. Since the 1990s, even Hardy's own special interest in evolutionary approaches to religious phenomena has enjoyed increased research attention. All this may have pleased Hardy, marine biologist-cum-religious theorist, though his devotees might well wish him more recognition for the role he played.

*God's Biologist* has a hagiographical air to it, punctuated with brief moments of realisation that its subject was something of a piece of work. David Hay's at-

tempts at explaining away Hardy's bad behaviour—upon arriving at Oxford as chair (he refers to himself as 'captain' of the 'crew' of Oxford dons), upon joining Manchester College (he plans an ambitious research unit, with little regard for its effect on the college), in his relationship with his successor (he continues meddling in the research unit)—are sheepish, if not lame. Similarly, Hay seems not to notice the contradiction between Hardy's commitment to scientific rigour and his vow, made as an undergraduate, to demonstrate the validity of religious experience in light of Darwinism. This single-minded effort to prove the truth of a proposition can hardly be called good science. Beliefs should follow evidence, not the other way round. Hardy's selective treatment of reminiscences of spiritual experiences collected from 'highly intelligent and independently-minded people' is a good example of bad science driven by wishful thinking. He took this as evidence against the stereotype that religion attracts the intellectually weak; but what would he make of the well-established negative correlation between intelligence and religiosity? However one interprets these findings, Hardy's choice anecdotes from academics about their religion surely fail as rigorous scientific evidence.

To be sure, Hardy had some fascinating ideas about the psychological origins of religious experience. One wonders how he would respond to contemporary evolutionary theories of religion, in some ways so similar to his own. While his somewhat hand-wavy hypothesis that religious feelings lead to a sense of oneness that promotes prosocial behaviour remains unexamined, there is plenty of research now on the role of religion in cooperation and conflict, particularly in large societies. Furthermore, there is now active debate over the theological implications of the sort of science of religion that Hardy was certain would validate religious experience. His naive trust in the veracity

of people's spiritual experiences may not stand up to philosophical scrutiny, but he would be a welcome contributor to current discussions about the evidential value of religious experience and whether the 'naturalness' of religious belief lends it credibility.

David Hay's biography of his old colleague has not convinced me of any lasting value of Hardy's work in the study of religion, but I am at least charmed by this peculiar and peculiarly driven man. It is, however, Hardy's life as a biologist and university administrator that I found most compelling, rather than as a theorist of religion. Hay is at his best when narrating Hardy's work on the Continuous Plankton Recorder and his involvement with the University of Hull; the latter is a specially interesting view of the early life of an academic institution, eventually home to such luminaries as the poet Philip Larkin and the historian A. G. Dickens. It is no coincidence that these periods of Hardy's life are perhaps the least amenable to the kind of quasi-psychoanalytic over-interpretation to which Hay is elsewhere tempted.

**Jonathan Jong is Research Co-ordinator at the Institute of Cognitive and Evolutionary Anthropology, University of Oxford.**

**Robert J. Asher**  
***Evolution and Belief: Confessions of a Religious Paleontologist***

Cambridge: Cambridge University Press, 2013. xxiv + 300 pp. hb. £15.99. ISBN 978-0-521-19383-2

A straw poll might suggest that amongst those scientists who profess Christianity it is physicists (with geophysicists and chemists) that far outnumber biologists. Perhaps the statistic deserves further study. Nevertheless as an evolutionary biologist (and world authority on fossil worms) my own ex-

perience suggests that declaring the Christian faith provokes reactions that range from mild puzzlement (the eeyore response) to blank amazement (to paraphrase: behind every successful man stands an astonished woman) to more often a naked hostility (the territory of Joseph Goebbels). When Rob Asher, an American evolutionary biologist now based in Cambridge (and here I declare my interest inasmuch as he is a friend and colleague) opens his *Evolution and Belief* with the statement 'I believe in God; therefore, I am religious' (xiii) then he might make friends amongst readers of this journal, but in the wider world many more enemies. Nevertheless here he stands, so what does he have to say?

The subtitle might lead one to expect a Rousseauesque narrative of limpid prose, dark thoughts and flashes of inspiration, set in a mellow Arcadian twilight. Not quite. To be sure we have an engaging narrative and in places a sassy East Coast tang, but do we have a book? Well yes, but in a way perhaps three books. The most obvious is a highly articulate and accessible overview of evolution. The second circles around the proponents of creationism and intelligent design. The third, the most tentative and incompletely revealed, establishes Asher's credo. Clearly there are connections but do they provide real bridges as against disparate strands that ultimately fail as a synthesis?

Asher is primarily a vertebrate palaeontologist with distinguished work on mammalian evolution. It is less surprising then that his examples of what evolution is, how it works and what it might tell us, are very largely drawn from the vertebrates. So, for example, we are given lucid introductions to the history of mammals (and the central role of molecular phylogeny), as well as case studies such as the evolution of the elephants and whales. Such are a mainstay of undergraduate teaching and in this respect *Evolution and Belief* would be an excellent addition to any reading list. Asher is adept at both teasing out

the details and explaining how matters such as phylogenetic analysis actually work. Added vignettes of the life of a biologist, and I particularly relished his brisk description of a characteristically poisonous gathering of cladists, add to the enjoyment.

What of the other two 'books'? Asher is savvy with the technologies of communication and has spent far more time than I would choose listening to proponents of intelligent design (and of course their evolutionary counterparts). Like myself he recoils from the intellectual corruption and dishonesty of ID. No doubt he hopes that his book will be opened by nascent ID-ers and the penny will finally drop that irrespective of one's beliefs evolution happens and the evidence is overwhelming. Unfortunately I see no prospect of his succeeding. This is not for want of compelling examples, but because at no point can his arguments gain real traction. This is no criticism. Nobody else, neither Francis Collins nor Ken Miller, has succeeded in this venture. Creationists continue blithely to twist, distort and ignore the evidence.

Where this book might really work is to explore how the claims of Christianity might mesh with what evolution reveals. It depends, however, on what claims one cares to make. As I read Asher, however, I sense he is at some remove from the orthodoxy that might, for example, be expounded by G.K. Chesterton. That is, there are realities orthogonal to our mundane existence where the Incarnation, Transfiguration, and Resurrection are not fairy tales for the illiterate but rather a proclamation that this is how the world actually is. Asher, of course, is under no compulsion to sign up to any of these articles. The net result, however, is for him to draw short of appreciating just how startling the claims of Christianity actually are. Hence, I feel that we end up with a sense of evasiveness, if not a slide towards pantheism. One can appreciate how the world picture he presents sits

more easily with evolutionary theory. It freely admits that science cannot tell us everything and to think of gods is not in itself absurd. But Christian orthodoxy demands something quite different. If, however, creationists are inclined to cheer at the moment they had better think again. Evolution is the only game in town, but as it is the mechanism by which the Universe became self-aware so it is the key that opens the doors of transcendence. That is what matters.

