

Reviews

Robert John Russell
*Time in Eternity: Pannenberg,
 Physics, and Eschatology in
 Creative Mutual Interaction*

Notre Dame: Notre Dame University Press, 2012. xiii + 440 pp. pb. \$49.00. ISBN 978-0-268-04059-8.

Those who have been working for any length of time at the intersection where theology and science meet will recognise Robert John Russell as having laboured at this juncture for the last thirty plus years. During this time this founder and director of the Center for Theology and the Natural Sciences at the Graduate Theological Union in Berkeley, California, has been at the heart of the ongoing dialogue with theologians and scientists of the Vatican Observatory that has produced a half dozen or more edited exploratory volumes, among other of his works. *Time in Eternity* represents one major culminating trajectory of these efforts. Among its many achievements, I will mention three.

First, Russell has repeatedly emphasised that any dialogue between theology and science should be among equals rather than one side capitulating to the other. However, this is easier said than done. If fundamentalists therefore have had to operate largely outside the margins of the mainstream scientific community, those on the other side usually end up presuming some kind of naturalistic framework through which to accommodate their theological commitments. Russell's bold move here is to begin with a fundamental theological claim within the Christian tradition, the bodily resurrection of Jesus, and then to engage with the dialogue with science. Herein, then, the German theologian Wolfhart Pannenberg (who passed away at the age of 86 in 2014, two years after the publication of this volume) becomes Russell's primary

theological interlocutor for the task at hand. In brief, Russell adapts Pannenberg's trinitarian metaphysics – particularly his notions of divine co-presence with creatures, of the prolepsis of the divine future in the resurrection of Jesus, and of the divine omnipresence – according to the latest developments in physics and cosmology, and in light of Georg Cantor's mathematics of infinity, in order to tackle fundamental questions regarding Christian (and human) long-term hope given the present cosmological predictions regarding the ultimate freeze-or-fry fate of the universe. In brief (and this is grossly simplistic given the complexity of the book), Russell argues that creation's redemption relies on the future transformation of the world, which possibilities are intimated in Jesus's resurrection, even as the latter is not merely fideistically embraced but can be illuminated by what Russell calls a 'relativistically correct eschatology', an understanding of the experience of temporality, particularly the nature of the future, that appreciates that the future is related to the past and vice-versa. The point is that while such an eschatological approach to the issues not only acknowledges the discontinuity between the new heavens and new earth and the present one (80) and in that sense rejects the presumption of nomological universality across these epochs of space-time (77), it nevertheless does not minimise the continuities that will persist and hence also presses into the 'formal conditions for [creation's] transformability' (79) in dialogue with science.

This leads to the second major achievement of *Time in Eternity*: an in-depth reconsideration, in part I of the book, of the perennial mysteries of time and eternity inspired by the Pannenbergian dialogue with special and general relativity theory and a proposal for

understanding both the past-present-future distinctions in our experience of temporality and how these will be preserved but not separated (or fragmented) in God's durational eternity. More precisely, there is a sense in which the two major theories of time – that of the so-called 'block universe' of special relativity in which past, present and future are observer-related, and that of the second law of thermodynamics which suggests that time 'flows' in one direction – are correct, albeit in different ways when theologically refracted through the trinitarian economy of revelation, even as their application not only clarifies the relationship of creaturely time to divine eternity but also explicates the historical resurrection as an eschatological event that anticipates how the past and future are held together in the eternality of divine duration.

The third accomplishment herein is a substantive demonstration of the fruitfulness of the model for science-theology interface initially elaborated in Russell's *Cosmology from Alpha to Omega: The Creative Mutual Interaction of Theology and Science* (Fortress Press, 2008), and signalled again in the subtitle of the present book. The 'mutuality' unfolds precisely through the bidirectional flow between the two fields. So if we have already seen how the physics of relativity has enabled extension of (Pannenbergian) theological claims, part two of the book shows how theology can potentially prompt new paths for scientific inquiry as promised by the interactive model. In particular, theological perspectives can suggest experimental research, in this case, for instance, regarding duration in physics (from relativity theories understood in theological perspective), non-separability in time (from notions of eschatological divine eternity providing the frame for the experience of temporality), and for the possibility of 'retroactive causality' in electromagnetism and quantum mechanics, among other areas (from

Pannenberg's notion of prolepsis understood in part relativistically). Obviously, if and how such research programmes are implemented will depend on whether such theologically informed hypotheses are embraced by physicists and cosmologists, but the point is that the plausibility of 'closing the loop' so that there is genuine two-way movement between theology and science is here coherently manifest.

Needless to say, the above only barely scratches the surface of what thirty years of concerted work has produced. The discussion is dense throughout and not for the faint of heart. Only those thoroughly trained in theology, mathematics and physics will be able to engage with the details in these pages. For those more generally interested, the almost 100-page introduction to the book – two-thirds of which are 'appendices'! – will provide an accessible orientation. The book deserves a wide reading from those working in theology and science from the varied perspectives found herein as its merits can be discerned only through the kind of long-term multidisciplinary conversation that generated the argument to begin with.

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Gerald O'Collins and Mary Ann Meyers, (eds.)

Light from Light: Scientists and theologians in dialogue

Grand Rapids, MI: Eerdmans, 2012. 256 pp. pb. \$22.99. ISBN 0-802-86667-0

Light from Light brings together papers from two Templeton-sponsored symposia, which gathered theologians and scientists on the subject of light. As we might expect, there is certainly evidence of theologians gaining a new appreciation of the nature of physical reality, but little corresponding sense of scientists having benefited in a directly equivalent way – for the practice of their discipline – from the theologians. However, we might not expect there to be: theology is the more omnivorous discipline of the two. If its remit is to think about God and everything as it relates to God, then theology's scope is, in some important sense, 'everything', while the natural sciences have a far more limited remit.

This collection offers really quite an important case study as to what 'science and religion' might or might not be about, and how it does or does not work well. Many of the theologians clearly relished the opportunity to hear new things about physics, but even the intense interaction represented here seems unlikely much to change what they think, write or teach. The physics is expertly presented, but once the physicists start extrapolating into theological or philosophical territory, the writing becomes a good deal wispier. The essay by Markus Aspelmeyer and Anton Zeilinger, for example, on the entanglement of quantum states, is no doubt rock solid as science, but the philosophical exposition (here cast in terms of 'realism' and its supposed overthrow) explores its terms in such a cursory fashion (and what *realism* means here is exactly what is at stake) that it hardly gets off the ground.

Andrew Steane points to light as nature's fundamental glue (described by

Quantum Electrodynamics), but what a theologian might make of that – if anything – is left for another day. On the other hand, his suggestion that certain approaches to quantum entanglement (again) might point to God as the 'environment' in relation to which the universe is worked out, stands as rather a bold claim: most of the doctrine of creation and not a little of the doctrine of God is seen to be latent in a particular response to a quantum mechanical quandary, and all that in three pages.

More important than any specific example of theology being enlarged by physics is the discussion of methodology, and even fundamental ontology. The question, in particular, that runs throughout the book is whether light is deployed in theology by way of *metaphor* or of *analogy*. John Polkinghorne's essay illustrates this beautifully. Those terms might mean a good number of different things, so it is striking that they are deployed, more or less throughout the book, according to the definitions given by Thomas Aquinas (for instance in *Summa Theologiae* I.13). On this basis, light is deployed *metaphorically* if it conveniently just so happens to serve as a good illustration for something about God, while it is used *by analogy* (or 'analogically') if the relation is intrinsic: if light bears witness to something about God because light in its very nature bears something of his likeness. The emphasis across the theological contributions is on analogy: that *God* is the True Light, and creaturely examples of light are finite representations of something of what that means.

The chapters of theological discussion are really very valuable, whether they summarise the physical speculations of Robert Grosseteste and Dante Alighieri, or the light-derived images used by biblical and patristic writers (principally Greeks, but Augustine has a chapter of his own). Kathryn Tanner's essay on the function of light in doctrinal arguments is particularly worthwhile, as is one by Kallistos Ware. Although his is

called 'Light and Darkness in the Mystical Tradition of the Greek Fathers', it is far more compendious, doing sterling service in its survey of the scriptures. It takes in some Western sources, and the significance of images of darkness. Ware's taxonomies of how these images are deployed are masterly.

From the metaphor-versus-analogy question another question naturally follows, as Polkinghorne recognises. If light is used merely metaphorically – as a convenient illustration – then little rests on whether biblical and patristic writers understood light 'correctly'. Our task would simply be to make sure that we understood what they meant by light. However, if light appears in theology because of an analogical relation to God – because it truly bears some representation of the One who made all things – then it matters rather more whether theologians really understood light's features, since their analogies would be drawing a parallel not between God and the way they understand the world to be, but between God and the way the world *is*.

At least, strictly speaking, so we might suppose. In fact, I suspect that one can be committed to an analogical vision overall, but be willing to see most theological invocations of light as illustrations, based on the best understanding at the time. The proposal that the Persons of the Trinity interleave without competition, like light interleaves with light, might stand even if we now know that light is not always quite like that: if light is intense enough, optics can be 'non-linear'.

