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Reviews

Andrew Steane

Science and Humanity: A Humane Philosophy of Science and Religion

Oxford: Oxford University Press, 2018.
289pp. hb. £25. ISBN 978-0-19-882458-9

The historical success of science in answering an increasing number of our questions about the physical world has often led to the tendency to suppose that science can answer all questions that are worth answering. In *Science and Humanity: A Human Philosophy of Science and Religion*, Andrew Steane provides a counter argument to these tendencies. The book aims to value science as an important part of our intellectual endeavours, but to insist that this does not supersede or somehow invalidate our lived experience of what it is to be human. Steane, himself a professor of Physics at Oxford University, argues that the arts, poetry, music, religion and so forth are equally valid ways of getting at different aspects of truth. As part of its assertion of the value of aesthetics in coming to truth the book itself includes various poems, short stories and reflections.

In the first section, Steane presents an argument against the notion that scientific knowledge is like a ladder that proceeds from the bottom up: physics explains chemistry, which in turn explains biology and so on. He argues that this reductionist model fails to appreciate the multi-layered nature of reality. What is studied in, say, chemistry is not just reducible to complex interactions of a more fundamental theory of physics, but something new in its own right. As such, he argues, the ladder is not one-way but goes both ways: higher levels of complexity 'enarch' and illuminate the lower levels. His argument is interesting and persuasive on this point. Using various examples such as thermodynamics and ideal gas laws he argues that we can derive concepts about complex systems without needing an understanding of the microphysics involved. These higher-level symmetry principles serve to inform and constrain the underlying microphysics. He also argues that low-level explanations cannot do all the 'explanatory work', and therefore we cannot be sure that a low-level model will give rise to high-level behaviour without independently demonstrating the high-level phenomenon. He also tries to extend the argument to evolutionary biology, arguing that there are symmetry-like principles at work.

Steane then moves on to look at the issues of value and meaning, examining the limitations of science and arguing that science is part of a larger explanation of the world; it does not deal with questions of value and purpose. He argues that there is much that we believe which cannot be derived by reason, but that we come to truth about value through experience. Moral truth is not created by humans but discovered. It is in this context that he begins to lay out his philosophy of religion, gently introducing talk of God into his discussion of truth. Although the framework he uses to talk about religion is a Christian one, the language used is not necessarily what one might expect of Christian theology. Steane helpfully emphasises the relational aspect of God and uses language not so specifically religious to gesture towards the divine in a way that is accessible to those who might be suspicious of religious belief. 'The word "God"', he claims 'refers to that foundational reality whose nature is continually being more fully expressed as the universe develops'(160).

Whilst he argues that 'religious language has to be indirect' (158), he makes

various assertions about what religious language is not saying. For example, Steane claims as idolatry the idea that 'there exists a supernatural powerful entity outside the universe and overseeing it' (123). At times the picture being developed almost seems to come close to a more pantheistic view. The resistance to employing analytic language to describe or understand God here is at points refreshing, but also makes it somewhat difficult to pin down the notion of God that is being offered. For many it may feel that the emphasis on mystery leaves various legitimate questions unanswered. Concerning the relationship between science and religion, Steane treats both as important but separate approaches to truth. He spends some time arguing that God is not something we can argue for in traditional ways, and critiques some attempts at arguments for the existence of God.

Covering such a wide array of ideas *Science and Humanity* naturally ends up being somewhat brief in its dealing with such a wide variety of subjects. Steane himself notes that his project is 'like teaching a language or an artistic style: you have to begin to speak the language, or to allow the style to work on you, before you can assess its success' (6). The book is well written and although it does not shy away from dealing with concepts that are in themselves quite complicated it does so in a way that is accessible and does not require much previous knowledge of science and philosophy. Whilst there are good arguments throughout that are certainly worth considering and engaging with, as the author himself notes, much of the work 'consists simply in getting the idea in view'(6), and much of the later chapters seem more like an attempt to present a view rather than make an argument for it.

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Paul Scherz

Science and Christian Ethics

Cambridge: CUP, 2019. pp xiii + 229. Hb. £75. ISBN 978-1108482202

Over the past few years there have been several widely publicised retractions of published scientific papers. These have included the infamous and totally fraudulent claims of Hwang Woo Suk that he and his group had cloned human embryos to a stage where the embryonic stem cells could be available for therapeutic use. We note too that the data had been so well fabricated that they had 'survived' the peer review process in the prestigious journal *Science*. Some ten years later, another prestigious journal, *Nature* published data from Haruka Obakata and her colleague purporting to show that adult stem cells could be transformed into pluripotent (i.e. capable of forming many different types of tissue) stem cells by a very simple chemical treatment. However, other researchers were unable to obtain similar results. Whether or not this involved deliberate fraud, simple error or even sloppy lab practice is not clear but whatever the reason, these are part of what is, according to Paul Scherz, an epidemic of irreproducibility in current science.

I will return to this later in the review. However, at this point I will say that neither fraud nor mistakes in experimental practice are new, nor are they confined to the bio-medical area. Early in my career, one of my PhD students and I read a paper in which one of the techniques described could not possibly have given the results that were presented. Anyone with knowledge of the biochemistry of the process under investigation would have known this but nevertheless the paper had been accepted after peer review in a

well-known journal. On being challenged, the author claimed that the relevant section in description of the techniques was a typographical error.

In another example, papers on aspects of plant molecular biology were retracted by *Nature* and *Science* in the late-1990s; the data had been at least partly fabricated by a research assistant and that had gone unnoticed by the principle investigator and by the head of the department (both of whom I knew personally) in a prestigious European laboratory. Both resigned from their jobs. I could go on with examples that have emerged from time to time throughout my career but at this stage I need to return to the book under review.

The author of *Science and Christian Ethics*, Paul Scherz, has a PhD and post-doctoral experience in vertebrate developmental genetics, after which he left science for theology. Here then is a person ideally suited to write in this area. His starting position is that science is in crisis for three reasons: lack of reproducibility of results, poor application of, or a rush to apply science in wider society (leading to false innovation) and finally, loss to the profession of younger qualified practitioners. I will focus mainly on the first, although lack of reproducibility of data certainly affects the second.

The author ascribes lack of reproducibility to three factors: fraud and misconduct, lack of care in research and the 'management' of what is published (the latter is particularly true in the bio-medical and pharmaceutical sectors). The picture he paints is a bleak one and gives the impression that the whole edifice of science is about to come tumbling down. Indeed, he cites a paper by John Ioannidis (2005, *PLOS Medicine* https://doi.org/10.1371/journal.pmed0020124) that claims that most research findings are false. I am not convinced that this is true across the spectrum of the sciences and wonder whether this claim can only be substantiated in the area of bio-medicine. Certainly in my own area of molecular biology, our work would not have been successful if the findings of others, which stimulated our experiments, were actually false.

If there is a crisis in science, based partly on lack of reproducibility, what has led to this? Scherz believes that we have lost the idea that science is a vocation in which truth is pursued. Instead, a range of societal pressures has turned scientists from scholars to entrepreneurs in pursuit of short-term gains (which may be commercially exploitable) and/or of personal glory. Again, I am not sure whether this applies to all sciences, although it is certainly pleasurable when one's work is acknowledged. However, focusing on the author's thesis he suggests that one result of scientists being entrepreneurs is that they have adopted a very anthropocentric view of the world's resources, namely that the resources are there to be exploited by humankind. He wants to return to a teleological approach, based on an Aristotelean idea that everything in the world has its *telos* or function.

So, what is to be done? We must regain a virtuous approach to the practice of science and Scherz initially discusses two ways of doing this. The first is Aristotelean virtue ethics, especially as interpreted by MacIntyre. This focuses on the development of a virtuous character. The second is based on another Greek philosophy, stoicism, especially as developed by Foucault. He supports the second approach rather than the first. I find this surprising: although there are inadequacies in MacIntyre's development of virtue ethics, I am unconvinced that the purely practice-based approach of the Stoics is any better, despite the author's strong defence thereof.

This leads on to the idea that we should all, whether scientists or not, develop a habit of moral formation and of protection of the 'self'. By the latter he does not

mean becoming self-centred but protection of our inner being (some might say 'soul'). This will require regular introspection and even meditation. For the Christian this sounds a lot like spiritual formation and it is towards the end of the book that we encounter fuller discussion of a specifically Christian approach to the problem. It has been widely suggested that the heart of Christian ethics is virtue; it is about developing a virtuous character and acting virtuously, albeit with some rules that provide us with boundaries, as argued clearly by, amongst others, Tom Wright (2010, *Virtue Reborn* SPCK). Thus Scherz, after discussion of the relationship between science and faith (which I do not think is strictly necessary), suggests that Christians working in science may have a unique contribution to make in the recovery of science from the perceived crisis.