**Simon Conway Morris is a professor of evolutionary palaeobiology in the University of Cambridge and a Fellow of St John's College.**

**Lydia Jaeger**

***What the Heavens Declare: Science in the Light of Creation***

Eugene, Oregon: Cascade Books (Wipf and Stock Publishers), 2012. 226 pp. pb. \$25.00. ISBN 978-1-61097-034-1

Lydia Jaeger is a philosopher and a theologian, with a background in theoretical physics. This rather rare and interesting combination has generated an impressively knowledgeable treatise on the Christian concept of creation, particularly as it pertains to the practice of science today and the notion of an intelligible order that scientists seek to describe. *What the Heavens Declare* should be celebrated for the breadth of its coverage and its impeccable clarity, though chided perhaps for its occasional caricatures and somewhat partisan temperament.

The book is comprised essentially of five chapters. The first explores the idea of creation as an entirely free act, resulting in an entirely contingent creation, made by a God that is entirely *other*, upon whom it depends for its continued existence. Significantly, Jaeger insists that this 'constitutive relationship' of creature and Creator is not something

that can be deduced, but must simply be 'accepted as a gift', in order to think correctly about the world.

The second chapter exults in the victory of modern philosophy (nominalism in particular) over the wisdom of the medievals. In Jaeger's view, the hierarchical vision of a world 'fraught with purpose' was properly abandoned in favour of a universal order 'imposed from outside' – by the inscrutable will of God, to begin with. 'Natural entities no longer have any intrinsic meaning, which refers to the supernatural Beyond, but are linked together by imposed laws: "In this new language of nature, syntax has triumphed over semantics"'. (Hurrah?)

Jaeger finds much at fault with Aquinas. In her assault on the principle of *analogia entis*, which repeats Barth's denunciation ('the invention of Anti-christ'), Jaeger characterises the medieval's metaphysic as a spectrum between *potentiality* and *actuality*, with God at one end, nothingness at the other, and everything else falling somewhere between. This, of course, is theologically objectionable, though far removed from how many have understood the principle. For Bentley Hart, its proper interpretation suggests 'quite the reverse, in fact: it is precisely *being* that is to be understood as analogous; and it is precisely any univocal concept of being – any notion that God and creatures alike are "beings" comprehended by "being as such" – that the... principle, denies'.<sup>1</sup> It is a pity that Jaeger has failed to interact more seriously with other interpretations.

---

1 Hart, D.B. 'The Destiny of Christian Metaphysics: reflections on the analogia entis', available freely online at [www.scribd.com](http://www.scribd.com) ; for Hart, 'the analogy presumes what no self-sufficient and perfectly systematic metaphysics could ever properly admit into its speculations: the radical contingency and non-necessity of the created order'.

Similarly, in her repudiation of hylemorphism,<sup>2</sup> the Thomistic understanding of *matter* is given short shrift for injecting a foreign principle into the Christian cosmos that resists the will of God and defies intelligibility. I cannot comment on her interpretations of Aquinas's text, but her exposition bears little resemblance to those of contemporary Thomists like Oderberg or Haldane, for example, for whom matter is the passive *receptacle* of form, and is properly introduced as part of the philosophical analysis of *change*. Jaeger does not appear to be aware of this context: she neither repudiates the idea of substantial change nor offers an alternative account of it.

The third chapter discusses theologically motivated expectations of the *kind* of order the created world should possess – an objective, intelligible, extrinsic order based on God's 'covenant faithfulness' to creation, rather than the inherent virtues of inviolable natures or regularities. Her account of 'covenant causality' admits miracles. Jaeger also asserts theological grounds for the rejection of certain kinds of reductionism. However, it is unclear to me how, having gutted nature of natures, her choreographed cosmos can ground some of the things that, as a Christian theist, she expects to find in it – like persistent human subjects with the capacity to think and act freely. Without a richer ontology, her discourse on 'Kuyperian spheres of creation' for understanding its different aspects sounds rather vague and unsatisfactory.

In the fourth chapter, Jaeger explores the 'relational nature' and 'situated character' of knowledge, nodding to contemporary discussions of the socio-culturally conditioned aspects of scientific discourse. Echoing Polanyi-inspired

---

2 An Aristotelian doctrine that decomposes metaphysical substance into a compound of matter and form.

convictions on the personal nature of knowledge, Jaeger argues that even science has a personal dimension. The 'scientific method' is, in fact, a reduction of a more complex process of knowledge, so it is unreasonable to expect everything to submit to scientific analysis, or even a reduction among the sciences. For the theist, and the Trinitarian in particular, the proper paradigm for knowledge lies in the 'empathetic relationship' between members of a community.

Finally, the fifth chapter explores various alternative accounts of the natural order, and contains some thoughtful critiques of scientism, pantheism and multiverse speculations. Jaeger is sadly dismissive of Swinburne's natural theology (it is 'spellbound by the myth of neutral reason') and Foster's case for a divine law-maker (it 'does not deserve to be called theistic'). Her strong misgivings about natural theology are especially in evidence here, and apparently rooted in the teaching of Cornelius Van Til. Unfortunately the presuppositional school persistently confuses the 'order of knowing' with the 'order of being': from the insistence that God is 'the foundation of everything that exists', it simply does not follow that we must *begin* with God's existence in order to explain anything. For example: in the order of being, the university town of St Andrews precedes any road sign that points to it; the one, presumably, would not be present without the other. In the order of knowing, however, the road signs may precede the town for a traveller trying to find his way to it. The theological twist behind the epistemic slip is more serious: in Calvin's nomenclature, it involves an unbiblical refusal to seek common ground, grounded in common grace, with non-Christians.

Still, there is much worth pondering in this book, and its persistent call to acknowledge our creatureliness is salutary. We can agree with Jaeger that nobody gets to look over God's shoulder. The question of what God has decided

to put in front of him, for all to see, remains open.

**William Simpson is a PhD student in Theoretical Physics at the University of St Andrews, Scotland.**

### **Nidhal Guessoum**

#### ***Islam's Quantum Question: Reconciling Muslim Tradition and Modern Science***

London: I.B. Taurus, 2012: 403 pp. pb.  
£16.99. ISBN 978-1-84885-518-2

Last August, Richard Dawkins elicited a bout of controversy by tweeting that Trinity College Cambridge had produced many more Nobel Laureates than the entire Muslim world. While no one could deny that his tweet was objectively correct, any serious point he might have been making was drowned out by the condemnation of his quasi-racist language. Dawkins's clumsiness is a shame because, as Nidhal Guessoum reveals in the book under review, science in the Muslim world really is in crisis.