In this metaphor-analogy debate, the contribution by George Hunsinger is particularly important, as the outlier. Following Karl Barth impeccably here, he is hostile to much of what attracts other writers to analogy. Hunsinger frames his discussion in terms of a passage from Irenaeus of Lyons, in which God is described as 'wholly light... most aptly called 'light', but... nothing

like the light we know' (*Against Heresies*, II.13.3-4). His 'Barthian' position stresses the third point at the expense of the first two. This is illustrated as clearly in what it assumes about its opponents as by what it says explicitly about itself, and Hunsinger often misrepresents the analogical approach. I will stick to two examples (beyond his simple misreading of *Summa Theologiae* I.13.5). Firstly, he assumes that to say that the world bears, in its own limited way, a likeness to God implies that God is like the world. This is precisely what metaphysics grounded on analogy has been at pains to deny, at least since Dionysius the Areopagite, and arguably since Plato. Even at a mundane level, I would say that my portrait is like me, but not that I am like my portrait.

Second, Hunsinger claims that to say that the world 'cries silently' for an explanation beyond itself (as Thomas Torrance suggested – Hunsinger's interlocutor here) must necessarily amount to an exercise in crude natural theology: the construction of an idol by extrapolation from the world. I can see no reason why that would necessarily follow. Indeed, the tradition that Hunsinger criticises has stressed that this 'silent cry' proclaims *that* God is, not *what* God is, and in as much as it bears upon that 'what', it does so 'negatively': the creator of all things *cannot* be another thing; the cause of contingent beings *cannot* be contingent, and so on. Hunsinger, it seems, does not want to say that the world 'is unable to give any final account of itself' (these are Torrance's words, and to deny them seems to me the essence of secularity), because Hunsinger takes that to imply a god who lacks 'self-sufficiency... [or] essential difference from the world'. And yet, 'self-sufficiency' and 'difference' are exactly what this 'cry' has been said to proclaim about God, and indeed little else.

The value of meetings such as the ones that led to this book is as much in what they throw up unexpectedly as

in what they would obviously want to cover. The individual essays here often have great merit in the second way but, taken together, a broader, probably unexpected, question emerges, encompassing being, language and their relation, and that is just as welcome.

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Allan Chapman

Slaying the Dragons: Destroying Myths in the History of Science and Faith

Oxford: Lion Publishing 2013. 256pp. pb. \$9.99. ISBN 978 0 7259 5583 4. e-ISBN 978 0 7259 5583 4

Allan Chapman is a deeply devout Anglican Christian, a flamboyant and plain speaking 'Lancashire lad', and an Oxford historian of science with vast learning and erudition. All these aspects come out in this book!

The style is most definitely populist rather than 'academic'. There are no footnotes to primary or secondary sources, and we have to take his statements on trust. The language is polite but pithy – he does not hesitate to call something a rubbishy myth rather than a rather misinformed belief. Some may dislike this (I had one student recently proclaim that a book on the history of astronomy was not 'academic' because it had exclamation marks!!) but in many of the issues Chapman deals with it is clearly justified.

The book says it is 'destroying myths in the history of science and faith'. A reader might have expected, therefore, to find just a historical analysis of some of the popular myths about a belief in a flat earth, the 'martyrdom' of Bruno and

Galileo and the radicalness and consequent 'persecution' of Darwin. The book does deal with these myths, but actually it goes much deeper than this. It is an examination of the whole development of atheism and secularism from ancient times into the so called 'new atheists' like Dawkins and Hitchens who are aggressively combative in their approach and often factually inaccurate in what they assert. Movements like Humean and Hobbesian materialist empiricism, positivism, German idealism, Marxism and others, are analysed, together with the so called 'Enlightenment'. Chapman also shows that seldom if ever does any new idea come along without antecedents.

The target audience is not explicitly stated. A person with some historical/philosophical background would find this book both informative and (if they like the style) refreshingly plain speaking. I suspect that a person with no philosophical background at all could struggle with some of it, and might find that the initial chapters launch them into an unfamiliar world. My own view is that it is worth such a person persevering, because all educated Christians should be aware of some of the serious myths and misinformation which are commonly peddled, and the inconsistent viewpoint from which militant atheists actively push them.

The actual 'myths' are at different levels. Some are very commonly met in general society from people who are not particularly anti-religious but simply take it as given that in the days of Columbus church people thought the world was flat, that Galileo was persecuted because he proved the earth moved, or that Darwin's *Origin of Species* hit a biblically literalistic Victorian world like a traumatic bombshell. These simple myths *are* exploded, and if the Galileo one is dealt with in less depth than one would have liked then there are other books (like Chapman's own *Stargazers: Copernicus, Galileo, the Telescope and the Church*) that

do this. A second level of myth comes from those slightly wider read, like the supposed trouncing of the ignoramus Sam Wilberforce by Huxley in the 1860 BAAS debate, or the ‘martyrdom’ for science of Giordano Bruno. A third level concerns some of the myths which are implicit in an underlying viewpoint pushed by militant atheists which sees science and progress as fundamentally opposed to religion and blames religion for all the ills in the world whilst ignoring the horrors inflicted by Robespierre, Stalin, Mao and others. Chapman not only exposes all these levels of myth, but also shows how they came to be out there.

Inevitably there are some points that could be criticised. A short section argues that science does not deal with causes only effects, which makes sense only if one realises that he means ultimate metaphysical causes rather than physical ones. He states that a ‘significant number of late nineteenth century Dissenters and Low Churchmen’ read their Bibles as ‘literally true from Genesis to Revelation’ (142). I don’t believe that this is true, and the lack of any footnotes in the work means that we cannot check to whom he refers. Chapman also uses the word ‘fundamentalist’ in the popular sense, without noting that the original early twentieth-century ‘fundamentalists’ were far from being biblical literalists – an idea that largely arose with and from Seventh Day Adventism. But these are *very* minor points. In general the book appears well-informed, accurate and informative, even if some of us may sometimes balk at a few of the generalisations.

Overall, then, I find this a book that can be highly recommended for anyone with some historical/philosophical background and who will appreciate a tour de force overview of the atheism vs faith interface and where science fits into this. I would also recommend that anyone with no such background should make time to persevere with the book, and enter a deeper understand-

ing of the science-faith issues and how atheists misrepresent them. The book is a clarion call to Christians to be positive about their faith, and to approach apologetics in the classical sense as robust combatants for both its truth and its human benefit and relevance.

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Robin A. Parry

The Biblical Cosmos: A Pilgrim’s Guide to the Weird and Wonderful World of the Bible

Cambridge: Lutterworth Press, 2014. 227 pp. pb. £16.50. ISBN: 978-0-7188-9399-6

Old Testament scholar Robin Parry has written a helpful book outlining the structure and operation of the physical world as understood by the writers of Holy Scripture. John Walton’s *The Lost World of Genesis One: Ancient Cosmology and the Origins Debate* (2009) and Kyle Greenwood’s *Scripture and Cosmology: Reading the Bible between the Ancient World and Modern Science* (2015) challenge the concordist hermeneutic embraced within evangelicalism. Parry’s book is both a complement and a supplement to these works which underline that the Bible has an ancient understanding of nature and cannot be used as a scientific text.

The Biblical Cosmos unfolds in four parts. The first half of the book offers indisputable evidence that the structure of the world in Scripture is a 3-tier universe. Parry opens, ‘Part of what I am saying is that the Bible’s understandings of the universe are based on ancient “science” and are no longer the way that we think about the world’ (xi). However, he is quick to qualify that Scripture is ‘divinely inspired’, ‘authoritative’ and ‘remains relevant’ today in terms of its theological truths (xi).

Appealing to scores of biblical verses as well as numerous examples and images from ancient Near Eastern literature, Parry demonstrates that the biblical authors and surrounding cultures believed that the earth was a flat disc surrounded by a circumferential sea, and that below the surface of the earth there existed an underworld where dead resided. The heavens included a solid domed firmament embedded with the sun, moon and stars; and the firmament upheld a heavenly sea upon which God's divine dwelling was set. Parry explains quite well the ancient phenomenological mindset employed by ancient people to construct their understanding of nature.

But there is a unique twist to Parry's view of the ancient cosmos, and it is well illustrated by his view of the heavenly bodies. Instead of seeing the biblical authors stripping the sun, moon and stars of their divinity as most Old Testament scholars contend, Parry argues, 'In biblical writings the astral bodies did not lose their divinity so much as have it put in its proper place—they are servant gods, not gods to be served' (110). To support his case, he cites numerous passages that have traditionally been interpreted as figurative expressions. For example, Parry suggests that 'the morning stars sang together' in Job 38:7 and the praising of God by the sun, moon and stars in Ps. 148:1-6 are indicative of their divinity (103, 107). As we will see, Parry has an agenda that drives his interpretation in this direction.