Overall, I think the book focuses on problems in particular areas of science with, in places, quite a strong emphasis on the situation in the USA. I am not convinced by all the author's arguments but I am happy to agree that Christians, acting 'Christianly' can and should play a role in bringing an ethical approach to the practice of science. The author takes a long time to reach this conclusion in a text that is not an easy read. One needs to know quite a lot about philosophy to follow all the author's discussions. And one more small thing: his 'virtue signalling' that he is not sexist eventually annoyed me. In common with many authors in the social sciences and humanities, there is constant use of *she* and *her* when 'a scientist' is being talked about. I know it's a bit ugly but can we not use *he/she* and *him/her* or *they* and *them*?

Finally I need to say that this review was written during the lockdown response to the COVID-19 pandemic. Scientists are engaged in urgent research on the virus itself, on possible treatments for the disease and on the development of vaccines. Success in the latter will obviously bring fame to the groups involved but in all these areas there is no room for publication of false or erroneous data which will be of use to no one. It is a time where the vocation to search for truth becomes paramount, albeit driven by an urgent societal need.

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Luther H. Martin & Donald Wiebe

Religion Explained?: The Cognitive Science of Religion after Twenty-five Years

London: Bloomsbury, 2017. 260 pp, pb. £28.99, ISBN 978-1350032460

The title of this book intentionally harks back to the audacious title of Pascal Boyer's 2001 book *Religion Explained: The Evolutionary Origins of Religious Thought*. Boyer's title is audacious almost to the point of arrogance because it lacks the question mark of the present volume – a question mark that signals the critical, if friendly, approach to the cognitive science of religion (CSR) to be found within its covers.

Yet the word 'explained' is more than a reference to a seminal work published in the early years of CSR. It alludes to one of its key features: the rejection of the dominance of interpretation in religious studies in favour of explanation, a turn from hermeneutics to the construction of empirically based causal accounts. This is an instance of defining one identity against the other, something to be expected in a relatively young guild of scholars, and to be found throughout the book. The concerns of CSR are presented not only as explanation rather than interpretation, but also the methods of science rather than the humanities, and naturalist accounts of religion rather than theology. One might go further and say that the whole book is an exploration of identity,

something described by one contributor as:

imbuing a certain fervor into the social group, instilling charismatic authority to its founding figures, ostracizing alternative approaches, and thereby formulating strong identities to new scholars… (Sørenesen) (143).

I would add to this the construction of a coherent narrative, beginning in the recent past, pausing in the present and looking to the future. The structure of the book mirrors this diachronic form; its opening chapters are by scholars with a claim to be the two founding fathers of CSR, Thomas Lawson and Robert McCauley, followed by further historical accounts by key figures, moving into an assessment of the present 'state of the art', and finally looking to the future. But a coherent narrative is very hard to sustain precisely because of ambiguities and disagreements as to what constitutes CSR, and what has been described elsewhere by McCauley as its 'piecemeal' nature. Questions of identity recur throughout the book because it is not at all clear whether CSR is more than a disparate collection of tribes or a nation state, an unsystematic movement or a coherent discipline.

One major area of contention is the existence or usefulness of 'religion' as a distinct category of human activity. Many proponents of CSR would question its usefulness (e.g. Guthrie) (71), or deny its existence (e.g. Whitehouse) (43). But this is problematic for a field which has chosen to include 'religion' in its title. Jesper Sørenesen offers a helpful summary of what most CSR scholars understand by this term:

Religion' is a shorthand, synthetic term covering a number of beliefs and practices considered to be by-products of evolved cognitive structures, some of which perhaps (opinions differ) at some point in time have been exapted to serve the adaptive function of social integration. (Sørenesen) (144).

This definition of religion demonstrates a non-negotiable aspect of CSR; it is embedded in evolutionary theory. Its explanations are ultimately framed in terms of the question, 'What selective advantage does 'religion' confer?' In my undergraduate lectures on CSR this is the first bullet point on my introductory slide. The remainder are:

- Its currency is the cognitive module
- It focuses on supernatural beliefs
- and ritual actions,
- both their mental representation and their transmission in culture.
- It is interdisciplinary, embracing plural methodologies from anthropology, philosophy, psychology, neuroscience and so on.

At root CSR deconstructs the complex notion of religion into discrete phenomena which it treats as by-products of natural cognitive structures, each conferring a selective advantage in our evolutionary history, and therefore common to all human beings. Yet at the same time, its interdisciplinary character arises from the aspiration to provide an integrative account of religion as a whole. The ultimate aim has been to take its many and diverse small-scale empirically based theories (for example on why people so readily believe in invisible agents at work in the world and seem disposed to attribute certain mental properties such as omniscience to some of them) and join them up to form a macro-theory that will truly 'explain religion'. This grand aspiration is taken seriously in the early chapters where CSR is presented as spawning a highly generative research programme that has sufficient internal coherence to represent a Kuhnian paradigm shift in the study of religion; but it is rigorously interrogated in later chapters. These

offer more modest goals of ' providing causal explanations of discrete phenomena in countless particular cases' (Saler & Zielgler) (137), and several call for the integration of CSR with classic historiographic approaches to the study of religion, arguing that this will allow specifics of local context and unique contingencies to be factored in to its models (e.g. Ambascano) (121).

This book is not for the CSR novice (though McCauley offers a good introductory philosophical position statement in his chapter). Rather, for readers already familiar with the field, it provides an interesting and informative range of perspectives on a movement that has reached something of a watershed in its development. The perspectives offered are scholarly, honest and critical, often probing deeply.

For me perhaps the most interesting chapter was by Anders Klostergaard Petersen who demonstrates the way in which a CSR analysis has enriched his historical studies of ritual efficacy (more commonly known as 'magic'). Here CSR is, like psychoanalysis before it, serving as a hermeneutic lens that offers an enriched reading of ancient texts; CSR not explaining religion but, deeply ironically, called into the enterprise of interpreting it.

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Eloise Meneses

Studying the Image: Critical Issues in Anthropology for Christians

Eugene, OR: Cascade, 2019. 268 pp.
£25.00. ISBN 1-532-63676-9

In the years following the Enlightenment, the relationship between Christianity and science has continually come into question, normally when theories emerging from the 'hard sciences' conflict with traditional Christian cosmological claims. Yet the softer sciences, such as anthropology and sociology, present a challenge as well in so far as they often operate with post-Enlightenment 'assumptions and presumptions that exclude religious interpretations' (232). So what does it look like for Christians to cross the disciplinary divide, particularly in relation to the discipline of anthropology? Eloise Meneses's *Studying the Image* pursues an answer, attempting to illustrate how the integration of anthropology 'with biblical and theological insights' enables us to arrive at 'a holistic understanding of the study of people and cultures' (xiii).

Over the course of ten chapters, Meneses addresses nine different issues in anthropology: epistemology, human origins, culture, race and ethnicity, social orders, economics, politics, art and the relationship between Christianity and other religions. Each chapter begins with a discussion of a particular issue from an anthropological perspective, but the overarching quest is an epistemological one. Throughout the work Meneses consistently tries to chart a middle path between modern and postmodern approaches to epistemology, especially in regards to their pursuit to understand the human subject. On the one hand, Meneses is worried that post-Enlightenment approaches to anthropology will inevitably lead to delusions of certainty which cultivate violent practices ranging from ethnocentrism to ossifying gender roles (3-4). Yet, on the other hand, Meneses is equally concerned that relativistic approaches to studying human beings and cultures leave us unable to critique deleterious social practices (39). Instead, Meneses proposes that we adopt a methodological relativism that views knowledge as relational and contextual, thereby enabling us to listen to and understand the other before we evaluate

their beliefs and practices (13, 44).

Additionally, Meneses seeks to illustrate how Christian theological commitments critically interact with the discipline of anthropology and can make a positive contribution to understanding human beings and cultures. Meneses worries that Christians are inclined to appropriate the tools of anthropology and thereby allow it to dictate the rules of engagement without recognising the discipline's indebtedness to modern or postmodern epistemology. According to Meneses, Christian scholars can maintain their Christian commitments as anthropologies, in so far as their theological insights provide another vantage point for understanding the human condition (240).

Readers will be particularly interested to see how Meneses brings theological interests to bear on a variety fields, ranging from the epistemology to politics, cultural theory to economics. Yet, on multiple occasions Meneses's work can become somewhat reductionistic and her discussions of race, culture, evolution, gender and ethnicity all suffer as a result. Meneses's discussion of evolution and Intelligent Design seems to relegate God firmly to the gaps, wherein he is resourced to explain that which geneticist and evolutionary biologist alike have yet to understand. And, perhaps more importantly, Meneses consistently fails to articulate the larger philosophical framework which undergirds her arguments. At one point Meneses laments the role Western individualism has played in economics (144), but then later argues that prioritising our individuality is a means of freeing us from the trap of violence and war (174). But which is it? Are human beings fundamentally individual or social creatures? Or, more specifically, which has logical priority and on what grounds? Unfortunately, Meneses never says and the reader is left wondering how these seemingly conflicting points of emphasis can cohere.