Guessoum, a professor of Physics and Astronomy at the American University of Sharjah in the United Arab Emirates, likes to ask his students and colleagues about their scientific beliefs. He has found that, despite living just down the road from the multinational entrepot of Dubai, only about ten per cent of Muslims at the university accept that human beings evolved from other animals. In comparison, Gallup polls of Americans have consistently found that half of those surveyed accept human evolution. We tend to think of the United States as a haven for creationists, but it has nothing on the UAE.

If the problem for science among Muslims was confined to their rejecting Darwin, we would at least be confronting an opponent familiar from debates with Christian creationists. But, as Pro-

fessor Guessoum explains, science in the Islamic world faces further threats that have no counterpart in the West.

One threat is the assertion that science is an imperialist cultural artefact with no objective claim to truth. This leaves Muslims free to reject science as a colonial imposition or simply to ignore it. Professors in the United States, who have drunk deep of the draft of post-modernism, have attempted to build an 'Islamic' science better suited to their co-religionists. Guessoum is always impeccably polite, but it is clear he despairs of views like these. He knows perfectly well that science is universal. Its truths are the same everywhere. The idea of a specifically Islamic science makes as little sense as a Christian or atheist science. This is why Abdus Salam, who won the Nobel Prize for Physics in 1979 for his work on the weak nuclear force, is one of Guessoum's heroes. Salam saw himself as an ambassador for science to the developing world. It goes without saying that he found no conflict between his own Muslim devotion and his epochal work in nuclear physics.

Other threats are more insidious. The school of *I'jaz* teaches that the findings of modern science have been miraculously present in the Koran all along. Guessoum devotes one of the appendices of the book under review to refuting a 'calculation' of the speed of light from the Koran. He is clearly angered that *I'jaz* is so influential. Unfortunately, despite having much in common with the Bible Code craze of a few years back, *I'jaz* is fast becoming mainstream in Muslim countries. Guessoum found that eighty per cent of the Muslim faculty and students at his university believe that the Koran contains explicit statements now known to be scientific facts.

What, then, is the solution to Islam's quantum question?

There are some clues in Guessoum's book. One element is the need for any

discussion of science to be grounded in the Koran. The esteem in which this book is held among Muslims is inestimable. Since it is full of injunctions to observe and understand nature, there is strong backing for science to be found within its pages. It also implies a philosophy of the unity and predictability of nature which coheres well to the axioms of modern science.

Given the importance of its theme, it is unfortunate that *Islam's Quantum Question* is such a poorly organised and written book. Even the title is a misnomer – Guessoum tells us early on he's got hardly anything to say about quantum mechanics. The book was originally in French and Guessoum has translated it into English himself. The result is difficult to read and even harder to follow. Muslim thinkers come thick and fast, sometimes referred to by their surnames and sometimes by their given names. Keeping track of who is who and what they all think becomes a serious challenge. It's not even clear for whom the book is written. There is lots of material which looks as though it is aimed at an audience of non-Muslim scholars. But Guessoum also spends a great deal of space elucidating basic philosophy of science and presenting evidence that evolution is true.

Deep within this book there is an essential text fighting to get out. There is no doubting the relevance of the subject matter or the urgency of the issues it raises. Thus, despite its faults as a piece of writing, it is something that everyone interested in the interface between science and religion should read.

**James Hannam is the author of *God's Philosophers: How the Medieval World Laid the Foundations of Modern Science*.**

**Calum MacKellar & David Albert Jones (eds.)**

***Chimera's Children: Ethical, Philosophical and Religious Perspectives on Human-Nonhuman Experimentation***

London: Continuum International Publishing Group. 2012. 240pp. pb. £18.99. ISBN 978-1-4411-9886-0

The ability to move genes across species boundaries has opened the door for the creation in the research laboratory of many human-nonhuman combinations as eggs, embryos, tissues, organs and complete organisms by mixing DNA from humans and primates or higher mammals. These combinations present huge bioethical and legislative dilemmas that the authors seek to unravel. There is no precedent for these life forms. Potentially they offer better understanding and even treatment of some otherwise intractable human health conditions, but they also present society with the prospect of superhuman or subhuman creations which are unethical and repugnant to many people. The dilemma challenges scientists, legislators and society.

A central issue is human identity. What designates humanity? How does one recognise fellow human beings? How should society treat organisms with some human DNA? What proportion of the genome must derive from human DNA to create a human? Is the answer simply quantitative or also qualitative? Can life forms ranging from cells to a fully developed organism be adequately described only by DNA? This crucial question of human identity is thoroughly reviewed, though not finally answered, by the authors.

The book has three parts. Part 1 gives historical background and reviews existing legislation that proscribes or allows the creation of specific organisms with mixed DNA. Part 2 provides precise descriptions of the many alternative combinations of human-nonhuman life forms which exist or are in prospect.

Part 3 deals with cultural, world-view and ethical perspectives.

Human history is reviewed in part 1 with examples of chimeras in myths, legends and alleged sightings of human-nonhuman creatures including the Yeti. Stalin evidently attempted to produce superior warriors by inseminating chimpanzees with human sperm, as revealed recently from Soviet archives. Stalin failed; today laboratory technologies can succeed. A more benign recent example is the Hamster Test used to measure the motility of human sperm for many years by mixing sperm with golden hamster eggs, assessing them for penetration and subsequently destroying them before formation of a hybrid embryo. Some scientists have invoked this test to justify creation of hybrid embryos – a slippery slope.

The authors provide comprehensive listings of past and current legislation and patenting in many countries, which has been extensive in the UK, the EU and the USA. Legislators struggle with competing interest groups including: enthusiastic researchers, business lobbyists, lack of clear public opinion and vagueness among ethicists. Further, they cannot anticipate new developments. Precise legislative phrasing is sometimes picked apart by scientists looking for loopholes to permit new combinations.

Part 2 competently describes, analyses and classifies the existing and the emerging scientific techniques and organisms already produced or proposed using combinations of human-nonhuman DNA. To date, most of the products have been cells, embryos or tissues which, after research, are washed down the sink, although pigs with a few select human genes affecting the immune system have been produced in an attempt to avoid rejection of organs transplanted into humans. In reviewing all the actual and potential techniques and organisms the authors briefly describe human-nonhuman transgenics,

xenotransplants, gestation, embryos, cytoplasmic hybrids (cybrids), mosaics and chimeras. They speculate on the unknown consequences of allowing organisms of mixed DNA to grow to full term. For example, fertilising animal eggs with human sperm or fertilising human eggs with animal sperm and growing the embryo *in vitro* or in the uterus of another animal for limited or full development. Alternatively, animal embryos are injected with human tissue or DNA. The huge variety of potential options leaves one feeling that the scientific imagination (some would say creativity) has already passed beyond the Frankenstein fantasies of science fiction.