The third part of Parry's book deals with the fashionable notion that the temple in Jerusalem was a model or microcosm of the structure of the universe. Accordingly, '(a) the outer court corresponds to the terrestrial sphere of earth and sea, (b) the holy place represents the sky, and (c) the holy of holies stands for God's heaven itself' (148). The only biblical evidence that Parry cites to support his thesis is Psalm 78:69, 'He [God] built his sanctuary like the high-

est heavens, like the earth, which he founded forever.' As extra-biblical evidence, Parry appeals to Josephus's view of the various objects in the tabernacle. 'Every one of these objects is intended to recall and represent the nature of the universe' (*Antiquities* 3:180).

However, I find Parry's cosmic temple thesis unconvincing. The most obvious problem is that after offering indisputable evidence that Scripture features a 3-tier universe in the first half of his book, the structure of the temple has only two tiers: heaven and earth, and no representation of the underworld. Moreover, the walls in the holy place featured garden imagery with 'palm trees and open flowers' (1 Kg. 6:29). These should not appear if the holy place is supposed to represent the sky. And if Parry wants to employ (proof-text) Josephus, then in fairness he should also reveal the ancient historian's eccentric hermeneutic. Regarding the curtains in the temple, Josephus writes, 'The veils, too, which were composed of four things, they declared the four elements; for the fine linen was proper to signify the earth, because the flax grows out of the earth; the purple signified the sea, because that color is dyed by the blood of a sea shell-fish; the blue is fit to signify the air; and the scarlet will naturally be an indication of fire' (*Antiquities* 3:183).

In the title of the final part of his book, Parry asks the question, 'Can WE Inhabit the Biblical Cosmos?' He answers 'both no and yes' (165). He states that no one today 'short of severe delusion' can accept the ancient science in Scripture. But Parry argues that God can still reveal to us important metaphysical truths through this 'wrong science' (167). He attempts to use Scripture's ancient conceptualisation of nature in order to justify 'the classical approach of Christian Platonism' (170).

To illustrate, Parry contends 'that the biblical cosmos seems to be spoken of as if it were animate—as if rocks and mountains and seas and stars were

living creatures' (204). In this way, Christian Platonism asserts that 'God infuses the world with the dignity of internal powers that operate as causes within it . . . God is the Living God; he is Life Itself. Creation participates in Being, Beauty, Truth, and Goodness' (174, 205). Parry concludes, 'Thinking of the world as fundamentally alive rather than as fundamentally dead may be just the kind of kick in the backside that the Bible can give us in the modern age' (206). For a second time, I must say that I am unconvinced.

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David Albertson

Mathematical Theologies: Nicholas of Cusa and the Legacy of Thierry of Chartres

New York, NY: Oxford University Press, 2014. 483 pp. hb. \$51.00. ISBN 978-0-19-998973-7

In an intensely mathematical age, whose scientific leaders hold out the promise of a unified theory of everything, theology might seem otiose. The seventeenth century proliferation of mathematical laws occasioned by figures such as Galileo, Descartes and Leibniz prompted a decoupling in the modern mind of mathematics and theology, which has continued apace in our own information revolution. Yet mathematics, with its intimations of ideal objects and eternal truth, remains theological. The neglect of this Pythagorean insight, and its profound influence on ancient and medieval Christian theology, lies at the heart of David Albertson's immensely compelling reconsideration of twelfth century French philosopher Thierry of Chartres and fifteenth century German theologian and astronomer Nicholas of Cusa. By locating in Cusanus, via Thierry's

Pythagoreanism, a robust mathematical theology marrying number and word, Albertson masterfully suggests the possibility of continuity rather than conflict between the medieval and the modern, and science and religion.

Albertson's richly detailed genealogy is divided into three parts. First, he provides an expansive account of Pythagorean philosophy (not simply numerical rules, but the systematic application of mathematical concepts in philosophy and theology) from Plato to Augustine to Nicomachus to Boethius. He suggests that, through a series of historical accidents, Pythagorean thought fell into disuse for the next thousand years of Christian theology. Second, he identifies the re-emergence of Christian mathematical theology in Thierry, not only in the notion of the arithmetical Trinity (whereby mathematics mirrors and proceeds from divine self-numeration), but, crucially, in Thierry's modal theory (whereby theology grasps God's enfolded simplicity and mathematics grasps God's unfolded unity in numerical difference). In this system of reciprocal folding, theology and mathematics are seen as intimately connected, each concerned with the same divine subject matter and end. Finally, with the pieces of his meticulous excavation of Christian Pythagorean theology in place, Albertson convincingly demonstrates the intellectual debt to Thierry owed by Cusanus, who saw mathematics as the most reliable way to contemplation of God.

Just as the rise of modernity is often associated with the supremacy of mathematical scientific models at the expense of religious superstition, modern scholarship has tended to perceive in Cusanus a shift away from the constraints of medieval Christian doctrine to a modern, mathematical epistemology. Against this prevailing narrative, Albertson argues that Cusanus provides a unique account of the mutual constructive interaction between mathematics and theology. For Cusanus,

the eternally incarnate Word is best exemplified by the maximal enfolding of number, of particular things in the world. The Incarnation is inherently mathematical, representing the intersection of the transcendent ground of number and the infinite multiplicity of created numerical difference. Further, theological thinking becomes an ecstasy of mathematical thinking, a sort of mathematical mysticism in which the vision of God is achieved through the realisation that human and divine self-measurement are synonymous. God is the ultimate mathematician, and the human mind may ascend to the divine when it understands its own mathematical categories as reflections of God's mathematical nature. Cusanus's mathematical account of divinity and humanity thus serves as the mechanism by which they are united. In this sense, Cusan theology fulfils Thierry's vision of an integration of mathematical cosmology with traditional Christian beliefs.

With a strikingly (and what Albertson allows might be an unfashionably) broad historical scope, supplemented by over one hundred pages of end notes, Albertson has produced a deeply learned, provocative and significant work of scholarship. In spite of his carefully structured and closely argued style, as well as the wide range of Platonic traditions surveyed in the first part, lay readers without specialist knowledge of the development and critical reception of Cusan theology might be daunted by an investigation that manages to combine tremendous subtlety with vast ambition. Perhaps mindful of this, Albertson expends considerable effort on placing the specific thinkers and themes of his analysis into the broader context of the relationship between science and religion.

Albertson's achievement is therefore twofold. In the first instance, he has succeeded in prompting a serious reassessment of a towering figure in the history of Christian philosophy. He shows

that the familiar question of whether Cusanus is medieval or modern—with its obvious implication of tension between religious belief and mathematical epistemology—is itself based on a false premise. In fact, Cusanus's mathematical theology, drawing heavily on Thierry's own Pythagorean variant of Christianity, offers a fully integrated religious cosmology. By recognising the continuity between mathematics and theology in Cusanus, Albertson submits that we might in turn resist a wider, destructive historical narrative that regards modernity as the emergence of a mathematical (and likely anti-religious) method. As mathematical creativity continues to drive technological, social, financial and military change, the need to reconcile number and transcendence will be paramount in the science and religion dialogue of the early twenty-first century. Albertson's book represents an important contribution to this project.

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Michael Welker (ed.)
The Depth of the Human Person: A Multidisciplinary Approach

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What does it mean to be a person? Is it possible to be a living human being but not to qualify as a person? Is it possible to be a person but not a living human being? Is the internal sense that we have of being a unique and individual person merely an epiphenomenon, an illusion created by the neuronal machinery of the brain? Why is it so difficult to have a coherent conception of personhood?

These issues are much more than abstract speculations for philosophers and theologians. Our understanding of

what it means to be a person has profound practical implications in fields as diverse as medical ethics, law, psychology, social and political action and even artificial intelligence and robotics.

This volume arises out of a prolonged multidisciplinary consultation on the nature of human personhood. It brings together the perspectives of a range of scientists, from the fields of biology, psychology and neuroscience, together with theologians, philosophers and scholars in the fields of biblical studies, church history and anthropology. Some, such as John Polkinghorne and Malcolm Jeeves, are well known to readers of *Science and Christian Belief*. However, Michael Welker, the editor, is a theologian based in Heidelberg, Germany, and I found it particularly interesting and illuminating to read the contributions of many scholars from the German-speaking countries.

It is hardly surprising that a book comprising contributions from twenty authors and a huge range of disciplines, is somewhat uneven in tone and style. Yet this volume offers a wealth of insights and interesting fresh perspectives on age-old problems of human identity.

I was particularly interested in several chapters that reviewed biblical perspectives on anthropology in the light of recent scholarship and current scientific understandings. The Old Testament scholar Andreas Schule analyses the use of the Hebrew words *nephesh* (usually translated 'soul') and *ruach* (spirit or breath). *Nephesh* often expresses the neediness of a human being, including longing for the enlivening presence of God, as in Psalm 42 'As a deer longs for flowing streams so my *nephesh* longs for you, O God.' The *nephesh* is the aspect of the human being that enables him or her to connect with the sphere of the divine presence. In the later Old Testament texts of the Second Temple Period, the concept of *ruach* becomes increasingly important, and a human

being is often seen as a physical body enlivened by the divine *ruach*. The divine spirit 'pulsates through the (creation) and links the living history of the world to the vitality of the creator himself. Schule summarises the biblical material as describing a living being as composed around two poles: 'one that is material and connects them according to their emergence from the dust of the earth and one that characterises them specifically as God's creatures. In this view *ruach* is that which forms matter into a particular living entity'.