However, it seems to me that a larger spectre lurks in the background. I was left with the nagging suspicion that Meneses's call for a more integrative approach to Christian theology and anthropology remains opaque. Meneses consistently employs Christian categories for *interpreting* anthropological data, but fails to cogently portray the difference Christian theology makes on a methodological level. Moreover, while Meneses's book is illustrative in nature, the reader is left wondering how exactly to go about the process of integrating the two disciplines. Presumably the relationship is dialogical, but Meneses never tells us how to adjudicate between contradictory claims and, consequently, we are not equipped to evaluate her judgements. Perhaps this is indicative of my own indebtedness to modernity's endless search for more methodology. But while Meneses offers principles to guide Christian interpretation of anthropological issues, she never directs the reader in the development of the principles themselves nor does she demonstrate how they meaningfully influence our study of the human creature.

And perhaps this is the rub. Indeed, Christians should till the fields of anthropology and science. And Christians certainly need to ensure that they pursue the scientific task *Christianly*, that is, in a manner that illustrates the difference that Christ makes. The question is, and has always been, how. *Studying the Image* takes a helpful step forward, but in so far as Christians wish to integrate their theological insights with anthropological concerns, work remains to be done.

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Franz A. Foltz, Frederick A. Foltz
Faith , Hope, and Love in the Technological Society.
Eugene, OR: Cascade Books, 2018. 200pp. pb. £21.12. ISBN 978-1-5326-3625-7

Faith, hope and love are fundamental attributes of the Christian life (1 Cor. 13:13). Traditionally they are considered as three theological virtues, which totally express Christianity. Technology, on the other hand, is the application of science to enhance, support and protect human life. In that sense the title of this book justifies the project goal which, according to the authors, is to research and analyse how technology is affecting the Church and society in terms of those three virtues, as well as to provide guidance on how society should use it appropriately.

Frederick and Franz Foltz are father and son and well qualified for this task. The father, a Lutheran pastor emeritus, and the son, a professor in science and technology, both in the US, examine the tendency of modern technology to break traditional connections of mankind to nature, place, time and community. They argue that the advancement of technology has now passed a critical point when it gradually becomes so powerful that it is beginning to justify its own demands. The economy behind it and the products it creates are turning into a malevolent force changing human society for worse. We now have to refocus from what people do with tools to what tools do to people. With regard to time, technology forces us to accept a new culture of the 'now' with immediate gratification. Connections to community break when the vulnerability and commitment of old style relationships, involving bodily presence, are being replaced with the narrow, impersonal superficial connections of electronic social networking. Decisions about what we create, produce and innovate are no longer based on past wisdom and vision for the future, but only on desire for efficiency, speed, power and immediate material gratification.

An interesting area of investigation is the way the electronic form of communication affects modern language with the introduction of 'plastic' words, devoid of precise meaning and truth. Businessmen, politicians and others use these words to create the impression that only 'experts' can deal with the problems. They manipulate people by hiding or completely removing ethical issues concerning trade, production and social activities. While the new computerised forms of communication improve life in terms of speed, immediacy and abundance, they also create a culture in which ethical considerations look redundant, outdated and archaic.

One can argue whether the use of electronic media can be exclusively blamed for loss of cultural values, but the authors are right that its proliferation exacerbated the decline. They seem to manage to stay on neutral, biblically based ground when criticising some Christian schools of televangelism on controversies like the 'law of creation' of Kenneth Copeland, the 'plan of salvation' of Oral Roberts, the 'prosperity theology' of Joel Osteen. These are criticised for their attempt to replace the mysteries of the faith with the work of technological systems and for teaching their disciples to follow strict manipulative steps of faith and gratification.

It is observed that instead of reacting to these issues by increasing human contacts, institutions and authorities are looking to resolve the problems of failed trust by increasing technological power. Diplomacy is reduced and hi-tech military solutions are on the rise. In the US people are encouraged to carry weapons and protect themselves, to use more intelligent, more powerful, faster systems. In response to this the authors offer a vision for informing and inspiring the change of the heart of people, giving as an example Martin L. King's dream for

equality and justice in America of the 70s.

The book certainly impresses by referencing over two hundred titles on various philosophical ideas of different times and styles: the French philosopher and Christian anarchist Jacques Ellul (*The Technological Society*) in the 1960s; the British socialist Anthony Giddens (*The Transformation of Intimacy*, *Modernity and Self-Identity*); the US post millennial secular technologist and futurist Ray Kurzweil (*The Age of Spiritual Machines*) to name just a few of those reviewed.

The authors suggest that in order to make the biblical 'Principalities, Powers and Authorities' function as God intended society should strive to restore the true biblical meaning of faith, hope and love. They call for us to follow the example of the early church and use more 'story telling' than 'systematic theology' in teaching, as is typical for the later church. However, it is difficult to see how this can be achieved without bringing on board a systematic approach that reliably relates the biblical stories of the past to present-day life. Also, while the title suggests a broader spectrum of technological issues, the analysis is too much focused on the negative effects of IT and computer network communications on individuals, disregarding the positive. Nevertheless the book is an excellent point of reference on the social aspects of technology and their effect on Christians.

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Zoë Lehmann Imfeld and Andreas Losch (eds.)

Our Common Cosmos: Exploring the Future of Theology, Human Culture and Space Sciences

London: T&T Clark, 2019. 187 pp. £91.90.
ISBN 9780567680167

Collections of essays often are a mixed bag. So it is with *Our Common Cosmos*. Let me begin with the negative. In his foreword, Carl Pilcher perpetuates the myth that the Earth was considered special because it was at the centre of the universe (x). Given the Aristotelian natural philosophy that dominated European thought well into the seventeenth century, there is no plausibility to the idea that people thought the Earth was special because of its spacial location. It was special because of its perceived centrality to God's plans and purposes!

The intersection of theology, culture and space sciences is an interdisciplinary topic, so it is striking that there is so much misunderstanding of interdisciplinary studies in the chapters. The editors' introduction states that 'The very form of "interdisciplinarity" is often contested within these pages, each contributor attempting to map out a space in which the humanities and the natural sciences can communicate' (4). Unfortunately, more often than not, when interdisciplinarity is mentioned some caricature or misunderstanding is trotted out and swatted down. For instance, in his chapter, Markus Mühling writes of the 'limitations' of interdisciplinarity (which he lumps in with transdisciplinarity), 'The main limitation consists in the fact that they take the sure ground of specific disciplines as a standpoint, and try to transcend this somehow; either by talking across disciplines or by mixing up two formerly independent disciplines into a new one' (11). This does not represent interdisciplinary approaches, but a lack thereof.

A good working definition of interdisciplinary studies is 'a cognitive process by which individuals or groups draw on disciplinary perspectives and integrate their insights and modes of thinking to advance their understanding of a complex problem with the goal of applying the understanding to a real-world problem', where the problem provides the

nexus for integration. 'The underlying premise...is that the disciplines are themselves the necessary precondition for and foundation of the interdisciplinary enterprise' (28). Interdisciplinary studies both respects each discipline, its ways of knowing and contents, *and* puts them in conversation with each other to explore complex situations and problems. This volume could have been strengthened by paying attention to genuine interdisciplinarity.

Theologians and philosophers make up the vast majority of contributors, hence it is surprising to see so little mention of philosophical hermeneutics: no references to Hans Georg Gadamer or Charles Taylor and only one to Paul Ricoeur. Such an understanding of human dynamics is missing in most of the chapters. For instance, Mühling worries about dialogue between science and theology being only 'an exchange of speech back and forth, in which the subject matter functions only as the means for an "across" like the table in ping-pong' (10).

Instead, what he proposes is that:

The subject matter is not a means for the interaction, but is rather the very ground one is moving through in research. In perception on the move the terrain discloses itself only along the way one is walking. The observations, insights, discoveries, theories and arguments as expressions of research are formed by the way itself and the way is formed by walking *along, not across* it (10, original emphasis).

Heidegger, anyone? So much is lost in reinventing wheels when the potent understanding of human beings as self-interpreting beings always engaged in seeking understanding is left on the self.

Another example where the lack of philosophical hermeneutics shows up is Andreas Losch's chapter, where he claims that 'In a Baconian view of science as a process of *induction* from observations and experimental data to concepts and theories, there would be no need for hermeneutics at all' (38, original emphasis). This is simply false. No interpretation – i.e., no understanding – no concepts or theories even if induction were the primary means of scientific inference. There would be just meaningless data. Induction alone is inadequate to build theories, to be sure, but interpretation is always involved in any inductive inference, even in understanding that something is data rather than noise.

But enough of the negative! Part 1 provides some background on approaching the relationship between science and religion. Mühling importantly grounds theology in self-disclosure of the triune God and the lived life of the believer, and emphasises that the conversation between theology and science always has a third conversation partner: philosophy. Dirk Evers's chapter reminds us that it is not science, theology and religion (or even philosophy) that engage in conversation with each other, but people who engage in practices and inquiry that fall under such disciplinary headings. And whereas Evers derides Ian Barbour as too abstract, Losch rehabilitates Barbour in a way that is very fair to his views. Connor Cunningham's chapter details some of the good reasons why reductionism and scientism fail, though the crisp, clear prose in the opening pages falls into text that will be difficult for most readers to follow. He is somewhat vague about how larger-scale contexts constrain microscopic properties and behaviours, and often is less than clear on whether emergence is ontological as well as how it is related to reductionism. There are precise ways to address these issues (e.g., Bishop, 2019, *The Physics of Emergence,* Morgan & Claypool). In his thoughtful Afterword, Tom McLeish writes, 'the question of whether we inhabit a reducible or emergent universe is surely as much question of science as of philosophy' (179). I can only say, 'Yes!'