The authors draw particular attention to two techniques of major ethical concern. One is the transplant of human brain cells or DNA into the brain of a developing animal embryo and allowing it to proceed to full term. Will this result in a human consciously imprisoned, for example, in a full grown mouse body? The second area of concern is a mixture of human-nonhuman cells in the germ line, leading to the unpredictable consequences of gene transmission in successive generations.

Part 3 examines and discusses the variety of ethical and legislative areas that surround these new techniques and the organisms they create. These issues include human and animal rights, disposal of experimental embryos, abortion, human dignity, the UN charter of Human Rights, feminism, taboos, vegetarianism, the yuck factor in human society and others. The authors consider, somewhat briefly, the attitude of different religious faiths to this issue including Judaism, Islam, Hinduism, Buddhism and Christianity. They also recognise that humanists have positions on these issues but note the variety of postures held by different humanists.

The authors do not commit themselves to any specific ethical code, nor do

they imply that society should adopt a specific position. Nevertheless it is clear from their comments that they respect the cultural background and values derived from Christianity which provide the deep historic foundation of morals and ethical behaviour in Western society. The authors note that Christianity is unique in considering that humans are not only animals but are also made in the image God. For Christians this theology defines the way other humans and sentient animals should be treated and therefore raises boundaries against certain techniques to produce human-nonhuman life forms.

The authors conclude with three options for society to consider. First, allow certain kinds of human-nonhuman combinations to be created and developed to term; however, if they prove to cause more health problems or social inequalities, society may decide they should never have been created. Secondly, allow certain kinds of human-nonhuman combinations such as cells, embryos or tissues for research and to kill them before they develop to any advanced stage, although this may risk killing a living entity entitled to dignity. Thirdly, society can decide to ban certain kinds of human-nonhuman combinations because it is unable, as yet, to deal with the ethical and societal consequences which should be sufficient argument against their creation.

The book presents the biological facts accurately and dissects the issues sensitively but, recognising the unresolvable dilemma, the authors are unable to make a recommendation satisfying to all parties. The Christian, who sees each human being both in the image of animals and of God, will find their third option most acceptable as it is grounded in the Precautionary Principle: avoiding any abuse of one's neighbour and refusing to treat humans as disposable research resources in a utilitarian society that gives priority to the interests of the current generation over concern for those not yet born.

**John Hodges is an animal geneticist, retired from academia and the United Nations, who writes and speaks on the relationships of genetics, agriculture, ethics and Christianity.**

**Michael J. Dodds, O.P.**  
***Unlocking Divine Action.***  
***Contemporary Science & Thomas Aquinas.***

Washington, D.C.: The Catholic University of America Press, 2012. 311pp. hb. \$59.50. ISBN 978-0-8132-1989-9

The theme of this work is straightforward and its analysis starkly simple: most of the studies on the relation between science and religion, in considering God's action in the world, are beside the point. They fail to take account of the analogous nature of causality. The overall aim of the work is then to preserve the integrity of divine action and the proper causality of creatures, as one or other of these is compromised by the standard approaches. This is not the conclusion of an outsider to such studies, as the author has been a Professor since 1985 at Berkeley's Graduate Theological Union, a friend of Robert Russell of the Center for Theology and the Natural Sciences. Michael J. Dodds, O.P. belongs, however, to the Dominican School of Philosophy and Theology and is a specialist, appropriately, in the works of Thomas Aquinas. The style and content of the book bear the marks of years of teaching the philosophy and theology of the great Dominican and the many homely examples used to illustrate philosophical theorems appear to have originated in the undergraduate lecture hall. The early chapters on causality draw on Aristotle as well as on Aquinas and lay the foundation for the subsequent analysis of the treatment of causality in both modern (Newtonian) and contemporary science, in which the basic flaw is shown to be the understanding of causality as a univocal concept.

The constriction on the understanding of causality typical of modern science has resulted in limiting the ability to speak of God's action; God's action is thereby 'locked'. Both deism and the liberal theology of personal and existential encounter with God are consequences. Process theology, one of the responses to this situation, is analysed and shown to be another example of causality understood as a univocal concept. This remains the consistent criticism applied to the less constricted understanding of causality of contemporary science arising from the preference for indeterminism over the idea of hidden variables. Thus, the various theories of divine action associated with emergence, chaos theory and, in the biological sphere, design are all shown to have this same reduction of causality to a univocal concept. While Robert Russell's theory of Non Interventionist Objective Divine Action is presented sympathetically, subsequent analysis of any theory dependent on quantum events is shown in a subtle analysis to be problematic 'not insofar as its proponents do embrace the Copenhagen interpretation of quantum mechanics, but insofar as they do not' (144). Both Nancey Murphy and Robert Russell are made to bear the brunt of this criticism.

Having noted, however, that the less constricted understanding of causality found in contemporary science is reminiscent of some aspects of what is found in the philosophy of Aristotle and Aquinas, Chapter 5 can begin consideration of the 'unlocking' of divine action on this basis. The approach is that of philosophical theology, focusing on God's transcendence and immanence and touching incidentally on panentheism and the 'causal joint'. Aspects of contemporary science such as indeterminism and emergence are evocative of Thomistic and Aristotelian notions of chance and formal causality and so encourage consideration of God's causality at various levels such as final, formal and efficient causality.

A useful diagram (208) shows the relationship between God's transcendent causality and the secondary causality of creatures. Given the role of chance in empirical science, it is important to note that God's transcendent causality does not deprive chance of its contingent character, nor does chance subvert God's action.

The final chapter is devoted to three central issues in the theology of divine action: providence, prayer and miracles. One aspect of providence merits special attention, the relation of God's providential action to the reality of evil and suffering in creation. The author admits immediately that this raises a question that no theology can answer or solve.

Some theologians try to deal with the problem of evil by seeing God's action in the world as limited, either as a result of a free divine decision or as an inherent result of God's confrontation with the causality of creatures. John Polkinghorne exemplifies the position that God's limitation is self-chosen, that 'God has stood back, making metaphysical room for creaturely action'. But this the author sees as putting God once more at the level of a univocal cause, who must limit his causality to make room for the causality of creatures.