In another chapter New Testament scholar Gerd Theissen assesses anthropology in the Pauline epistles and the complex interplay in Paul's usage of the words *sarx* (flesh), *soma* (body) and *pneuma* (Spirit). Despite the apparent dualism in the battle between the *sarx* and the *pneuma*, Paul's anthropology at root is holistic, embodied and transformative, pointing towards the creation of a new man and of a new heaven and earth. *Sarx* belongs to the old world and *pneuma* to the new. Human existence is in the process of change. 'Christ is the model of such a change, the Spirit is the energy for this change, and the body is the location where this change is taking place.' The *sarx* is suppressed ('crucified') but the *soma* is sublimated. 'The divine *pneuma* is an integrative power, establishing a new unity of the person beyond all antagonisms and dissociative phenomena.' Ultimately the divine *pneuma* is the power that overcomes death, as the core of the restored human being is re-created in the form of a spiritual body (a *pneumatikon soma*).

Other chapters address the concept of 'emergence' applied to personhood, the image of God, human dignity, gender stereotypes and personhood at the edges of life as well as many related topics. It is hardly surprising that with such a broad range of topics and disciplines, the reader seeking a coherent and internally consistent understanding of personhood will be disappointed. Perhaps human personhood will always be

conceptually elusive and frustratingly obscure. However this volume provides a fascinating and helpful overview of contemporary biblical and secular thinking in this vital area.

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David Wilkinson

When I Pray, What Does God Do?

Oxford: Monarch, 2015. 222 pp. pb. £8.99.
ISBN 978-0-85721-604-5

In this excellent little book David Wilkinson tackles one of the more perplexing aspects of the Christian life. He does so in a light and easy style, with humour, but it is apparent that he also brings to bear a lifetime of personal experience and reflection, and of grappling intellectually with the complexities of the way God interacts with the world and answers our prayers. So, he looks at the problem of unanswered prayer, and the problem of the seeming arbitrariness of answered prayer, at least on some popular views of the matter. If God provides my friend Bill with a parking space for his car, why does he not cure my aunt of cancer? Thus the way we view prayer is intimately linked with the problem of theodicy.

It is of course also intimately linked with the way we think God acts in the world, if indeed he does act within it apart from creating and sustaining it in being. Wilkinson is rightly critical of some modern theologians who deny that God acts in special providential ways in the universe – a position which may alleviate the theodicy problem but at the severe expense of making God impotent. He also rejects the idea of the all-too-powerful God who pre-determines every event from before the foundation of the world. These positions are impossible to maintain if one takes the

Bible seriously, as Wilkinson himself emphatically does, where God is seen as relational and responsive. Wilkinson rightly rejects the Bultmannian demythologisation programme, which is both false to the Bible and locked into an outdated Newtonian clockwork universe view of science.

Wilkinson is not prepared to settle for prayer as simply changing the person who prays, as Bultmann and others have thought. That is no doubt true and important, but his main concern is with intercessory prayer in which we ask God to change people and situations, things going on in the physical world. He also affirms the place of miracles, ably setting forth the weaknesses of David Hume's famous argument against their occurrence, and providing positive reasons for believing in them, especially the sine qua non of the Christian faith, the resurrection of Jesus – even if his treatment is necessarily brief. On the other hand, Wilkinson is rightly critical of attempts to test the efficacy of prayer experimentally.

It is the impact of a scientific worldview which will most interest readers of this journal. Here Wilkinson notes how quantum theory and, more recently, chaos theory undermine the mechanistic clockwork view. He sees these as potentially helpful in seeing how God might act now the universe is no longer seen as deterministic and predictable. However, he is cautious in not fully endorsing any particular view, simply drawing what positive lessons he can. He gives a good critique of process theology and sees some merits in open theology, though ultimately Wilkinson thinks this goes too far and maybe undermines God's ultimate victory.

One omission is any reference to St Thomas Aquinas's distinction between primary and secondary causes, which is a popular approach to divine action in the modern discussion. God's acting through secondary causes can be seen in the laws of nature, but as St Thomas

says (though not all his modern supporters), this does not limit God's action since he can act outside the regime of the secondary causes or bring about effects without their preceding cause. Nevertheless, this omission hardly detracts from an excellent book which can be thoroughly recommended to a wide readership, indeed to any Christian who wonders about the efficacy of prayer.

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Jeffrey Koperski

The Physics of Theism: God, Physics, and the Philosophy of Science

Chichester: Wiley Blackwell, 2015. 279 pp. pb £21.99. ISBN 978-1-118-93280-3

The subtitle of this valuable book is more informative than the title. Koperski deals with a number of issues where physics has philosophical and theological relevance, and he approaches them specifically from the point of view of a philosopher of science. The result, at least for this reviewer, who is probably not alone in having wished in vain to include courses in the history and philosophy of science in his (mainly physics) undergraduate studies, is illuminating and helpful. He writes from a clearly Christian (Roman Catholic) perspective, but with a balanced and scholarly tone.

It is difficult to briefly and accurately describe the level at which this book is written, and to deduce its intended audience. He uses an informal style, with amusing asides, as if this were aimed at a student audience with little prior background. But while parts of it read like an introductory textbook, he makes it clear that it is not his intention to summarise generally received wisdom

in this area, as a textbook should, but has included his own distinctive and tentative hypotheses. Furthermore, some of the subject matter is quite testing and difficult. Three of the chapters are based on previously published articles, and to a considerable extent the chapters of the book stand alone, rather than forming a connected argument which needs to be read in the order in which it is presented. Apart from a brief overview, a preliminary sketch of historical and philosophical issues, and a concluding chapter on 'the philosophy of science tool chest', the body of the book consists of discussions of particular issues where physics interacts with theology.

He deals at some length with fine tuning, in physics and in cosmology. He does not spend much time explaining particular examples of claims of fine tuning; the emphasis is more on the statistical background of fine tuning claims. There is a clear and helpful discussion of the difficulties in being quantitative when one is talking either about potentially infinite ranges of values of physical or cosmological constants, or the potentially infinite numbers of universes hypothesised by those who favour the multiverse explanation of fine tuning. I should like to have seen notice taken both of Victor Stenger's attempted dismissal of fine tuning ('The Fallacy of Fine Tuning') and the full and helpful treatment of these issues by Luke Barnes, for example his article entitled 'The Fine Tuning of the Universe for Intelligent Life', arXiv:1112.4647.

His chapter entitled 'Relativity, Time and Free Will' deals with the extent to which Einstein's theories have modified our view of time and how it flows, the fact that the difference between the past and the future is observer dependent, and the suggestion that representation of events in a four dimensional space-time or 'block universe' makes the concept of free choices influencing the future untenable. I found this chapter unconvincing, and only useful in dem-

onstrating what philosophers worry about, and that they do not understand relativity! But I may be displaying my own ignorance here.

The chapter on divine action and the laws of nature explores how God could interact with the world without breaking his own laws, and whether a combination of quantum indeterminacy and amplification via chaos theory makes a useful contribution to the conundrum of divine action. He helpfully discusses reasons why some philosophers have objected to the idea that God might ever break his own laws.

The chapter entitled Naturalism and Design is basically a friendly critique of the Intelligent Design Movement; since the focus of ID is on biological issues, this is a little off the main subject matter of the book. Most of the literature on ID is extremely polarised for or against; I felt this was a helpful analysis making a number of valuable points which I have not seen elsewhere. It is followed by a brief but useful introduction to the contrasting strategies of reductionism and emergence. The book concludes with a more general series of brief but useful reflections on theological and philosophical issues under the title of 'The philosophy of science tool chest'.

I noted a couple of errors, and I hope they are not indicative of other mistakes or misunderstandings that I have missed. It is alarming that a graduate in electrical engineering should not realise that there is no electric field inside a charged metal sphere (166). The co-editor of *The Re-emergence of Emergence* is wrongly referenced three times as the philosopher Paul Sheldon Davies rather than the physicist Paul C. W. Davies (245).

My overall comment is that this is a valuable and well referenced study, with some uniquely valuable material particularly on issues associated with fine tuning and the multiverse.

Paul Wraight has retired from teach-

ing physics and engineering at the University of Aberdeen, but maintains his interest in design and related issues.

Gregg D. Caruso (editor)

Science and Religion: 5 Questions

Copenhagen: Automatic Press / VIP, 2014.
278 pp. pb. £23. ISBN 978-8792130518

This is a collection of thirty-three interviews involving five questions presented to prominent philosophers, scientists, theologians and atheists. It includes writers like William Lane Craig, Daniel Dennett, Alister McGrath, Lawrence Krauss, and John Polkinghorne. As well as Christians there are Muslims, Jews and a Buddhist, and even a magician, James Randi.