Part II is devoted to thinking theologically about space sciences. Readers new to such an interdisciplinary subject will find introductions to sustainability and ethics (Robert White), ecology and ethics (Fabien Revol), aesthetics and ethics (Knut-Willy Saether), imagination and science fiction (Imfeld), planetary protection, astrobiology and commercial use of space (Erik Persson), and modern astrophysics and spiritual dimensions (Howard A. Smith), all through various theological lenses. Each in their own way reminds us that our relationship with Earth and the environment beyond is fundamentally ethical.

Here are some highlights: Revol reminds us that the triune God is present to everything through the Spirit, which has ethical consequences for our relationship to the world. Saether describes how experiences of beauty, sublimity and wonder can lead us to an ethical relationship with our own planet and others. The gem of the collection, in my view, is Imfeld's discussion of imagination in science fiction as a window into the intersection of ethics and science. She focuses on terraforming, which holds great potential for resurrecting as well as for exploiting a dead planet such as Mars. There are lessons, here, for our stewardship of Earth. Science fiction helps us to explore questions of human participation in creation: 'Is the expansion into space an act of co-creation – human beings participating in bringing the universe more fully into being? Or, by behaving as god like creators, are human beings ultimately destructive – spreading parasitically into space having exhausted the resources of the earth?' (127). Persson's chapter raises the question whether our search to discover extraterrestrial life is mainly instrumental – valued only for the knowledge we can gain from its study. If so, it is hard to see any way to stop the commercialisation of that life as well as its contamination. Howard Smith reminds us that questions about human specialness in the cosmos are more delicate than some of the secular dismissals of that specialness consider.

It is refreshing to see science-theology engagement on topics other than origins. There is much food for thought in this collection, and any reader will find something to challenge and enlarge their thinking.

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David L. Clough

On Animals vol. 2 Theological Ethics – 2019

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This volume presupposes the conclusions arrived at in vol. 1 Systematic Theology. Namely: that other animals are 'fellow creatures that glorify God in their flourishing' (23); and that they are 'fellow beneficiaries of God's grace in creation, reconciliation and redemption' (62). For the purpose of this review I will accept that these conclusions are a valid starting point for the ethical explorations in vol. 2.

An initial reading of the book left me overwhelmed with facts and statistics on how we use animals for food, clothing, labour, research, sport and entertainment: five chapters cover these topics. Interestingly, these chapters are entitled 'Using other animals for…' but when you come to the chapter on animals as pets this is entitled 'Other animals as companions and pets'. Given the frequent references in the book to Clough's cat Mitsy we may conjecture that his personal experience perhaps colours his views, whereas it can be argued that we are in fact also *using* animals as companions and pets – since they have no choice in the matter of be-

ing so used. He states that humans keep 'non-human animals because they enjoy living with them' (180), but this too is an instrumental approach to animals, something Clough objects to elsewhere. In this chapter the language becomes anthropomorphic. For example, stating that non-human animals 'show obvious signs of well-being and enjoyment' (180) assumes that we can recognise such in animals, which is far from obvious from a scientific perspective. We attribute such human emotions to animals but demonstrating whether or not their emotions are the same as ours is problematic. As noted by Dawkins (Marian Stamp NOT Richard!), with regard to ascribing similar emotions to human and non-human animals, this is a 'leap of analogy' rather than being based on scientific evidence (2012, *Why Animals Matter*, OUP, p.97). In fact, I found it is surprising that Clough makes no reference at all to Dawkins' extensive work and writings on the science of animal welfare, given his concerns about it.

Returning to the main thrust of the book, the key message is that much if not most of the human use of animals is unethical and as Christians we are called to care for animals, as part of our care for creation. We should aim to ensure that animals flourish and so glorify God. Animals are part of God's good creation and therefore not simply of instrumental value, that is placed on the Earth purely for our benefit. The arguments in support of this are well made and reasonably convincing. The proposed solutions are less so. While individuals might move to change their diet to one that, for example, eliminates meat, so reducing the need to intensively farm animals, this is unlikely to significantly impact the global demand for meat (of course, that is not a reason for not doing so). However, there is evidence that the move towards a vegan diet in rich Western countries is causing problems in the poorer countries of the world as they shift their agricultural production to meet those changing demands.

Some of Clough's biblical interpretations can at best be described as strained. For example, he endeavours to apply the 'who is my neighbour' teaching from the good Samaritan parable to animals as our neighbours. He makes much of the fall as being responsible for the current state of creation, including our use of animals as food, but some would question the Augustinian idea of a fall. Clough does not address the scientific aspect of how and why animals (human and non-human) evolved to be meat eaters and how that squares with his biblical interpretation. Some statements made lack evidence, such as the claim that compassion towards animals also results in increased compassion to humans (xx), which seems to be belied by the behaviour of some animal activists. The converse, that cruelty to animals is often a precursor to cruelty to humans (xx), is supported by evidence.

What can one conclude from the book? Undoubtedly humans are misusing other animals on a grand scale (as Clough's facts and statistics demonstrate) and as such his book is a wake-up call to Christians to take seriously their God-given responsibility to care for creation, and for animals in particular. Nevertheless, the book fails to address the scientific facts that humans are omnivores and a purely vegan diet (as promoted by Clough) is not necessarily a healthy one (as has recently been shown with regard to the lack of the vitamin B12, for which supplements are necessary). Likewise many animals are carnivores and that will not change until the new creation. In creation now, as noted by Isabella Tree (the author of *Wilding*) in her Guardian article (www.theguardian.com/commentisfree/2018/aug/25/veganism-intensively-farmed-meat-dairy-soya-maize), sustainable forms of livestock farming can restore soils, enhance biodiversity and sequester carbon – so having positive ecological and environmental effects.

Would I recommend the book? Yes, but in its cheaper paperback form rather than the very expensive hardback version, as it provides much food for thought (*sic*) on the issue of how Christians should treat animals.

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J. P. Moreland, Wayne Grudem, Christopher Shaw, Stephen C. Meyer (eds.)

Theistic Evolution: A Scientific, Philosophical, and Theological Critique

Wheaton, IL: Crossway Books, 2017. 1008 pp. hb. £47.99. ISBN 978-1433552861

This edited book consists of 33 chapters by 25 contributors with over a thousand pages, all of which amount to one of the most comprehensive compilations of ideas from Christian evolution-deniers. The chapters are generally well-written and accessible, and the authors lay out their positions with clarity. The volume covers scientific, theological and philosophical criticisms of evolution (not just *theistic* evolution). Each chapter would require a thorough critique and refutation, such as is not possible in this short review. Few of the arguments are new, and many of them will be familiar to readers of S&CB, but it's useful to see them gathered into one place. The authors, many of who have links with the 'Discovery Institute', make it clear that this is not a book about the age of the earth, and their backgrounds range through young earth creationism, old earth creationism and intelligent design and the many variations on these themes. The authors also state that they are not questioning the Christian faith of those who disagree with them, though Grudem comes very close to this when he maintains that, in his view, this is not a secondary issue (823), though thankfully he clearly states that one's views on evolution/creation are not essential for salvation.

The issues that they raise are of course worthy of serious consideration by thinking Christians, but this one-sided volume is not helpful. Indeed it could lead many unsuspecting people to imagine that the argument is over. As the authors will be well aware, most of their arguments have been challenged in some form or another in publications by Christians who uphold the authority of scripture. Evolution is not a theory in crisis and it is still the best (only) explanation for the wealth of biological data. Even the title is somewhat deceptive 'Theistic Evolution' in large bold letters 'A Scientific, Philosophical, and Theological Critique' printed so small as to go unnoticed; at first sight one might imagine that it is a book about theistic evolution!

The authors' consistent message is that theistic evolution (evolutionary creationism) is wrong about God's method of creation and the history of life on earth (especially human life). However, few of the authors offer any alternatives, except for the oft-repeated statement that the narrative of Genesis 1-3 should be taken seriously (literally?) as a historical narrative. They criticise evolution, but offer no other detailed explanation for life on earth, though one often suspects that they favour a literal six day creation, or continual divine interventionism in the form of an 'intelligent designer'; yet they fail to offer any real explanations. As such this is mainly a negative book, but what else would you expect from a 'critique', rather than a dialogue or discussion?