It is worth noting that Polkinghorne in *The Work of Love* (2001) had anticipated this critique of his position: 'What for its partisans is the strength of the notion of primary and secondary causalities is, for its critics, its greatest weakness. The strategy represents an extreme case of the "two languages" way of understanding how science and theology relate to each other. Their discourses are treated as independent, so that they talk past each other at different levels.' In defence of the book under review, however, it must be noted that it is a study in *philosophical* theology. If a common language is to be developed for the science and theology debate, then science in its turn could contribute

by adopting a more philosophical way of reasoning. This book represents then a considerable challenge to the scientific community.

The provision of a very large number of references to and quotations from the relevant philosophical works and from studies on the science and religion debate is a very helpful, if demanding, aspect of the book. It is a very comprehensive survey of the field but, more than that, a profound study throwing new light on all the major issues.

**Fintan Lyons OSB, of Glenstal Abbey, Ireland, is a theologian interested in the science and religion debate.**

### **John Bryant**

#### ***Beyond Human? Science and the Changing Face of Humanity***

Oxford: Lion Hudson, 2013. 253 pp. pb.  
£9.99. ISBN 9-780745-953960

John Bryant is a great explainer. Without using unnecessary jargon he is at his most impressive when, as a cell and molecular biologist, he is explaining some of the astonishing recent developments in biological and medical science and the ethical challenges that they raise. He does this pellucidly and with great enthusiasm. His focus, as the title of his new book suggests, is especially on those areas of science that might be seen to be changing, or about to change, human nature itself—whether through genetic manipulation, IVF, drugs or digital implants. He is particularly critical of utilitarian enthusiasts, such as the secular philosopher John Harris, and exponents and proponents of transhumanism, such as Nick Bostrom—regarding the first as too shallow and the second as too exaggerated. In contrast, his own ethical position has explicit roots in the Christian virtues of compassion and humility—virtues that shape almost every chapter in this very accessible book.

The weakest chapters are the first four; three of which attempt to provide a sort of social history of *homo sapiens* from the beginning until the present, and the fourth a summary of moral philosophy. This was probably much too ambitious and too far removed from his own academic expertise. Readers might wish simply to skip these chapters and begin instead on page 93, where they will be on much more solid ground. From this point onwards science readers may well learn from the careful and balanced way that he sets out the ethical arguments for and against a particular biological development (often refraining from reaching an ethical conclusion himself and leaving the reader to decide). Theologians and Christian ethicists, in turn, may learn that they need to listen carefully to scientists before rushing to judgment about, say, embryonic stem cell research or GM crops. It is interesting that, although he occasionally cites the Christian ethicist Stanley Hauerwas, he largely ignores his highly theological approach and favours instead the more scientifically informed approach of Celia Deane-Drummond.

He ends his book with a note of caution. He argues that the main problem is not with science (for which he remains an enthusiast) but with the application of science. As Ian Barbour used to remind us, almost every scientific development can be used for our benefit or misused at our cost. In addition John Bryant repeatedly raises issues of justice, pointing out that while some complex medical developments may benefit the rich they may never be made available to the poor. He envisages some point in the future when people will look back amazed that we did so little to prevent hunger and treatable diseases among the poor and, instead, put 'resources into research on thought transfer and thought-control technology, on dramatic extension of human lifespan, on artificial wombs and sexless reproduction! What were we thinking of?' (241).

**Robin Gill is Professor of Applied Theology at the University of Kent and editor of the journal *Theology*.**

**Robert Bolger**  
***Kneeling at the Altar of Science: The Mistaken Path of Contemporary Religious Scientism***

Eugene, Oregon: Pickwick Publications (Wipf and Stock Publishers), 2012.  
xiii+160 pp. pb. £16/\$20. ISBN 9781610973168

With this book, Robert Bolger earned his Ph.D. at Claremont Graduate University. While he was working on the dissertation on which the book is based, his mentor and dissertation advisor, the Wittgensteinian philosopher D.Z. Phillips, died unexpectedly. Yet this book still breathes D.Z. Phillips on every page, and after having read it, I think it serves as a tribute to Phillips, not by becoming a new Phillips, but by adopting and adapting Phillips's ideas in his own way. Moreover, Bolger brings Phillips's ideas into the field of science and religion.

Phillips himself never expressed a great interest in the field of science and religion. Bolger, on the other hand, provides a thorough Phillipsian critique of some mainstream approaches in science and religion which he refers to as 'religious scientism'. Religious scientism, in Bolger's view, is a subset of explanatory scientism which 'is the result of bringing the scientific methods of a particular discipline to bear on non-scientific disciplines in such a way that the result is some form of conceptual distortion' (25). In the case of science and religion, scientific methods are brought to bear upon a religious discourse resulting in conceptual confusion and the distortion of religious concepts. In Bolger's view, religious scientism is the result of theologians and religious scientists who try to imitate science so that theology appears scientific so that it can find a

place at the trough of academic acceptance.

Bolger illustrates religious scientism in science and religion by focusing on four major discussions in the area of science and religion. The first area of discussion is the role of models in science and religion. Central to the problems in this area is what Bolger calls the 'parity thesis' that argues that scientific models and models in religion function in similar ways. The result is conceptual confusion, for example, by treating God as an 'unobservable'. In contrast, Bolger argues that in religion, a model serves as a 'regulative picture,' 'a conceptual tool that helps give meaning to the believer's experiences and helps regulate their religious actions. ... Religious models are regulative and not representative. They are existential and not epistemological.' (56-57).

The second area of discussion is about intelligent design. Bolger describes ID through the work of William Dembski, and concludes that 'ID's problem is that it tries to covertly sneak a theological argument into the domain of the sciences while stripping it of the very thing that gives it sense' (77). However, Bolger does give room to design as a 'confession of faith', that is as a way that religious believers see and experience the world, but not as a quasi-scientific, explanatory hypothesis.

Thirdly, Bolger considers discussions about mental causation and divine action. By focusing on the work of Philip Clayton, Bolger shows that Clayton's position is confused due to the lack of conceptual clarity and sloppy definitions. Yet Bolger gives Clayton credit for his 'valuable theological contribution to understanding human freedom by placing it in the context of the divine/human relationship' (108). Bolger concludes that Clayton's work 'is best taken as an extended sermon rather than a piece of philosophy' (108).

Finally, Bolger considers the role of

panentheism in the work of Arthur Peacocke. He shows how Peacocke's work falls into the trap of conceptual confusion when taken as a kind of 'scientific theology'. But, again, Bolger does give panentheism credit as a 'religious interpretation onto the facts of science. No new facts, just new ways of seeing old facts' (125).