All are first asked what drew them to theorising about science and religion, which helped me better understand the perspective of Krauss, for example. A big question follows: Are science and religion compatible when it comes to understanding cosmology (the origin of the universe), biology (the origin of life and of the human species), ethics, and the human mind (minds, brains, souls, and free will)? Here, several of the atheists object that even if some religious beliefs do not contradict specific scientific *beliefs* there remain issues of conflicting *methods* and wider questions of how believing things on the basis of religious faith might be compatible with reason. It was interesting to note that atheists like Susan Blackmore denied the existence not only of free will but also of a continuing self, while others, like Rebecca Newberger Goldstein, commended secular ethical philosophy and persons mattering equally, without discussion of how scientific ideas might undermine the reality of moral knowledge, responsibility and personal identity. As Keith Ward notes, there are ongoing questions about how some science fits with our personal experience, let alone religion.

We then find a narrower question: Do science and religion occupy non-overlapping magisteria? No contributor gives unqualified assent to this proposal. Several complain that religion has no legitimate magisterium even when dealing with ethical questions.

When asked what they think are their own most important contribution(s) to theorising about science and religion, several contributors deny any, raising questions about why they were included.

Finally, contributors comment on the most important open questions and challenges confronting the relationship between science and religion and on prospects for progress. Neuroscience is frequently mentioned in this connection, with both believers and unbelievers noting how tied to the brain mental function seems to be. Another recurrent theme notes the need for better popular understanding of the issues. I got the impression that fundamentalism was seen as a problem by believers and unbelievers alike, but that the unbelievers often saw fundamentalism as typical of religion, perhaps reflecting sociological realities in the USA more than in Europe.

A strength of the book is the wide variety of perspectives to which one is introduced by leading proponents, but the format means that some issues, such as the effects of literalistic and figurative interpretations of scripture and the various meanings of 'science' and 'religion', inevitably recur and might seem repetitious. We find short summaries of key points and a few memorable illustrations, but superficiality is an obvious danger. It isn't clear if there was a word limit and the contributions vary greatly in length (John Searle's is barely a page!) as well as in academic rigour. The range included means that many views one disagrees with are likely to be present, but there is not always enough explanation to understand what is at stake. Books by the contributors are

often mentioned, however, which could help those wanting to read and understand more. When these caveats are born in mind I think the book does offer a provocative and interesting introduction to contemporary discussion of science and religion.

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Richard J. Coleman
State of Affairs: The Science-Theology Controversy

Cambridge: Lutterworth Press, 2015. 272 pp. pb. £20.00. ISBN 987-0-7188-9392-7

Coleman, a retired United Church of Christ minister, has written on the science-theology debate in *Competing Truths* where he described science and theology as sibling rivals. This is a theme that recurs here. I was glad that I had to review this book – otherwise, I confess, I probably would have given up on it. I am pleased that I persevered as it does have some useful things to say: it's just that getting to the nub of the argument took a while. Coleman's main thesis is that recent years have seen a rapprochement between theology and science and here he aims to 'chart the course, principal players, and themes of this new rapprochement' (ix). However, it is only later that he makes clear that he is sceptical of such approaches to rapprochement.

Personally I found Coleman's writing style frustrating. He makes some good points, but I was often left with the feeling, so what? His style is discursive rather than analytic and in his discussion it's not always clear what his own views are. The advantage of this approach is that he is never dogmatic and gives the impression of being open minded to numerous approaches.

The strength of this book is that it takes both science and theology seriously. He looks at science and theology rather than science and religion. The weakness, however, is that he leaves unexplored the religious nature of science and the religious implications and underpinnings of science.

Coleman is disparaging about the new atheists: they 'cannot get beyond the presumption that science is the superior methodology' (20); and equally so about conservative evangelicals: 'As long as conservative Evangelicals are beholden to a biblical world view, they will make it very difficult to regard science as an ally in understanding the true nature of God' (21).

He sometimes presents a caricature of both science and theology. He sees science as being objective and having an autonomous method (28) and being an 'autonomous discipline' (111); whereas theology is associated with speculation and subjectivism and as having a self-authenticating methodology (28). In Chapter 2 he sees theology and science as having irreconcilable differences: 'Speaking methodologically they are miles apart; revealed vs. constructed, engaged vs. disengaged, passive vs. aggressive, personal vs. objective' (42).

In Chapter 3 he discusses the 'New Rapprochement' (NR). At first he gives the impression of agreeing with it. Then only later he looks at the problems with it. The tale of two handmaidens, science and theology, fighting it out to be the queen is an interesting one. Science it seems has become the new queen; but this is as equally problematic as theology being the queen during the medieval times. His look at the NR begins with Whitehead and Teilhard de Chardin, and then moves onto Barbour, Polkinghorne and Peacocke. All the time through this chapter it seems that it is theology that has to give ground to science. So, can we expect a rapprochement?

In Chapter 4 he raises some excellent objections to this NR. It only then becomes clear that he is sceptical of this rapprochement. He poses five excellent questions:

1. Has theology been bent out of shape by its efforts to emulate a scientific methodology?
2. Is the common ground premise overstated?
3. Is critical realism the bridge between science and theology we think it is?
4. Is this an asymmetrical conversation?
5. Are science and theology at a methodological impasse? (110)

He then goes on to develop the thesis that the NR underplays the uniqueness of science and the uniqueness of theology. Chapters 5 and 6 then look at the distinctiveness of science and the distinctiveness of theology respectively. He sees the methodology of science being on a continuum but ultimately being a methodology based on empiricism. Theology is based on subjectivism and revelation. While agreeing with his notion of the distinctiveness of the natural sciences and theology, I would differ with Coleman regarding the differences.

In the final Chapter, he poses the question 'Where do we go from here?' and makes three insightful suggestions: '(1) theology must define its own methodology, but not as a reaction to science, or for the sake of credibility and relevancy; (2) both science and theology must acknowledge the one-sided nature of the conversation to date; (3) and each must acknowledge what each does best, what sets them apart and defines their uniqueness, without falling into the complacency of separate domains'. (247)

Coleman does make some excellent observations and has some good insights. However, and this might be slightly unfair, I did wonder if the argu-

ments made might be better done in a more concentrated fashion in a journal article rather than in a whole book.

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Peter Harrison
The Territories of Science and Religion

Chicago and London: The University of Chicago Press, 2015. xiii + 300 pp. hb. \$21.00, \$30.00. ISBN 978-0-226-18448-7

Administrators in the university in the USA in which I worked in the early 1970s would often ‘correct’ what seemed to them an obvious typo in documents I sent them which said that I had a BA degree in Chemistry from Oxford University. They were mystified by my explanation that when chemistry began to be taught in Oxford in the nineteenth century it was part of natural philosophy and so *of course* it merited an arts degree. A few years later I obtained another BA from Oxford – in theology. This Oxonian anachronism is pertinent to the main thrust of this book by the Professor of the History of Science and Director of the Centre for the History of European Discourses at the University of Queensland. He argues that if we rigidly apply our modern categories of ‘religion’ and ‘science’ to the past we inevitably arrive at a distorted picture of their historical relationship. His book is a fresh undermining of the still-popular ‘conflict myth’ view of the relationship between science and religion which traces the rise of the modern use of these categories. It is a fascinating and somewhat complex story which is lucidly told. A review can touch on only a few points.

In the Middle Ages, as evidenced by

Aquinas, *religio* was a human virtue or habit, concerned with inner acts of devotion and prayer, not a set of beliefs and practices. *Scientia* referred to a habit of mind or intellectual virtue which could be developed by practice, not a body of systematic knowledge about the world. What historians of science usually see as the closest medieval analogue to modern science, ‘natural philosophy’, included topics such as God and the soul and excluded mathematics and natural history. As an integral part of philosophy it was also concerned with pursuing a ‘good’ life. It therefore always had moral and religious ends in mind. Christian critique of pagan philosophy is often seen as evidence of a bias against ‘science’. In fact much of it was directed at astrology, divination, the worship of deified heroes and belief in the divinity of the celestial bodies – at what is now seen as ‘superstition’. As medieval Christianity emptied the universe of divine beings it replaced them by divine meanings. Every creature was seen as designed to manifest some divine truth. Nature, like the Bible, was ‘God’s book’. Through the use of allegorical interpretation, a method already applied to Scripture, they gave intimations of the Trinity, bore witness to Christ’s work of redemption and were the source of specific moral lessons.

Reservations about the abuses of the allegorical method were voiced before the Reformation. Both Luther and Calvin rejected its application to Scripture, prioritising instead the ‘historical’ or ‘literal’ meaning of the text. This affected its wider use. Francis Bacon proposed a new non-allegorical way of reading the ‘book of nature’. In his view it manifested the ‘power and skill’ of its Creator but not his ‘image’. He replaced allegorical ‘deduction’ with the ‘inductive’ approach of observation and experiment. Following Bacon, natural philosophy still had religious significance but by the eighteenth century it simply provided a limited amount of evidence from which some basic truths about

God could be inferred, as by Newton in his *Principia*. Natural Philosophy also continued to be concerned with pursuit of a 'good' life, but the 'good' concerned came to be seen as not so much the 'good of the soul', as the material betterment of humankind.