Several of the chapters confuse theistic evolution with deism; they confuse evolution with abiogenesis (for which there are many disparate hypotheses); they muddle science with scientism, and they use the pejorative term 'methodological

naturalism' when they simply mean 'scientific method'. Some of these arguments relate to questions of what science is and what its limits are. It is therefore interesting to note that the book makes no mention of the Dover trial and the judge's verdict on science (and 'Intelligent Design'). Indeed I note that the 'intelligent designers' amongst the authors have now moved their target. Their scientific criticisms are no longer directed at the so-called irreducible complexity of the bacterial flagellum, the immune system or blood clotting, which have now been thoroughly explained by good scientific hypotheses, and which are hardly mentioned. The 'science' has now moved on to 'information in DNA' and protein complexity. The 'intelligent designer' has now evolved so as to occupy another niche.

A lot of the theological arguments are based upon Adam and original sin. In this regard the chapter on the New Testament is clearly argued, and sets out the need for careful exposition of these passages, especially Romans 5 and 1Corinthians 15. I may not agree with the author's exposition, but he raises challenges that deserve consideration.

One of the most disturbing aspects of the book is that they choose to define theistic evolution in their own terms, in such a way that no Christian would disagree with their statements. In so doing, they have created a 'straw man'. Their definition of theistic evolution is that 'God created matter and after that did not guide or intervene or act directly to cause any empirically detectable change in the natural behavior of matter until all living things had evolved by purely natural processes' (67). This form of deism, in which God simply lit the blue touch paper, would not be recognised by most theistic evolutionists and is a distortion of their views. I wonder whether Grudem et al. have deliberately adopted a type of provocative hyperbole or if they have simply misunderstood what we stand for. If the latter, then we must work harder to explain what theistic evolutionists actually do believe.

At one point JP Moreland, for all his scholarship and the wide respect in which he is held, lays the blame for the decline in faith on theistic evolution (633). As a philosopher he should know better than this, conflating two unrelated observations. The claim that theistic evolution is turning people away from faith is manifestly ludicrous. I wonder if he, and some of the other authors, are living in a self-consistent fantasy world, which is remote from material reality and the people with whom I interact on a daily basis (both Christian and non-Christian). Grudem makes the same error, writing 'theistic evolutionists undermine Christian confidence in the teachings of Scripture and contribute to disdain or contempt for Christian truth claims among nonbelievers' (56).

In one of the most provocative chapters Wayne Grudem lists twelve theistic evolution beliefs that conflict with Genesis 1 – 3 (783ff). Most of these relate to specific views of Adam and Eve, death, suffering (evil) and 'original sin', rather than evolution per se. Of course there are deep questions of how we rightly interpret these scriptures, but he does not have a monopoly on the biblical interpretation of these chapters. He then proceeds to elaborate on eleven 'significant Christian doctrines that are undermined or denied by theistic evolution' (831ff). It is here that I think his arguments are deeply disturbing and a gross misrepresentation. His list includes the assertion that theistic evolution denies: the truthfulness of the bible; God's creative word; the evidence for God's existence; moral accountability; God's wisdom; God's goodness; human equality; the atonement and the resurrection! Most theistic evolutionists that I know would soundly endorse and affirm all of these essential Christian doctrines, while affirming evolution. Again I have to

ask whether he is being provocative or deliberately obscuring the truth by misrepresenting those who disagree with him?

As others have noted, the authors engage in a simplistic style of arguing by using questions like 'Did God guide evolution?' This is rather like asking 'have you stopped beating your wife?' setting up a false dichotomy. The very question ignores God's regular acts in the world that he sustains and that, as scientists, we are privileged to study. God guided evolution just as much as God guides human development from an embryo to a baby to an adult, in the same way that he guides any cellular or biochemical process. Not by specific miraculous interventions, but by his intimate and ever present power, upholding every aspect of the entire universe moment by moment as an act of divine grace. So, does God guide evolution? Well, yes – and no!

I could go on… Overall, this is a useful book for compiling a range of views of Christian evolution-deniers. Some chapters do highlight areas where clear Christian thinking is necessary, though several others are unnecessarily provocative and misrepresent other people's views, which is a very poor way of arguing. Thankfully, this book is so long and expensive that few people will buy it and even fewer will read it (though of course it has received glowing reviews from some Christian quarters, for which it preached to the choir), and it will be consigned to library shelves gathering dust, for to dust it should return! There are more important primary issues to celebrate together, so spend your money on something more useful!

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Bernard Lightman (ed.)

Rethinking History, Science and Religion: An Exploration of Conflict and the Complexity

Pittsburgh, PA: University of Pittsburgh Press. 2019. 307pp. hb £38.50. ISBN 978-0822945741

Readers of this journal will be wearily familiar with the 'conflict' narrative of science and religion, shaped and popularised by John William Draper and Andrew Dickson White in the late nineteenth century. They will also, no doubt, be aware of its slow but systematic deconstruction since the 1980s, as scholars like James Moore, Ronald Numbers, Bernard Lightman and Peter Harrison have repeatedly shown the simplicity and inadequacy of the warfare metanarrative.

Although he would no doubt deny it, John Hedley Brooke has probably done more than anyone else to help this deconstruction. His 1991 book *Science and Religion: Some historical perspectives* was a seminal text in this endeavour, not least for its deployment of 'complexity' as a corrective to conflict. In actual fact, as chapter 10 of *Rethinking History, Science and Religion* points out, *God and Nature*, a multi-author collection published five years before Brooke's, was the first to moot the idea of a 'diverse and complex [historical] interaction'. Brooke's book, however, did more than any other to justify and 'popularise' complexity.

'Popularise' merits its scare quotes. As a number of chapters in this volume make clear, most especially Thomas Aechtner's on 'Conflict and Complexity in Contemporary University Textbooks', and Ronald Numbers's on 'the warfare thesis today', the idea of conflict is alive and in rude health. The problem, as Numbers has said elsewhere is that 'Brooke's complexifying history seems to have little to recommend it besides its truth.' What does complexity actually comprise? What does it look like? And how might it finally dislodge 'conflict' (or indeed harmony) at

the controlling metaphor?

Rethinking History, Science and Religion contributes to the ongoing debate about complexity. The product of a Templeton funded project on 'Science and Religion: Exploring the Spectrum', led by Prof. Fern Elsdon-Baker, the book is separated into three sections. The first adopts a geographical approach to complexity, the second examines it through the lens of media, and the third explores the 'historiographies and theories' around the conflict-complexity nexus.

Part one comprises four essays. Erika Milam looks at the reinvigoration of the conflict thesis in 1970s America through the development of sociobiology, particularly in the work of Irven DeVore on the social behaviour of primates. The wonderfully ironic result of this was the inadvertent allegiance of right wing conservative Christians and liberal-atheist cultural warriors against what they perceived to be a common scientific enemy.

Miguel de Asua focuses on Argentina and adopts a much wider temporal lens, tracking the relationship between science and religion in that country from colonial times to the twentieth century, tracing three distinct periods, which he characterises as periods of harmony, conflict and indifference. Sarah Qidwai explores the relationship between science and Islam, through the lens of the nineteenth century Indian Muslim reformer Sir Sayyid Ahmed Khan, looking at two case studies of how the Qur'an relates to questions of heliocentrism and evolution. Finally, John Stenhouse explores the varied and fascinating relationships between Christian missionaries and science in the nineteenth century, in the process assessing Ronald Numbers's important idea of mid-scale 'patterns' for the science and religion relationship: naturalisation, privatisation, secularisation, globalisation and radicalisation.

Part two has five essays, centring on the media. Bernard Lightman, the book's editor, gives readers a fine-grained reading of how monthly magazines in mid-Victorian Britain created a space in which a complex science and religion relationship played itself out. A master of his field, his is one of the strongest essays in the volume. Sylvia Nickerson stays in the same period but focuses on the relationship between Darwin and his publisher John Murray III, offering glimpses of a professional relationship that was strained by the nature of its content, the Anglican Murray troubled what he was putting into the world and using one of his other publications to undermine it. In a chapter that might have worked just as well in Part I, M. Alper Yalcinkaya looks at how Turkish media adopted and adapted the conflict thesis for its own ends in the twentieth century, using it to argue for the comparable harmony between Islam and science. Closer to our time, Alexander Hall looks at Jacob Bronowski's 'humanist blockbuster' *The Ascent of Man*, broadcast on the BBC to great acclaim in 1973, and explores whether and how this 'evolutionary epic' affected public understanding of science and religion. Finally in this section, as already alluded to, Thomas Aechtner gives a comprehensive overview of the way in which the historical relationship between science and religion is explained in textbooks. The result not encouraging.

Ronald Numbers begins Part 3 by looking at where and why the conflict narrative persists today. In a particularly good contribution, Ian Hesketh takes up Freud's famous assertion that Copernicus and Darwin (and Freud himself) were responsible for the progressive decentring of humanity from itself. Hesketh shows both how this idea had a prehistory in the nineteenth century, but also how different thinkers came to precisely opposite conclusions from the same evidence.