In the final chapter, Bolger considers 'the religious stance', by which he means 'an attitude taken towards the facts of existence whereby the believer interprets the facts of science as being imbued with grace and love' (130). Bolger identifies in this religious stance existential, expressive and propositional conditions, and argues that religion is something completely and incommensurably different from science.

It is a relatively short book, but enough to show the vices and virtues of the authors whose positions Bolger analyses and criticises. In contrast to D.Z. Phillips, who especially in his later works leaned towards writing in a rather essayistic style, Bolger's book is a textbook example of clear, analytical thinking and writing. Moreover, Bolger adopts a positive-constructive attitude towards the authors and topics he discusses. All in all, this is one of the better books in science and religion of late that tries to bring the discussions about the relation between science and religion forward. And its refreshing arguments will hopefully be discussed in the years to come.

**Taede A. Smedes is a philosopher of religion and theologian working in the Netherlands. His personal website can be found at: <http://tasmedes.nl>.**

**Davis A. Young**

***Good News for Science: Why scientific minds need God***

Oxford, MS: Malius Press, 2012. 349pp.  
pb. £8.95. ISBN 978-0-9820486-1-0

Reviewing a book from the imagined perspective of another's shoes has its difficulties. I find myself in that position. Young is writing for a specific reader, namely for scientists with an interest in Christian belief, but with a limited knowledge of it. Inside the front cover of Davis Young's book is a succinct statement of the author's passion and his purpose in writing this book. It is provided by Dr Randall D. Isaac who surmises 'As an expert Geologist, Davis Young has written many books that explain the science of rocks to Christians. In *Good News for Science*, he turns the tables and explains the Christian faith to scientists seeking to understand Christianity.'

One can sense the frustration of the author (presumably borne from his experience) both with scientists who make unfounded generalisations about theological matters from a place of ignorance and with Christians who adopt a defensive attitude towards science. Young gives short shrift to both. The most persuasive and engaging sections of the book are the opening chapters where Young interrogates the philosophical basis of materialism (chaps 2 & 3) and argues that the Christian world-view has provided the platform on which the scientific endeavour has been founded and prospers in a law governed universe (chaps 4 & 5). His whole-hearted rejection of Young Earth Creationism (18) was also refreshing, and well argued later in the book on the basis that it is both poor biblical interpretation (misunderstanding literary style and theological purpose) as well as poor science in its denial of the undeniable. In this regard Young's position provides a platform for conversation in that it creates space for rational discussion in a middle ground, having removed the unhelpful caricatures in both fields.

The second half of the book I found less helpful, both in its style and range of material. The style of the writing is in my opinion unnecessarily conversational, being deliberately directed toward a sceptical scientist, but having the unintended consequence of distancing the book from other readers. While Young's appeal to scientists to adopt their own good practice in reading source documents to assess evidence is commendable, it felt somewhat patronising.

Its range also becomes too broad as Young attempts to summarise vast areas of biblical knowledge and systematic theology. While the book is written for those who may not have significant knowledge of Christianity, I found it infuriatingly over-familiar in its portrayal of the Christian faith. It is not that Young says anything that would be considered outside of mainstream Christian thought, but in attempting to provide an argument for everything from the reliability of the biblical text (chap. 9), to humanity's plight (chap. 6), through to the salvation story of Old and New Testament (chaps 13 & 14), to the evidence for Christ's resurrection (chap. 15), it seemed over-ambitious and made the book read like an extended tract. I may be sounding a little harsh; which is ironic in that I would agree with virtually everything that Young has written! Perhaps therein lies the problem. Young is not writing with me in mind. He is preaching to the converted in my case, but I came away a little disappointed in not being challenged to think differently.

I would recommend this book to those who are specifically within the target audience. If you do not fall within that readership, I think you may find this book a little frustrating for yourself, though not a bad tool to have in the toolkit.

**Peter Lynch is a Baptist Minister and formerly a Professional Geologist (MSc; MA, MPhil)**

**Eric William Middleton**  
*Dimensions of the Spirit: Science and the Work of the Holy Spirit*  
Carlisle: Piquant Editions, 2012. ix+112 pp. pb. \$8.99. ISBN-13: 9781903689899

The author was a science teacher and then Principal of a sixth form college in North Yorkshire, before becoming a chaplain and counsellor. The main emphasis of this book is to relate extraordinary stories of people being healed following counselling and prayer with the author. The stories are remarkable and moving, with healings in the areas of emotional suffering, spiritual problems and physical disease. The power and forgiveness of Jesus and the reality of living 'in the Spirit' are emphasised. The book also contains some autobiography about the author's own spiritual journey.

But there is a second facet to the book, because the stories of healing are interspersed with reflections on science, especially areas of science – such as M-theory – where many dimensions are invoked. That was the theme of the author's previous book, *The New Flatlanders* (2002; reviewed in S&CB 17 (1), pp102-103, April 2005), which draws on the concept of additional dimensions to provide an analogy for how a spiritual realm could interact with a physical one. If I understand them rightly, these scientific sections of the book are not intended as explanations of how the Holy Spirit acts, but rather as a means of opening the imagination as to how this might be possible.

This book is rare if not unique in its bridge-building across the deep gap between science and spirituality, and between the theoretical and the experiential. Also, the author's example shows that scientifically minded people can also be open to the Holy Spirit. For these reasons the book is particularly relevant to readers of *Science and Christian Belief*, or to any scientist who is open to the spiritual dimension. But non-scientists can also read it with profit.

**Peter G.H. Clarke** was an associate professor (neuroscience and anatomy) at the University of Lausanne, Switzerland.

**Gerald Rau**  
*Mapping the Origins Debate: Six Models of the Beginning of Everything*  
Nottingham: Inter-Varsity Press, 2013. 237 pp. pb. \$12.99. ISBN 9781844746163

This book is a systematic, clear, and fairly objective analysis of philosophical and scientific aspects of origins, written for a general audience. The origins of the universe, life, species, and humans are each considered in turn, without excessive scientific detail, from six different perspectives. Rau names the six models naturalistic evolution (NE), non-teleological evolution (NTE), planned evolution (PE), directed evolution (DE), old-earth creation (OEC), and young-earth creation (YEC), and they are defined by 'the degree of interaction between the supernatural and natural worlds' (38). These six models represent atheistic/agnostic, deistic, and four monotheistic perspectives, respectively, and the book describes the philosophical and theological assumptions of each group (while admitting that each is heterogeneous). Rau helpfully offers a glossary (209-222) and fairly extensive tables in the appendices (193-208) that clarify the distinctions among the six models and list representative authors and organisations. Somewhat amusingly, this includes listing The BioLogos Foundation in the PE category and the current president of BioLogos, Deborah Haarsma, in the DE category (based on the book *Origins* she co-authored with husband Loren Haarsma). Intelligent Design is considered a big-tent perspective that spans several categories (primarily DE, OEC, and YEC).