Another significant result of the Reformation was the Peace of Augsburg (1555), a settlement between the Catholic Holy Roman Emperor Charles V and an alliance of Lutheran princes. It specified two 'religions' based on the idea that religious differences could be given objective expression, as in the twenty-eight articles of the Augsburg Confession. By the second half of the seventeenth century a number of influential English Protestant thinkers, for example Stillingfleet and Locke, presented faith and belief in terms of giving assent to propositions.

In the first half of the nineteenth century there was still a fundamental conviction that there was a unity of theological and physical truth. In this 'natural theology' played an integrating role, as seen in the Bridgewater Treatises (1833-36). However, seen as an 'inductive science' the idea of 'natural theology' reinforced the understanding and definition of 'religion' in terms of belief in propositions. It was the second half of the nineteenth century that saw the reconstruction of 'science' around the principle of a common method for studying the physical world to gain knowledge about it and a common identity of its practitioners, the emerging professional 'scientists'. This drawing of boundaries around 'science' and 'religion' with a focus on each as bodies of knowledge expressed in propositions raised the question of the relationship between them in a new way. This was the period which produced the 'conflict myth' as some scientists set out to validate their particular view of reality and reinforce the boundaries of science to establish its independence and authority. This myth was linked with another one, the myth of 'historical progress'

which took various forms in the late nineteenth century – such as J. G. Frazer's scheme in which humanity progresses from magic, through religion, to science. Reading history through the lenses of these myths distorts it.

Harrison provides a wealth of interesting material to support his understanding of the development of the understanding of 'religion' and 'science' and their relationship from antiquity to today. No doubt other historians will assess it and challenge him at some points. However, his overall thesis seems sound: that our current understandings of these categories are relatively recent constructs and it is unhelpful to project them into the past as is commonly done. This is not a matter of purely historical interest. As he indicates in his closing sentences, there are implications for today. He suggests that advocates of a constructive dialogue between science and religion may unwittingly perpetuate conflict because, 'Often they concede the cultural authority of the sciences, the propositional nature of religion, and the idea of a neutral, rational space in which dialogue can take place. As we have seen, each of these developments is relatively recent. But the history of their emergence, along with the past from which they came, offers some intriguing intimations of how things might have been, and might yet be, rather different' (198). There is a lot to think about there!

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Michael Hunter

Boyle Studies: Aspects of the Life and Thought of Robert Boyle (1627-91)

Farnham, Surrey: Ashgate, 2015. 244 pp.
hb. £70.00. ISBN 9781472428103

Perhaps no other single scholar has done more to elucidate the complex writings of the Hon. Robert Boyle than Professor Michael Hunter. Amongst other things, his publications include major works on Boyle in 2000 and 2009, while the present volume also draws deeply on the rich manuscript remains, such as Boyle's 'Workbooks' in the Royal Society Library. Indeed, these documents contain a fascinating miscellany of information, and provide a running record of Boyle's intellectual pilgrimage.

In the present volume, we do not meet Boyle the laboratory scientist so much as Boyle the theologian and philosopher, working at a time when European ideas about God, nature and super-nature were riven with contradictions and cross-currents. The book's nine main chapters discuss topics as diverse as contemporary Anglo-Irish science, the early Royal Society, the roles of secrecy and publication, the 'supernatural' and the traveller's fascination with the 'exotic'.

The 'Workdiaries' contain (among many other things) records of conversations with travellers, such as Colonel Richard Cony and Pierre-Esprit Raddison, as well as philosophical and theological discussions with Thomas Barlow and an unnamed 'gentlewoman' about religious 'doubt'. For Boyle was not only one of Europe's most renowned experimental scientists; he was also a deeply devout 'Christian Virtuoso' whose faith and science melded in a number of fascinating ways, influenced by currents as diverse as experimental discoveries, miracle accounts, and contemporary atheism.

Especially fascinating from a science

and religion perspective is Chapter 8: 'Boyle and the Supernatural'. In an age which was coming increasingly to see the 'natural' in purely physico-mechanical terms, Boyle was captivated by the realm of the spirit. And for him, the term 'supernatural' meant the non-physical, which could also include the theological. For whereas medicine produced 'natural' cures for diseases, the healing miracles of Christ and the Apostles belonged to a quite separate category of experience: the 'supernatural', transcending the regular order of nature.

This way of thinking also related to Boyle's curiosity about 'miracles' attributed to non-Christian practitioners such as shamans. For example, his conversations with Raddison and Cony record his own questions about any 'miraculous' phenomena they had witnessed amongst the North American and African peoples in whose lands they had travelled. And then there were the narrations of Captain John Slade about Indian Brahmin healing substances, killer snakes and even snake 'Dancing', or charming.

Boyle was scrupulous about differentiating between the 'supernatural' which appeared to transcend natural explanation, and merely 'preternatural' phenomena which were simply unusual. Preternatural phenomena could include things that were puzzling in themselves, such as the occurrence of a sudden, self-healing, toxicity in a lake in a Connecticut Colony, for which a natural explanation might be found, based upon local soil conditions or 'effluvias'. He applied similar thinking to *abnormal* phenomena which he recorded. These included ten cases of strange natural phenomena, such as wilting plants cultivated under glass jars reviving when heated, or a chemical solution which expanded when exposed to moonlight.

Indeed, Boyle was very alert to the possibilities of fraud, or even well-meaning delusion, for, deeply devout as

he was, gullibility was not part of his Faith. In fact, he spoke of the need to be *sceptical*, and would repeat experiments when uncertain of his original results. As Professor Hunter makes very clear, however, it is a false reading of the historical evidence to see Boyle as a proto-rationalist, for in tandem with his concern with experimental science ran a deep and abiding belief in a Creator God whose powers transcended those of nature, and whose hand could still be discerned in miraculous events.

Like the Revd. Joseph Glanvill, author of *Saducismus Triumphatus* (1681), with whom he corresponded, Boyle collected accounts of spiritually-related phenomena. These included conversations with the Irish faith-healer Valentine Greatrakes, an account of what we would now call a 'poltergeist' haunting in a castle near Geneva, and stories of witches. Yet Boyle was always aware that he had to exercise scepticism: not as a means of explaining away such phenomena in physical terms, so much as learning how to discern the true hand of God from the wiles of the devil, or from simple delusion.

Religious doubt itself was also examined and explored by Boyle, who saw it as a test by which a serious Christian might grow in his or her faith, and it was in this context that he recorded his conversations with the above-mentioned, unnamed, young 'gentlewoman' of troubled conscience. For clearly, what worried her was not whether or not God existed, but her own feelings of unworthiness for salvation. Boyle argued, however, that doubt strengthened faith, seeing it as a necessary part of intelligent spiritual growth.

It was with this express intention of demonstrating the true relationship between science, reason, and spirituality that Boyle left ample provision in his Will in 1691 for that series of lectures in St Mary-le-Bow Church, London, which would bear his name. And on the strength of a new endowment, they con-

tinue to be delivered today.

Michael Hunter provides a masterly exposition of the complex thought of Robert Boyle: a corpus of thought rich in science, folk belief and theology, in which he indicated how a rational and intelligent person could be both a critically-minded natural philosopher and a devout Christian. And over three centuries later, and with a host of new evidences that Boyle could never have imagined, I personally believe that his essential argument still holds.

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Snezana Lawrence and Mark McCartney (eds.)
Mathematicians & Their Gods: Interactions between mathematics and religious beliefs

Oxford: Oxford University Press, 2015.
298pp. hb. £24.99. ISBN 978-0-19-870305-1

Authors often do not have a significant say on the title the publisher chooses for marketing a book. This could very well be the case in this book, which tells us relatively little about mathematicians in history and often even less about their theology or understanding of God.