Diarmid Finngean then adopts a geographical analysis approach to the his-

tory of science and religion before Peter Harrison gives a typically clear and erudite critique of the complexity as a thesis (a critique with which Brooke himself concurs in a short afterword), before proceeding to look at how metanarratives can, for all their faults, be useful in making complexity more than a mere critique.

Rethinking History, Science and Religion is a fine, readable and well-edited volume, with many strong essays and several excellent ones. It underlines how complex and *interesting* the historical relationship between science and religion is, and it will deepen and strengthen this growing academic discipline. However, its strength is also its weakness: excellent in disrupting the idea of any controlling metanarrative for the history of science and religion, it does not (because, by definition, it cannot) replace 'conflict' in the public mind. And the result of that is that we are liable to hear much more about conflict in the future.

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Sarah Lane Ritchie

Divine Action and the Human Mind

Cambridge: Cambridge University Press. 2019. 373pp. hb £90. ISBN 978-1-108-47651-5

The acknowledged success of modern science in its investigation of the physical world can lead to the view that science can explain everything. This produces scepticism about the meaningfulness of God somehow breaking in from outside and interfering with autonomous physical processes. While some think that physics is the ultimate arbiter of reality, and claim the title of 'physicalist', others settle for the name 'naturalist', accepting that the processes of the natural world, although open to science, may not all be reducible to simple physical explanation. There may, for instance, be 'emergent' properties, perhaps themselves with causal efficacy.

These familiar pictures pose problems for theology, and philosophy. The idea of God seems redundant as an explanation, and any theistic intervention can appear arbitrary within what can be seen as a closed physical system. Indeed, many see the so-called 'laws of nature' as fixed and necessary, even mathematically describable. If God can then intervene and break them, even though, by definition He formed them, His activity in the world can appear irrational.

These issues form the background to this work by Dr Richie, in which she tries to uphold a 'theistic naturalism', itself an odd notion. The term 'naturalism' is normally meant to exclude any possibility of the supernatural, and in particular any reference to the divine. The book is painstakingly argued, although somewhat repetitive, and betrays its origins as a Ph.D. thesis. It laboriously progresses through the forensic examination of fairly recent arguments by a series of scholars, who have been concerned with the relations of science and religion in general, and divine action in particular. She is particularly opposed to suggestions that God can work through the human mind as itself a spiritual entity.

Richie wishes to rebut a dualism of mind and body, by focusing on a physicalism that reduces mind to brain. She believes that in that case 'physicality is to be affirmed, rather than feared' (341). She denies that consciousness is an immaterial phenomenon, confidently saying (214) that 'the consensus view is changing, and it is (at the very least) acceptable to assume an 'in principle' physicalist explanation of human mentality.' Yet counting heads, whether of scientists, philosophers or theologians, to arrive at a philosophical conclusion, is not a reliable guide. Agreement and consensus are not guarantees of truth. Arguments about dualism are still very much alive, with profound philosophical difficulties,

some of which Ritchie acknowledges. Scientific views are themselves the product of human consciousness, and rationality. Suggesting that they are mere physical processes, and even perhaps part of some causal nexus, must undermine any confidence we have in human rationality, and in our ability to search for and recognise truth. Apparently rational explanations of the physical origins of consciousness can in this way become self-contradictory.

Naturalism is important for Ritchie, as she wants to argue against the idea of a 'causal joint', whereby a transcendent God intervenes in the world from outside. She properly points out that this picture becomes more difficult with the idea of natural laws being prescriptive. A descriptive notion of laws as mere general regularities, and not prescriptions, may not raise such problems. Possibly the idea of laws 'that cannot be broken' in the physical world is mistaken in the first place. Yet Ritchie wants to uphold a picture of what she terms 'theistic naturalism', stressing the immanence of God. The physical, she thinks, 'participates in God'. A problem that she herself mentions (336) is that any theological naturalism that accepts the scientific view of the world, but still puts it into a wider theistic context, is 'wholly immune to scientific critique' (336). Yet she wants to balance immanence against transcendence, with an ensuing tug between a deism that sees the physical world as autonomous, and a 'panentheism' that wants to talk of God within the world, as well as beyond it. There is always the danger of that falling into simple pantheism.

Ritchie accepts the ontological reality of a transcendent God, and in so doing has opted for the reality of the nonphysical. Yet the philosophical advantage of a monism that denies the possibility of an immaterial mind becomes irrelevant, once the metaphysical reality of the nonphysical is accepted. She started with the problem of divine action within a closed universe, but her attempt to combine naturalism with a robust view of an ontologically distinct God seems paradoxical. Once the nonphysical reality of God is acknowledged, why should we be unwilling to accept the nonphysical reality of consciousness and mind? This tension is never resolved in a book that is carefully researched, but too long and too expensive.

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Olli-Pekka Vainio

Cosmology in Theological Perspective - Understanding our Place in the Universe

Grand Rapids: Baker Publishing Group, 2018. 212 pp. pb. £15.99. ISBN 9780801099434

Your reviewer was not professionally trained in philosophy or theology, but is a Christian with a background in physics and a serious interest in cosmology. He therefore does not aim to offer an authoritative critique of this book, but hopes that he represents many of the readers of this journal who may be interested in reading it.

The key issue which the author aims to address is the implication for Christian theology of our modern view of an immense cosmos, and in particular the possible discovery of life, especially intelligent life, elsewhere in the universe. There is a widespread expectation that this may be likely, in view of the identification of thousands of planets on other stars in our galaxy. Science fiction, for example the Star Wars series, thrives on the popular appetite for implications of space travel and encounter with aliens. The author quotes one opinion about the impact of the discovery of alien life: 'Life on another planet is completely incompatible with religious tradition.' The topic is clearly of current academic interest; during the course of my read-

ing of this book to review it, I also noted a report in Astronomy and Geophysics news and reviews (I.Crawford, Expanding World View, Cosmic Perspective, A@G 60, 36. December 2019) on the second of two meetings exploring the relationships between astrobiology, big history and cosmic perspectives. My impression of reading that report was both of how lively the multidisciplinary interest is in extra terrestrial intelligence and related issues, and how little it is informed by theistic insights.

My chief impression of this book is that the author is well informed about ecclesiastical, theological and scientific history, but less well informed about modern physics and cosmology. When he is writing about early cosmologies, and their reception by the church, he is enlightening. It is fascinating to discover how much speculation there was in earlier centuries, both theological and philosophical, about the possibility and implications of plurality of worlds and of other kinds of beings. His descriptions of Aristotelian and Ptolemaic cosmology, on what the ancients believed about the size and place of the earth in the universe, and on the fundamental reasons why the church reacted against Copernicus and Galileo, are illuminating. He is less convincing when explaining for example the multiverse, its justification in its various forms, and its implications. Perhaps partly because English is not his first language, reading and understanding his language is sometimes challenging. Moreover, the book is not very well focused, and in places repetitive, perhaps because it is partly based on previously published work. A significant fraction of the book is devoted to theological issues that, in my opinion, are not central to the main topic. There is for example quite a lengthy discussion on the theological history of the idea of humanity being in God's image, and serious engagement with ethical ideas such as moral non-naturalism.

He announces his intention to interact with the writings of CS Lewis relating to cosmology. As someone who has enormously enjoyed Narnia and the space trilogy (despite Lewis's limited scientific understanding, for example, of how gravity would feel in a space ship in *Out of the Silent Planet,* and the way his portrayal of Mars and Venus has been overtaken by more recent discoveries) I was excited to read more. But the largest space devoted to this interaction is a chapter on the relationship between reason and imagination in Lewis's thinking, which while interesting, is again rather peripheral to the main topic.

My rather discouraging verdict is that if you are a theologian or a philosopher who is interested in the relationship between theology, philosophy and cosmology, and especially if you are writing in this area, it will be worth searching this book for insights, questions, and especially for references to previous work of various kinds, which are copious. But if you want to be informed about implications for Christian belief of the search for extraterrestrial intelligence, you may find this book hard work and disappointing. In its place I warmly recommend David Wilkinson's book *Science, Religion and the Search for Extraterrestrial Intelligence* (Oxford, 2013, now in paperback, 2017) which is much more accessible, more focused, very informative and accurate scientifically, less theologically intimidating, and despite its clear Christian basis, appropriate for recommendation to non-Christians for whom the topic is a barrier to faith.

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Julian Chela-Flores

Astrobiology and Humanism: Conversations on Science, Philosophy, and Theology

Cambridge UK: Cambridge Scholars Publishing, 2019. 150pp. hb £58.99. ISBN 978-1-5275-3436-0.

We can divide scientists into two camps, believers and non-believers. Believers in what? In the religious claims of the three Abrahamic traditions: Judaism, Christianity and Islam. This is the way Julian Chela-Flores, Venezuelan physicist and astrobiologist, cuts the pie.

'Arguments, including revelation and tradition, are extraneous to science…foreign to the scientific method,' says Chela-Flores (73). This places him in the camp Ian Barbour calls *independence* and I call the *two languages model.* Science and religious belief speak separate languages that cannot be translated into one another. Therefore, they remain independent ways of knowing. This independence justifies how scientists can embrace either belief or non-belief without compromising their science.