Some readers may be surprised at the distinction between the PE and

DE models, which elsewhere might be lumped together as theistic evolution, teleological evolution, or evolutionary creation. For Rau, the difference between PE and DE resides in their definitions of science, particularly whether we expect God to intervene in natural events. In PE, 'God has the capacity to intervene in nature, but does not need to do so' (45). In DE, 'God can and sometimes does intervene in natural events' (47). The nature of this intervention is not very clearly described in the book, which allows Rau sometimes to slip into conflating PE with NTE and revealing his own bias towards the DE model. I suspect that Rau included the DE model in large part to provide a clear option for Christians to consider evolutionary claims while retaining a robustly conservative theology, as compared to the NTE (liberal) and PE (moderate) perspectives. For this, I commend him.

In addition to explaining each model, Rau cites contributions of each perspective (yes, even NE and YEC; 155-162) as well as what each still needs to address (162-170). Obviously, the origin of life is the least understood of the four origins he tackles, and it is not certain how much we will ever know about it; his focus in that section is on the generation of information.

Rau does cite authors from a variety of perspectives, though a slightly fuller or annotated bibliography would have been nice. Given Rau's personal position and philosophical approach, I was surprised that Alvin Plantinga's *Where the Conflict Really Lies* was not listed. Mention of selected conversation-promoting films relating to origins (*Test of Faith*, *From the Dust*, *Origins Today*, etc.) would have been especially helpful to younger readers.

Overall, Rau succeeds in his goal to 'to map out the various positions in a way that will promote mutual understanding and thus honest communication about the underlying issues with less animosity' (190). It is a concise and

helpful guide for both novice and experienced participants in the conversation around origins. I hope it does indeed encourage reflection, dialogue, and respect.

**David Vosburg is an Associate Professor of Chemistry at Harvey Mudd College in Claremont, California, currently on sabbatical at the University of Cambridge (2013-14).**

**David Bentley Hart**  
***The Doors of the Sea – Where Was God in the Tsunami?***

Wm. B. Eerdmans Publishing Co., 2005.  
109pp. pb. £7.99. ISBN 978-0-8028-6686-8

There are two questions a theodicy must answer. What am I trying to achieve? And why am I doing it? The Eastern Orthodox theologian David Bentley Hart wrote *The Doors of the Sea* as a result of conversations which stemmed from an article in the Wall Street Journal in the aftermath of the Boxing Day tsunami in 2004. For Hart, the aim was to respond to this natural disaster and to what others were saying about it.

The book's principal problem – and one of the major stumbling blocks for theodicy in general – is apparent from the outset: how *do* you respond with the necessary sensitivity? As Hart himself admits, 'we should probably have all remained silent for a while,' (6) and, 'words we would not utter to ease another's grief we ought not to speak to satisfy our own sense of piety,' (99) – or, indeed, our desire for some sort of intellectual satisfaction. Yet, after lambasting opportunistic journalists pushing atheistic metaphysics, and whilst acknowledging the potential for hypocrisy, he leaps to the paradoxical conclusion that he should plough on regardless. Unfortunately, though, his flowery prose takes such artistic liberties with the anatomy of a subduction

zone that his introductory passages feel inappropriately cavalier. Nonetheless, for the remainder of his two, chunky, but eminently readable, chapters he picks some of the classic texts off the shelves – Voltaire, Dostoyevsky, Aquinas – and proceeds to oscillate, largely successfully, between academic theology and popular polemic.

Though the project is arguably flawed and the style meandering, there are some insightful nuggets here. In particular, Hart gives a fabulous exposition of Ivan Karamazov's argument in Dostoyevsky's *The Brothers Karamazov*. Ivan relates to his brother Alyosha a series of chilling stories about the torture and murder of small children, which Dostoyevsky himself had collected from the newspapers, before coming to his famous conclusion that he would rather return his ticket – God's creation 'is not worth the tears of that one tortured child' (41).

As Hart puts it, 'How, with anything like moral integrity, can [we] defer [our] outrage to some promised future where some other justice will be worked, in some radically different reality than the present?' (40) He rightly emphasises Dostoyevsky's sense that a morally intelligible account of the history of suffering and death would be truly terrifying and therefore neatly undermines any argument which makes evil instrumental to God's purpose. Yet behind Ivan's argument, Hart suggests, lies the Christian intuition that it is impossible for a God of love to will evil – as Christians we are *required* to loathe evil. He continues: 'in disabusing believers of facile certitude in the justness of all things, it forces them back toward the more complicated, "subversive", and magnificent theology of the gospel' (44). This 'subversive' theology is that God's attitude is to be discerned in Christ: 'sin he forgives, suffering he heals, evil he casts out, and death he conquers' (87). Christ never tried to rationalise suffering; he got on with helping those in need.

That would be a fitting thought to end on, but Hart somewhat confusingly opts to continue. He draws a distinction between divine will and divine permission: the divine will operates at the level of Aquinas's primary causality, whilst the divine permission allows the free creation to operate at the level of secondary causes (83). As Hart puts it, 'God may permit evil to have a history of its own so as not to despoil creatures of their destiny of free union with him in love' (87). However, just because God is no longer the author of evil, God is still complicit in turning a blind eye; 'free union' is considered to be *worth* the suffering. But it was precisely this position that Ivan Karamazov was in and he concluded that it isn't.

Nevertheless, *The Doors of the Sea* comes thoroughly recommended. Despite its apparently unachievable aim and somewhat unsatisfactory conclusion, Hart's little book is considerably more thought-provoking than many other writings on this topic.

**Tim Middleton is a PhD student in the Department of Earth Sciences at the University of Oxford and an Associate of the Faraday Institute of Science and Religion.**

**Nick Hawkes**

***Evidence of God: A Scientific Case for God***

Eugene, Oregon: Wipf & Stock, 2012. 186 pp. £17.00. ISBN-13 978 1 62032 144 7

This is a very accessible and readable account of modern science and its implications for Christian theology. The author, Nick Hawkes, a Church Pastor from Adelaide, South Australia, was once sacked as a Talkback Host on a Christian Radio Station for suggesting that one could be a Christian without believing in creation in six days (xii)! He brings to the task a background in science, having previously worked for

twelve years as a research scientist.