There are a few chapters, however, that do fit the title, most notably the one titled, 'Maria Gaetana Agnesi, mathematician of God'. This eighteenth-century Italian mathematician was the first woman to publish a mathematics book under her own name. While prevented by her father from entering the cloister as an Augustinian nun, she basically lived a lifestyle that could hardly be distinguished from that of a woman

religious. After her father's death she gave up her wealth and inheritance rights to live a life of poverty and dedication to charitable activities. Agnesi's publication, an introduction to calculus, was one of the first to focus on 'pure analysis' and mathematical technique without reference to applications or empirical examples. The author of this chapter, Massimo Mazzotti, suggests that this is because of her mystical devotion and approach to God through intellectual concentration. Accordingly, she wrote, 'Devout scholars should not try to gaze into the mind of God through the marvels of creation. Rather, they should discipline their intellect through strenuous exercise ... to achieve a proximity to God that could only be the result of intense meditation and ascetic practices.' (161)

The essay on Newton explores the side of this great scientist/mathematician that was not well known until the twentieth century. His problems with the doctrine of the Trinity, while serving as the distinguished Lucasian Chair of Mathematics in, of all places, Trinity College, Cambridge, required him to keep many of his theological ideas out of the public sphere. In the centuries to follow, the scientific community which saw him as a great scientist was reluctant to acknowledge his exhaustive study and writings on biblical prophecy. Yet Newton believed that just as mathematics is the key to understanding the natural world, mathematics was also critical to understanding the hidden messages in the Bible. The essay author, Rob Iliffe, says that 'in both fields, different sorts of mathematical approaches were prominent features of his work. As he saw it, the same God had authored both 'texts,' and it requires someone with advanced understanding to decipher each one.' (141-2)

Owen Gingerich's chapter on Kepler provides a contrast to Newton in the description of Kepler's Trinitarian cosmology. Kepler had trained in theology and planned to be a Lutheran pastor

when his faculty urged him to go into astronomy. His having been introduced to the Copernican system, as well as being accomplished in mathematics, led him to first publish his ideas about the spacing of the six known planets by successive circumscribed spheres around appropriately chosen Platonic solids. While this approach didn't work out, it is an example of his mathematical approach as well as his fascination with the sphere. He writes, 'For in the sphere, which was the image of God the Creator and Archetype of the world, there are three parts, symbols of the three persons of the Holy Trinity – the center, of the father; the surface, of the son; and the intermediate space, of the Holy Spirit.' (80) This threefold approach was in contrast to commonly held Aristotelian dichotomy, heaven and earth, or celestial and terrestrial. It opened the way to see the sun as a centre, along with the earth and the other planets, and then the stars as the three components of the new emerging system.

The chapter on Charles Dodgson is by Mark Richards, a researcher on the writings of Lewis Carroll, the name by which Dodgson is better known as the author of *Alice in Wonderland*. Richards argues, however, that to really understand Dodgson he must be seen through the interplay between mathematics and theology. Dodgson received his degree in mathematics from Christ Church, Oxford, where he continued as a faculty member. While he was expected to join the priesthood he chose to pursue his profession in mathematics. For him it was 'a simple question that he had to face. How best could he serve God?' (197) While he made some significant contributions to mathematics, the success of his children's books allowed him to give up his post and focus on writing and mathematics education. He wrote that the goal of his book on symbolic logic was 'to make the study of Logic far easier than it now is: and it will, I also believe, be a help to religious thoughts,

by giving clearness of conception and of expression, which may enable many people to face, and conquer, many religious difficulties for themselves. So I do really regard it as work for God.' (191)

A fascinating essay by Melanie Bayley about Edwin Abbott's story *Flatland* is not really about a mathematician and his God, but a theologian who uses mathematics to open new ideas about how we should think about God. *Flatland* is an allegory which uses a two-dimensional world as the setting for how a higher-dimensioned being would be perceived in that world. Abbott studied the classics and theology at Cambridge in a setting that put an emphasis on Euclidean geometry. But in the late nineteenth century new ideas of geometry were becoming known with the non-Euclidean geometry of Bernhard Riemann and the explorations of multi-dimensional space. The author writes, 'Abbott's argument is that, now that geometers have demonstrated that other worlds can exist, Christians have to reassess the basis of their beliefs.' (267)

Thirteen different authors packaged in a book with a promising but misleading title left this reader somewhat disappointed in what could have been an important contribution to the role of mathematics in the ever-expanding discussion on science and religion.

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Ignacio Silva (ed.)

Latin American Perspectives on Science and Religion

London: Pickering & Chatto, 2014. 191pp. hb. £58.40. ISBN 978-1-84893-499-3

The interest in science and religion around the world has gained momentum with this new volume, now from a Latin American context. The editor, Ignacio Silva, expresses in the introduction the goal of the project: 'to problematize further the contemporary understanding of how science and religion relate by bringing attention to these considerations in Latin America' (1). Mainly, this book shows the views in science and religion of some Latin American scholars in fields such as theology, history and philosophy, mostly from a Catholic tradition. So, it should not be seen as the final representation of the historical or current situation in the region.

Eleven excellent and highly academic chapters are divided in three major sections: methodological considerations, historical interactions and contemporary cases of science and religion. However, the structure and writers' styles follow a distinctive flow, being eclectic and dynamic in each section.

The first four chapters present different approaches to the discussion: Oscar Beltran (Pontificia Universidad Católica Argentina) works on Mario Artigas's reflections on the interactive connection between scientific regulation and theological wisdom through philosophical bridges; Jaime Laurence Bonilla Morales (Universidad de San Buenaventura) offers a Paul Tillich type of view of how a philosophy of religion and theology of culture could bridge the gap between science and religion by portraying and developing the dimension of meaning and depth that lie in the unconditional substance of reality; Juan Alejandro Navarrete Cano (Université catholique de Louvain) provides a more Latin American contextual approach, analysing the works of certain liberation theologians; and Luis Corrêa

(Pontificia Universidade Católica do Rio de Janeiro) presents a historiographical and relativistic method in the Catholic tradition.

Although all these methodological concerns give some feedback about how to approach the debate, they also open relevant questions about the interaction between Latin American society as a whole and science and religion concerns. Liberation and contextual theologies — and other social revolutionary events — have made it almost impossible to talk about theology without including the experiential and social dimension of salvation. ‘Theology is not a net of ideas about God, but a reflection on Jesus Christ’s praxis and our commitment to it in a contemporary context’ (41). On the other hand, how could Christians engage in the debate in Latin American contexts in which superstitious ideas persist and the nonsense mixes with the Christian spiritual dimension which, at the same time, faces the dimension of science? Perhaps a good place to work upon is environmental concern, which is a fascinating and common subject among Christians, scientists and Latin American people.

In the second section, Jesus Galindo Trejos (Universidad Nacional Autónoma de México) opens with an exciting account of the pre-Hispanic Mesoamerican religious understanding of the sky. Miguel de Asúa (Universidad Nacional de San Martín) analyses Jesuit Science in the mission of Paraguay and Rio de la Plata. As in this last case, Christians in the past have used scientific knowledge to meet their needs (Harrison and Lindberg, 2012, 67). Hector Velasquez Fernandez (Universidad Panamericana) argues that meanwhile Catholicism had not raised objections to Darwin’s theory, and many scholars and scientists interpreted, adjusted and appropriated evolution in a positivistic way, generating new paths that went beyond the scientific enterprise. This latter might be one of the reasons for the persistence of an independence/

conflict model in the Latin American academy until now.

The final section has four highly useful chapters for contemporary issues. The first two provide a case of study for the creationist/evolutionist debate in Brazil. On one hand, Hesley Machado Silva and Eduardo Mortimer (Universidade Federal de Minas Gerais) analyse the Brazilian result of the ‘Rescuing Darwin’ survey, originally developed and submitted in the United Kingdom. On the other hand, Eduardo Rodrigues da Cruz (Pontificia Universidade Católica de São Paulo) advocates an alternative way to avoid wars between science and religion in general terms: by recognising the ambiguity of reality and the role of scientists as story tellers in the public understanding of science. Creationism movements (Young Earth and Intelligent Design) are growing fast, supported by the growth of evangelical churches, the authors point out. It is good to mention, however, that not all evangelicals in Latin America adhere to creationism or the Intelligent Design hypothesis. Two good examples are the online journal, *Razón y Pensamiento Cristiano*, dedicated to researching and reaching out to the dialogue between science, religion and humanities and *Sociedad Educativa Latinoamericana para Fe y Ciencia* in Guatemala that makes a case for promoting scientific inquiry, experience and education as divine Christian activities. Both embrace evangelical tradition and the current mainstream science, as in evolutionary theory.

The last two chapters explore human identity and indeterminism. Juan Francisco Frank (Universidad Austral) discusses the notion of ‘person’ as a good opportunity for an interdisciplinary dialogue. This notion still constrains neuroscience researches for bridging the ‘gulf between the discourse of neural processing and the simplest form of personal mental experience, such as seeing red or feeling hungry’ (Polkinghorne, 2008, xviii). Claudia E.

Vanney — the only scientist — (Universidad Austral) closes with the scientific and philosophical distinction between a deterministic and indeterministic world-view. Academic Christianity has suggested in the past the necessity of an indeterminism in the created order of things to admit free will and God's action in the creation. But for some it might sound like the old god-of-the-gaps argument. Following Leonardo Polo's theory of knowledge, Vanney argues for a transcending knowledge of God in which neither indeterminism of physical reality nor human freedom can be identified or mutually implied in a direct way.

Overall, the whole book is very useful for Latin American students in theology, history and philosophy who are familiar to some degree with the debate and would wish to engage in it with a more contextual flavour. It also introduces the foreign reader to a broader dialogue from a new world that will surely generate many more fascinating meetings between Christianity and science.