The book, *Astrobiology and Humanism,* cites a number of well-respected scientists who have been believers such as Muslim Abdus Salam and Roman Catholic Cardinal Carlo Maria Martini. For such scientists to integrate their naturalistic grasp of the world with their respective beliefs in God, they must reject *natural theology* – the attempt to demonstrate God's action via the methods of science – in favour of a *theology of nature*, which derives belief in God from revelation and tradition. 'Theology of nature', he contends, begins by 'accepting science' and then 'attempts to come to a more fundamental understanding. It relies on the unifying explanatory power of science' (30-31). A theology of nature relies primarily on revelation buttressed by tradition and then augmented by scientific explanation.

Much of the book, *Astrobiology and Humanism,* consists of staccato ruminations combined with a scientific hagiography of luminaries such as Paul Dirac, Frank Drake, and Charles Townes. In the case of Nobel Prize winning Townes, Chela-Torres takes us beyond the two-language model in the direction of consonance. Townes co-invented the maser and laser. This invention was the result of an intuition, an inspiration, what Townes called a 'revelation'.

In a personal conversation, Townes told me and some of my students that he believed scientific discovery and religious inspiration both belong in the same category, namely, revelation. Chela-Torres observes, 'Townes believes that both science and religion both represent the human effort to understand our universe and must ultimately be dealing with the same substance' (101). This assumption that the reality accessed through science and the reality accessed through religious understanding must be the same reality is what I – following Ernan McMullin – have called *consonance.*

The worldwide community of astrobiologists is currently taking up the question: what will be the social impact of space exploration in general and the discovery of extraterrestrial life in particular? The door is open right now for theologians and other scholars in the humanities to walk through. Scientists are welcoming partners in discussing the ethical and social implications of space exploration.

In Berkeley at the Center for Theology and the Natural Sciences, we are currently fertilising the complementary fields of astrotheology and astroethics. Astrotheology interprets astrobiology, of course; yet, it covers much more. Astrotheology is that branch of theology which provides a critical analysis of the contemporary space sciences combined with an explication of classic doctrines such as creation and Christology for the purpose of con-

structing a comprehensive and meaningful understanding of our human situation within an astonishingly immense cosmos. Astrotheology provides one example of a theology of nature that goes beyond the independence or two languages model. Astrotheology presupposes consonance between science and theology; then it engages in the creative mutual interaction (what Robert John Russell calls 'CMI') with specific sciences.

Astrotheology is a form of public theology. *Public theology* is conceived in the church, reflected on critically in the academy and addressed to the world. Astrotheology is conceived by church theologians and critically pruned in the university. Astroethics, in turn, is addressed to the world.

The seeds of astroethics or space ethics have been planted in the scientific garden by astrobiologists concerned with long term implications of space research. Theologians along with others outside the sciences now have an opportunity to co-nourish a shared discussion regarding our terrestrial future in light of extraterrestrial exploration. Astrotheologians who prune this garden in concert with scientists and other scholars in constructive ethics are functioning as public theologians.

When the astrotheologian returns to the church, his or her task is to paint a picture of all things in relation to the one God of grace. This task is implied, I think, by the gospel in miniature, John 3:16, which begins: 'For God so loved the world...' The word for world is *kosmos*. The concept of *kosmos* includes all things, even all physical things. To be sure, when the biblical writers looked up in the night sky they saw a lot less than modern scientists with telescopes can see. They saw 6,000 stars, not a trillion galaxies. But this does not change the fundamental insight: God loves the physical world and, in Jesus Christ, God took the existence of the physical world into the perichoresis of the divine life.

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Richard Dawkins

Outgrowing God – A Beginner's Guide

London: Bantam Press, 2019. 294pp. hb. £14.99. ISBN 9781787631212

This book is dedicated to 'all young people when they're old enough to decide for themselves'. One might expect that Richard Dawkins would therefore have written a book that was a model of scientific writing and a guide to evaluation of arguments. However, this is not so. Dawkins simply pours out his thoughts without any analysis of the strengths or weaknesses of his arguments and certainly without any consideration of opposing viewpoints. The book is an extended example of Confirmation Bias. He does not give a bibliography or recommended reading list. Nor does he give full references to his sources; so it is not possible for the reader to check that he has used them accurately. He has simply not given his young readers the tools to 'decide for themselves'.

For example, when dealing with (or rather, casting doubt on) the historical truth of the Gospels, in chapter 2, Dawkins several times refers to 'historians' without saying who they are. I suspect one of them is G A Wells who was a professor of German rather than History. By contrast, John Dickson, Senior Research Fellow of the department of Ancient History, Macquarie University, Australia, writes that he knows of no professional historian, no scholar in an ancient history department of a reputable university, who doubts Jesus' existence. (*Investigating Jesus – An Historian's Quest* Oxford: Lion Hudson, 2010)

The book is divided into two parts. In Part One 'Goodbye God' Dawkins dismisses the gods and goddesses of ancient Greece, Rome, the Vikings and Egypt and also the God of the Bible. He regards most of the Bible as myth and characterises the God of the Old Testament as cruel, jealous and horrible. The Christian doctrine of atonement is 'deeply, *deeply* nasty' (89). Dawkins regards Jesus as far ahead of his time morally but even he can be nasty.

In his second chapter, 'But is it true?' Dawkins uses the analogy of Chinese Whispers to argue that information about Jesus became distorted and mythologised before being written down into the four gospels. The whole point of Chinese Whispers is that it is set up to make communication difficult. You line a number of people up in a row; the first person whispers a message to the second; the second whispers what they heard to the third person and so on down the line; the message becomes more and more distorted as it passes down the line. The participants are only allowed to whisper; they are not allowed to repeat the message; at each stage the receiver of the message is not allowed to repeat it back to check that they have received it correctly, nor may they ask questions to check their understanding.

This is a complete travesty of the way in which the Gospels came to be written. Jesus would want people to get a clear understanding of his message. His twelve disciples travelled with him around the towns and villages of Galilee. Jesus would be giving the same teaching in each place so the disciples would hear his message repeatedly. Of course they would soon have learnt it by heart. Jesus sent his disciples out, in pairs, to teach on their own. He would certainly have made sure they knew what they were to say in each village. The gospels contain a number of passages where Jesus discusses his teaching with the disciples and his opponents. Like their master, the earliest Christians would have done their best to make sure that they got their message across clearly.

A good case can be made, on historical grounds, that Mark's gospel is almost entirely based on the reminiscences of Peter. (See for example: Bauckham R, *Jesus and the Eyewitnesses*, Grand Rapids: Eerdmans, 2006) The Chinese Whispers idea is as much a myth as the other myths that Dawkins decries (and surely he must know it is a myth).

Dawkins' interest in Part One has been mainly historical. Part Two, 'Evolution and Beyond' is the scientific part of the book, where Dawkins outlines the theory of evolution and refutes the idea of a designer. He also introduces some ideas from physics and cosmology.

For an atheist, Dawkins seems to have a very clear idea of what God has to be like. After discussing William Paley's 'watch' argument for the existence of God, Dawkins says, 'Anything clever enough – complicated enough – to design things has to arrive late in the universe. Anything as complicated as a watchmaker must be the end product of a long, slow climb from earlier simplicity.' (188) He clearly has no concept of an uncreated God who is entirely separate from the universe and not bound by its laws.

There are two-and-a-half chapters devoted to morality. Dawkins admits that we have evolved to be nasty to each other as well as nice. He also argues that our morality has improved over the centuries, although he has no explanation for this: 'It's almost like something in the air.' (125) His concept of morality is little more than 'Let us be nice to one another.' He has no concept of Right and Wrong, Good and Evil; no thought that morality might carry an *obligation* to be good.

It is hard to find anything to recommend about this book and a point-by-point rebuttal would require a book of similar length. However, if it sells well to its intended audience, then many

sixth-formers and undergraduates will be picking up ideas from it. Members of *Christians in Science* who are in contact with young people might wish to read the book in order to forewarn themselves of arguments they may encounter.

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Rupert Shortt

Outgrowing Dawkins – God for Grown-Ups

London: SPCK, 2019, 104 pp. pb. £7.99
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This book is not a point-by-point rebuttal of *Outgrowing God*. In a podcast for *Church Times* Shortt says that it was 'written at speed'. His stated aim in the preface is to 'turn the soil …to show that some of Professor Dawkins's [*sic*] main claims look far less credible from the standpoint of a mature faith'(xi). Yes – but Dawkins's target audience is 'Beginners' not those whose faith is mature.

In one way, Shortt's book scores over Dawkins's: Shortt gives full references for the published sources that he uses in his text. His book is organised in three parts or chapters. In Part 1, entitled *A dialogue of the deaf*, Shortt critiques Dawkins's theological ignorance, as shown in *The God Delusion* as much as in *Outgrowing God*, and comments on the belligerence and arrogance not only of Dawkins but also Christopher Hitchens, Sam Harris and Daniel Dennett. Shortt does not address the issue suggested by the title of this section, namely: how do you get Dawkins and his many disciples (*The God Delusion* has sold over three million copies) to listen to Christian, philosophical and even atheist voices responding to him? I wish I knew the answer – my only consolation is that, in the Parable of the Sower (Mark 4:1-20) the Sower deliberately sows his seed (representing the Word) on unproductive soil.