This book results from the analysis of, and response to, a survey of 390 tertiary educated people of whom 311 were judged not to be church attenders (xv). The four main issues thrown up by the survey were:

1. a perception that Christianity has generally been anti-science throughout history;
2. that Christianity is not credible in the light of scientific discoveries;
3. whether or not the order we see in creation points to the existence of God;
4. whether or not chaos and suffering in the universe is evidence that a loving God does not exist.

In Chapter 2, *Science Allows Faith*, Hawkes provides a well-informed historical overview of the origins of modern science and affirms a healthy relationship between Christianity and science. Chapter 3, *Cosmic Order as Evidence for God*, provides an apologetic for the reasonableness of faith in the light of the fine-tuning of the universe. The title of the book, and also the title of Chapter 3, might imply that natural theology on its own is a sure path to God. However, the author makes clear the need to explore the implications of modern science within a Christian Christology. Chapter 4, *Cosmic Disorder as Evidence against God*, identifies issues that cause many to reject God in the light of the role played by chance and disorder in our modern understanding of how the world works. In Chapter 5, *Theology Completes Science*, the author argues persuasively that science should inform theology and that theology should inform science.

Turning to the difficult subject of theodicy, the author cites the 1755 Lisbon earthquake, remarking, 'Could not God have organised it so that these things did not happen?' (106) Further he suggests that creation involves flawed mechanisms (116), implying that God

could (or should) have done a better job.

In saying 'It is quite possible for death to allow the growing complexity of life but for this mechanism to be regretted as something imperfect, a consequence of sin.' (103), the author seems to abandon the principle of the mutual dependence of science and theology he had so strongly advocated earlier. This is problematic for it implies that the creation, even before conscious (human) beings appeared, was not proceeding according to God's plan. Such a view ignores the evidence from the fossil record that death and predation existed long before we were on the scene.

Late in Chapter 5 Hawkes rejects ideas such as Polkinghorne's free process defence or open theism, and opts for what he considers to be a more orthodox view of Adam's fall. Thus natural evil is seen as God's judgment on sinful mankind. But much of the natural evil to which he refers was already happening before we appeared (121-122). Finally, the most problematic assertion is found on page 133 where the author implies that human sin applies retrospectively to account for the fallenness of creation!

In spite of what appear to me to be major unresolved issues to do with the author's treatment of theodicy, I believe this monograph can be read with profit by both Christians and non-Christians. It is ever more urgent these days for misconceptions both inside and outside the Church to be tackled in an informed manner and it is good to find a pastor who is not only widely-read, but able to speak into the Science-Theology dialogue. One can only wish that more clergy were as well-equipped to engage with the issues!

The references are comprehensive and the bibliography a useful resource. The book would have been much improved with an index and, at least in some places, more careful proof-reading.

**John Pilbrow is Emeritus Professor of**

**Physics, Monash University and a former President of ISCAST (Institute for the Study of Christianity in an Age of Science & Technology, Australia).**

**David Wilkinson**

***Science, Religion and the Search for Extraterrestrial Intelligence***

Oxford: Oxford University Press, 2013.  
227 pp. hb. £25.00. ISBN 978-0-19-968020-7

In the city church where this reviewer served as rector before retirement, we had a programme of lunch-time lectures. I took it upon myself to give one of those lectures each year and a few years ago tackled the subject of the search for extraterrestrial intelligence. I am glad that this book was *not* available to me while I was preparing, simply because reading it in advance would have left me feeling overwhelmed at the vast range of material from which I would have had to choose my material.

That said, this has been a marvellous book to read and to review, written as it is by someone who is well-known for his wide-ranging expertise in the fields of biblical theology and astrophysics alike, and with a fruitful output of works ranging from biblical exposition to a Christian critique of modern science fiction.

After two opening chapters setting the scene for an exploration of the interface between religion and the search for extraterrestrial intelligence, five further chapters deal with a range of scientific issues. So the reader is taken on a journey through issues to do with the size of the universe and the problems of communication between civilisations, finding planets whose physical conditions are conducive to life and, more specifically, 'life as we know it', whether or not evolution on another planet would lead to life forms with similarities to the human race, strate-

gies for making intelligible contact, and Fermi's Paradox ('If they existed they would be here').

Three further chapters explore the interface with theological understandings of creation and redemption (chaps 9 & 10). The chapter on creation challenges us, in the light of what we know of the universe to richer understandings of God as an extravagant creator and what it means to possess the divine image. The chapter on redemption is probably the most likely to exercise the minds of some readers. Here we are introduced to issues such as incarnations of God the Son in other worlds at other times and what the 'uniqueness' of Jesus would then mean, whether or not sin is a valid category in discussions of extraterrestrial intelligence, and whether the cross is truly 'once for all'. A final chapter brings us back to slightly firmer ground in its discussion of how Christian theology can be enriched by the search for extraterrestrial intelligence (SETI) and vice versa.

For this reviewer a number of features were immediately apparent. The first is the clear demonstration that the issue of life elsewhere in the universe has exercised minds for millennia (thus see the references listed on 16ff.). So in chapter 2 the reader is introduced to speculations about life on other worlds that go back to the Greek philosophers such as Plato and Epicurus (17) and Christian theologians such as Origen and Thomas Aquinas (who was more sceptical) (18). Even in the fifteenth century Guillaume de Vaurouillon grappled with the question of Christ's death on this earth as redeeming inhabitants of another world (19). Elsewhere Wilkinson speculates as to why Catholic thinkers have addressed ETI more often than those of other Christian traditions, and suggests that it was related to whether salvation was available outside the church (156).

The second is that, as already noted, the range of theological issues covered

includes not only the issue of Christ's death: Was it only for human beings? What would God need to do to redeem sinful beings (if, indeed, they *had* sinned) on other worlds (chap. 10)? Chapter 9 revisits the biblical view of creation and proposes that life on other worlds should be seen as an expression of the extravagance of God's creative activity (135ff.). Here he shows how advances in scientific inquiry necessarily challenge time-honoured perspectives on central Christian doctrines.

Thirdly, given the huge range of issues dealt with in the space of a mere 180 pages of text some readers may be left somewhat breathless and might wish for more detailed treatments of many of them. That is by no means a

bad thing. Against this, one can reply that Wilkinson writes in an accessible style even when he is discussing quite complicated scientific subjects. It gives the committed reader plenty to think about and, with the help of that extensive bibliography, in which I counted 571 references, ranging from Augustine to Lee Smolin, Simon Conway Morris to Erick von Däniken ('Chariots of the Gods') and C.S. Lewis to Douglas Adams, an invitation to delve further him(her)self with potentially fruitful results.

**Ron Elsdon was before retirement Rector of St. Bartholomew's Church Belfast, and is a former Lecturer in Geology at University College Dublin.**