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Mark A. Waddell
Jesuit Science and the End of Nature's Secrets

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214 pp. hbk. £70. ISBN 978-1-4724-4972-6

Some twenty years ago, a number of historians of the history of science found themselves drawn to study a remarkable figure from seventeenth-century Rome, Athanasius Kircher (1602-1680), a member of the Jesuit order and, by the standards of the day, a scientist and polymath. As a result, in 2004 Paula Findlen, Professor of Italian History at Stanford University, edited *Athanasius Kircher: The Last Man Who Knew Eve-*

rything. Until then, among historians who mentioned him at all, Kircher was regarded as an eccentric and deluded experimentalist whom Leibniz, an earlier admirer, eventually wrote off as someone who knew nothing, and this was close enough to the consensus that emerged among natural philosophers by the second decade of the eighteenth century. Findlen's book did something to rehabilitate this many-sided figure, though her own view was that Kircher's writing was 'unreliable and undigested', yet 'bursting at the seams with learning, overflowing with ideas and possibilities, and pointing confusingly in many directions'. Further studies have followed by colleagues and there are extensive holdings on Kircher and *Kircheriana* in the Bancroft Library at Berkeley and particularly in Stanford University.

The present work, ten years in preparation and so fitting chronologically into the research history just described, pursues its own course, though Findlen's two books are included in the bibliography. Mark Waddell of Michigan State University devotes the greater part of his study to Kircher but extends the area of interest to Kircher's Jesuit contemporary, Niccolò Cabeo, and his successor, Gaspar Schott. More importantly, his aim is to show the influence of Jesuit spiritual formation on their approach to the secrets of the natural world and that these men in their experimental and speculative pursuits tried to reconcile, and even move beyond, traditional modes of knowing endorsed by their superiors. At the outset, he states his conviction that the 'imaginative visualisation', which is at the heart of the Spiritual Exercises devised by their founder, Ignatius of Loyola, influenced these Jesuits' approach to the emergent natural philosophy. This view underlies his account of their move from the traditional Aristotelian philosophy of certainty to a probabilism based on the 'ingenuity of artifice'. These men had then their own way of

participating in the development of the inductive method associated in the history of science with Bacon, Descartes and in due course Newton. They shared the aspiration to move away from Aristotelian philosophy and its concern only with causes that fell within the regular course of nature, while the hidden causes of extraordinary phenomena were deemed indemonstrable. Their desire was for greater clarity, 'particularly when it came to the murky ontological space between the natural and the divine' (188). For these Jesuits, dispelling the secrets of nature was a necessity; only then could they point with certainty to the works of God.

The early chapters are concerned with the challenge to Aristotelianism from a resurgent Neoplatonism, with references to the influence of scepticism and hermeticism in the background. The disentangling of these philosophical trajectories in the early modern period presents a challenge to historians and philosophers of science, so none of this is an easy read. Waddell is very much at home in his subject, but is hardly helpful in not defining terms such as 'hermeticism' or even 'natural philosophy' as it was understood at the time. He has a great deal of ground to cover and goes into much detail on the publications, the experiments, the successes and vicissitudes of Athanasius Kircher, who devoted so much of his energy to the wonder of the age, the magnet. This was the subject of Kircher's major publication and figured largely in the demonstration of the hidden forces of nature in the very extensive museum (no longer existing) he created in the Jesuit College in Rome.

Kircher's aim was to entertain his many visitors, leave them baffled, and at the same time excite their curiosity about possible natural explanations of phenomena which at the time had the aura of the magical or even the supernatural about them. The cultural climate was such that extensive literature and controversy were generated – and

here the present day reader needs to suspend disbelief – by the issue of the 'weapon salve'. This was claimed to be a cure at a distance for wounds through the application of an unguent to the weapon itself – Waddell helpfully lists the bizarre ingredients. The argument in its favour on the basis of an analogy with magnetism acting at a distance was dismissed by Kircher on theoretical grounds without the need for messy experiment.

By focusing on the careers of these seventeenth century Jesuits, Waddell opens up a fascinating vista on the struggle for modern scientific method to emerge. Action at a distance played a central role in the controversies of the time and rather interestingly brings the contemporary phenomenon of entanglement to mind. A thoroughly researched work and rather demanding, it is a valuable account of the colourful beginnings of modern science.

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John Walton

The Lost World of Adam and Eve: Genesis 2-3 and the Human Origins Debate

Downers Grove: IVP Academic, 2015. 255 pp. pb. \$17.00. ISBN 978-0-8308-2461-8

The Lost World of Adam and Eve is expertly penned by Old Testament scholar John H. Walton, who specialises in the culture and literature of the ancient Near East. The text is a sequel to *The Lost World of Genesis One* (2009), in which Walton sets forth his functional cosmology model. As an evangelical Christian Walton's interpretation of Genesis 1-2 differs from that of most other conservatives. Walton proposes that the creation account of Genesis 1-2 describes God's endowment of functionality upon the cosmos rather than the

creation of the material universe. Such a view leaves the door open for compatibility between scientific and biblical claims regarding the origins of the universe and of humanity.

Walton's theories are based upon the premise that although scripture itself does not change, interpretations are dynamic. Theology should constantly be subject to reassessment based upon any new information that might emerge. Walton thus advocates reconsidering evangelical doctrines in the light of what is now known of ancient Near Eastern thought. He does not purport to offer 'the right answer or interpretation' (13) but aims to show that one may diverge from modern dogmatic beliefs on material creation and still be a genuine Christian.

The primary purpose of *The Lost World of Adam and Eve* is to describe the function and role of the first humans and the implications thereof. Walton's arguments come in the form of 21 'propositions.' The first several propositions treat interpretive foundations and linguistic concerns, along with a recapitulation of arguments from the first volume. Walton reminds readers that the seven-day creation account of Genesis 1-2 is a 'temple story,' in which God establishes his 'command center of the cosmos' (49). Next, Walton discusses the nature of God's 'good' creation. Walton controversially argues that the Hebrew term *tôb*, often mistakenly understood to indicate perfection, actually refers to optimal functionality.

The sixth and seventh propositions move even further away from conservative evangelical interpretations as Walton argues that Genesis 1 describes the creation of humanity, not just Adam himself. Thus, the Adam and Eve of chapters 2-3 are not the only humans on the earth, but rather representatives of collective humanity. The following propositions examine the relation between the biblical account and the biological formation of humans, spe-

cifically with regard to Eve's formation from Adam's rib. Walton concludes that the Bible is actually more concerned with 'Adam and Eve as archetypes than as biological progenitors' (92-95).

Proposition 12 and what follows brings readers to the heart of Walton's argument. Walton asserts that Adam is assigned to serve as the priest of God's holy precinct (i.e. the Garden of Eden), with Eve as a helper. The couple is tasked with furthering God's creative work in bringing greater order and functionality to the world. Unfortunately, the priestly couple fail in their duty and instead create chaos and disorder.

Proposition 18 marks a transition in the text as Walton explicates God's plan to restore order. Christ naturally marks the inauguration of restoration, although disorder still exists in the world. Therefore Christ's followers are tasked with adopting Adam's initial vocation. Walton asserts, 'When people are saved by Christ, the entire creation project can get back on track' (170). An excursus from N.T. Wright is helpful here as he explains the manner in which Adam's sin and Christ's sacrifice are related to the continuing vocation of mankind.

Walton concludes by considering the practical implications of his arguments. He offers four reasons for continuing the discussion between theology and science. (1) Creation care: Christians should act as wise stewards of the environment because God has appointed humans as caretakers of the earth. (2) Ministry: Christians who work in science-related fields are often alienated in the workplace for their Christian views, but also disparaged in the church if they do not reject scientific tenets that conflict with evangelical interpretations of the biblical text. (3) Evangelism: Non-Christians are hesitant to consider the gospel because 'to believe the Bible means to jettison science' (208). (4) The Future: By misrepresenting the Bible the church is

forcing people to make a choice between religion and science, which is causing increasing atrophy among the ranks of Christians. Walton pleads, 'Let us pray together that we can chart a path of faithfulness and stop the hemorrhaging' (210).

While conservative Christians will certainly be challenged by Walton's interpretations, those in the scientific community will find his propositions refreshing. Walton has provided an approach by which believers in the scientific community may stand confidently in both their vocation and in their faith. Scientifically oriented Christians will no longer be forced to experience the constant strain between the principles of science and scripture. Moreover, Walton's work opens the door for greater dialogue with non-believers, who will be more willing to consider biblical tenets if the whole canon is not overshadowed by beliefs considered ignorant and outmoded. Additionally, from a purely scriptural perspective,

Walton's interpretations respond to many difficult exegetical issues, such as 'Where did Cain's wife come from?' and the apparent discrepancies between Genesis chapters 1 and 2. One note of criticism should be offered, however. The text overlaps significantly with the first volume. Those who have read *The Lost World of Genesis One* may feel frustrated by the frequent repetition of information already presented.

In short, the import of Walton's work is far greater than the concise length and accessible text imply. Walton has produced a convincing apologetic for Christians and scientists to engage in greater dialogue regarding origins. Although the past century has largely produced a stalemate, Walton offers a promising avenue along which dialogue might reopen.

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