The title of Part 2, *God for grown-ups*, is presumably meant to signal that this is Shortt's main response to *Outgrowing God*. Shortt skims swiftly through a great deal of material. For example, he takes Dawkins to task over his discussion of the Five Ways in *The God Delusion* but he, Shortt, does not explain what Thomas Aquinas's Five Ways are or their significance. Since Dawkins's book is aimed at 'Beginners', Shortt should be aiming at the same readership and should not expect young readers to be familiar with the Five Ways. If you have not previously come across them you will be left wondering what this is all about. However, there is a helpful diagram (39) (attributed to Andrew Davidson) showing that God is not to be regarded as the first cause in a chain of natural causes but as the cause underlying all causes.

The author simply does not address adequately many of the issues raised by Dawkins. I will give two examples.

First, the God of the Old Testament (according to Dawkins) is a thoroughly unpleasant character; commanding genocide and endorsing child sacrifice. Shortt's response is 'the Old Testament is the first stage of an unfolding drama yet to reach its climax… [It] represents a genuine but partial revelation.' (49) That seems to suggest that God thinks genocide is OK until the New Testament reveals that he doesn't. Or that the Israelites were mistaken in thinking that God ordered the genocide of the people of Jericho. Surely Christians should be troubled by the ethnic cleansing recorded in the book of Joshua. We deserve a fuller and more sensitive discussion.

Secondly, Dawkins maintains that the Christian doctrine of forgiveness of sins through the blood sacrifice of God's own son is deeply nasty. This was the only point in *Outgrowing God* that made me stop and think. However, Shortt dismisses it as, 'apart from the atonement interpreted in one contentious way' (50).

He does not say what he thinks is a less contentious way. Jesus' blood sacrifice is contentious. Crucifixion is arguably the nastiest method of execution ever devised. Paul says, 'but we preach Christ crucified: a stumbling-block to the Jews and foolishness to Gentiles' (1 Cor. 1:23). He also makes it clear that, 'God presented [Jesus] as a sacrifice of atonement, through faith in his blood. He did this to demonstrate his justice…' (Rom. 3:25).

The sixth article of the Evangelical Alliance Basis of Faith states, 'We believe in the atoning sacrifice of Christ on the cross: dying in our place, paying the price of sin and defeating evil, so reconciling us with God.' (from the EA website, www.eauk.org) This is an essential part of Christian doctrine. It may be nasty (crucifixion must be the nastiest method of execution ever devised) but if God thought that was the only way forward, so be it. It certainly tells us how terrible sin is, if this was the only way for God to overcome it. (Dawkins makes light of sin. He seems to think of it as the occasional peccadillo, not as setting oneself up as one's own god.)

Part 3 has little to say about Outgrowing God. Rather it argues that Christianity (and other faiths) have made, are making and can make a more positive contribution to human society and welfare than secularism, 'it is possible to see religion as a bulwark against a potentially overmighty state…' (84). The title of this part is *Live and let live*. Perhaps atheism (or at least secularism) and religion should value each other. But is Christianity a 'live and let live' religion? We are told to make disciples of all nations (Matt. 28:19) and to be witnesses to the ends of the earth (Acts 1:8). Christianity is, in its own way, as aggressive as Dawkins's militant atheism.

Shortt has indeed 'turned the soil', in many places unrelated to *Outgrowing God*. However, he skates over the issues, never discussing them in sufficient detail and depth to put forward a convincing argument. If you have already engaged with Richard Dawkins and those Christians who have responded to him, I do not think you will get much more out of this book. If you are a beginner in this area I doubt if you will find it enlightening.

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Gerald McKenny

Biotechnology, Human Nature, and Christian Ethics

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How does human nature figure in debates about a biotechnological enhancement of bodily performance? This is the particular aspect in the ethical debate about the modification of human life that Christian ethicist McKenny discusses in this book. The upshot of his discussion is that, from a thoroughly theological and interdisciplinary perspective, enhancements are not necessary. They might distract from the true point of the human life form, which is its suitability for life with God. Nevertheless McKenny emphasises he does not see reasons for prohibiting biotechnological enhancements. Given the current discussions of whether performance enhancing medications like Ritalin should be available without prescription or whether genetic 'enhancements' of human embryos should be legalised, the implication of McKenny's book is that Christians should answer neither yes nor no. Their task is to practise the Christian life and proclaim the gospel with all its implications for the human condition and the use of biomedical technology, hoping to shift the terms of the entire debate. The book is an excellent resource with a lucid, even-handed argument on practically all of the relevant positions, both philosophical and theological. McKenny's

discussion is admirably free of prior commitments to conservative or progressivist principles. It remains to be seen, however, if his way of discussing human nature in slightly more abstract terms is the best way to approach the issue.

The book does not focus on specific enhancements or technologies. In keeping with his goals, McKenny reflects only generally on whether enhancements are worth wanting given what their use would mean for human nature. One chapter asks whether enhancements are off-limits due to the putative sacredness of creation and human nature. In dialogue with Oliver O'Donovan, Jürgen Habermas and Michael Sandel, McKenny answers negatively. The next question, posed by Jean Porter, Leon Kass and Martha Nussbaum, is if human nature does not function as a norm excluding interventions, whether that would not fundamentally alter human nature or endanger the particular goods which it constitutes. McKenny's critical response includes the argument that enhancements may force us to choose between human nature and an enhancement of its goods. Further, Donna Haraway, Philip Hefner and others suggest a norm of enhancement, given that over many millennia, human nature itself has co-evolved with technology. However, this position does not sufficiently reflect the relatively finished character of God's good creation.

McKenny then develops his own constructive proposal: human nature as we know it is created by God with relatively definitive features. Its goodness lies in the fact that it is particularly well suited to allow for life with God. Here one can think of the open-endedness in which human nature as we know it can take various forms. This plasticity of human nature would allow precisely for God's transformative influence on our lives. McKenny articulates this concept in dialogue with Kathryn Tanner. He suggests that while this by no means calls for biotechnological modifications, neither does it forbid such modifications across the board. Going beyond McKenny, however, one could point to the fundamental significance Tanner assigns to human passivity vis-à-vis God. Yet McKenny even prefers Karl Barth's emphasis on the distinctive features of human nature to Tanner's accent on plasticity: human life is characterised by temporal limitations, the physical embodiment of a soul and responsibility to God. It is within a theological account of responsibility that McKenny values autonomy. These features are the matrix with which God has enabled the covenant with the creature to play out, for our salvation. By contrast, attempts to extend the human life span significantly would be more in keeping with a fundamental questioning, not an affirmation, of temporal limitations. Following Barth's example, McKenny eschews absolute ethical prohibitions, but highlights the regular course of action – life without enhancements – as the liberating permission of the gospel. The focus on the individual or smaller communities is not rigid when McKenny notes how biotechnological modifications may be hegemonic in idealising 'expressive individualism' in a late-capitalist economy. The burden of justification now rests on the affirmation of enhancements, although they remain an option that requires 'a great deal of discernment, deliberation, and prayer'.

McKenny suspects that enhancements cannot be consistently distinguished from medicine, but writes largely as if they clearly can. Further, an important question that is not explicitly discussed is whether various enhancements should be legalised in the first place. His insistence that enhancements cannot be rejected out of hand implies that laws and regulations should not pre-empt individual choice. An important dialogue partner, Barth in *CD* III, conceives of sociality in the overly narrow terms of I-Thou encounters, but an account of sociality

should not exclude more generic forms as regulated by law. Here McKenny's focus on human nature, conceived of in abstraction from wider societal embedding, is not entirely helpful. One way to address human nature *in our societies* would be Habermas's secular argument that in enhancing their children's biology, parents harmfully override the significant anthropological phenomenon of self-determination, disposing of children in a hegemonic way. McKenny plausibly objects that putative 'general-purpose' enhancements like increased intelligence can indeed be beneficial rather than manipulative. Christian realism, however, would raise the question of sin. Many parents might choose enhancements in a beneficial way, but others are unlikely to do so. This is not merely a question of doctrine. In helicopter parenting, 'tiger mothering' and symbiotic relationships to children, parental influence has expanded significantly, and biotechnology would add to this worrying dynamic. Yet should society, in legalising embryo modification or lifting restrictions on Ritalin, tolerate disproportionate harm done in some families for the benefit of formally free choice? It is not clear that, from a secular perspective, enhancements improve the autonomy of the less powerful and, from a Christian perspective, add to McKenny's helpful vision of creaturely life with God.

This critique notwithstanding, McKenny's book is required reading in Christian biomedical ethics. It provides an even-handed discussion of the crucial positions and, with its own helpful new position, shifts the terms under which enhancements are discussed.

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