Ethics

THE SCIENCE OF VIRTUE: Why Positive Psychology Matters to the Church by Mark R. McMinn. Grand Rapids, MI: Brazos Press, 2017. 208 pages. Paperback; $18.99. ISBN: 9781587434099.

Christianity and psychology have a checkered history. Despite the systematic scientific review work of David Larson, Dale Matthews, and others, who have demonstrated over the last forty years that sincere Christian faith promotes physical and mental health, antagonistic psychiatrists have continued to look upon the faith community as delusional or mentally unbalanced. Some faith leaders consider psychology as a concoction of the devil and antithetical to a Christian worldview. In this work, Mark McMinn, George Fox psychology professor, Templeton-funded researcher, and clinical psychologist, assures the faith community that it has nothing to fear from positive psychology. Indeed, serious discipleship leads to a fuller expression of the six virtues highlighted in this short book: wisdom, forgiveness, gratitude, humility, hope, and grace.

Each chapter of the book has four purposes: (1) to help Christians understand positive psychology; (2) to illustrate how Christian thought can change positive psychology for the better; (3) to encourage the church to embrace the science of positive psychology; and (4) to consider the implications for Christian counseling.

The first virtue parsed is wisdom, which the secular Berlin Wisdom Project defines as "expert-level knowledge in the pragmatics of life" (p. 15). While this terse definition is helpful, additional criteria are necessary to make wisdom a measurable characteristic: factual knowledge, procedural knowledge, life-span contextualization, values relativism, and managing uncertainty. Scientific wisdom is then contrasted with the conventional wisdom of the wisdom books of the Bible and Jesus's critical wisdom. McMinn describes a PhD student's project on wisdom mentoring in which the study group had six meetings over twelve weeks. Since wisdom formation is greatest in young adulthood, this study paired older mature believers with young adults from 18 to 25. The results, as assessed by surveys before and after, showed improvement in several measures of wisdom that were not seen in the control group.

The second virtue, forgiveness, has been studied more extensively by secular psychology. Prior to the "discovery" of the scientific benefits of forgiveness and the explosion of articles written about the topic in the literature (from zero in 1980 to over one hundred per year from 2007–2014), forgiveness was demonized as wrongfully dismissing the pain of past wrongs. But since science has documented the benefits of forgiveness—lower blood pressure, less low back pain, reduced anxiety and depression, increased hope—the value of helping clients achieve forgiveness can no longer be ignored. For the Christian, forgiveness is not just a mechanism to achieve better mental and physical health but a command of Christ to forgive as we have been forgiven. Positive psychology can help by providing useful exercises, realizing that real forgiveness will take time. Beyond the forgiveness of others, there is the need for the Christian to seek to be forgiven by those they have offended. Although not always possible, reconciliation can sometimes result from seeking and granting forgiveness.

Gratitude is another of the virtues well studied by positive psychology. The book acknowledges the seminal work of Robert Emmons in this field, including his randomized trials demonstrating the value of gratitude journaling. Gratitude, like forgiveness, is associated with many physical and emotional health markers. McMinn is less certain that secular tools such as gratitude journaling can make the ungrateful thankful. For believing Christians, gratitude should come naturally since believers have received the blessing of salvation, a relationship with their Creator, and a hope for life beyond death. In his graduate student's crossover study, which sought to demonstrate that a formal program of gratitude enhancement would improve the psychological health of church members, a "ceiling effect" was encountered. Active church members were already highly grateful, satisfied with life, psychologically well, and spiritually attuned.

Humility represents a more difficult character trait to study. There is often a disparity between self-assessment of humility and the assessment of others. A simple definition of humility by psychologists entails three traits: (1) views self accurately (neither too high nor too low); (2) considers the other and not just oneself; and (3) is teachable, open to the possibility of being wrong (p. 101). One also needs to distinguish between "state humility," which refers to an individual who is humble in a given situation, and "trait humility," which is reserved for people who characteristically demonstrate humility. Scientific studies of humility, while limited, show that

> humble people experience more positive romantic relationships than others, form and repair social bonds more readily … are less anxious about death, are more compassionate, and experience less spiritual struggle. (p. 104)

For the Christian, humility follows logically from our relationship with the Almighty God and should translate into our relationships with people and our view of nature. It is still unclear whether humility can be increased in a measurable way by exercises. Mark believes that humility might be learned through example rather than cognitive exercises.

Hope as defined by positive psychology has three elements (p. 121): (1) feeling optimistic that one's future can be better than the present; (2) identifying pathways to help one move from where one is now to where one wants to be; and (3) having a sense of motivation to make it so. Scientific studies of hopeful people demonstrate that they have many positive health outcomes. They are more likely to engage in disease-preventive activities, less prone to high-risk sex, less prone to self-injury, and better able to cope with illness (p. 125). Although this secular view of hope is positive, it fails to give a rationale for that hope. For the Christian, hope is grounded in the sovereignty of God. The Christian worldview understands suffering within the context of sin and the fall. The individual striving inherent in the above secular definition fails to capture the role of community: hope for the believer comes in part from the faith community where hope is received and given.

Grace is the final virtue covered. While grace has not been well researched, the Templeton Foundation is currently sponsoring grants to study this virtue. There are preliminary studies that suggest that grace between couples "results in increased empathy, forgiveness, and reconciliation," and that a gracious orientation "is related to decreased levels of depression and anxiety and increased general mental health" (p. 144). This virtue has elements of the other virtues, especially gratitude, forgiveness, and hope. There are scales which empirically seek to quantify grace. For the Christian and the Christian community, the concept is rooted in God's grace to us while we were yet sinners. God's grace makes it possible to accept responsibility for our shortcomings and move to self-forgiveness. This then frees us to be more gracious to others and to enjoy the many gifts of people and the natural world.

This book is not a critical review of positive psychology; such a book would be much longer and I would not be qualified, as a practicing cardiologist and medical ethicist, to review it. I am struck by the parallels between virtue ethics and virtue psychology: both have grown in influence over the last fifty years. In virtue ethics, good ethical decisions result from positive character traits (truthfulness, temperance, modesty, courage, etc.) matured through years of practice. In positive psychology, by developing one's wisdom, forgiveness, gratitude, humility, hope, and grace, one becomes better able to withstand life's challenges, resist anxiety and depression, and enjoy better physical health (p. 165).

The book represents the reflections of a Christian psychologist who has contributed to the field of positive psychology. He is writing for fellow believers in the pews who wish to integrate the science of virtue with what we know about these virtues from scripture. There are applications to the church life and to Christian counseling. The book would be useful to ASA members who are always looking for a means to see their faith as a part of rational science. Because it is short, it can be read fairly quickly. If you have the luxury of being able to spend forty minutes to an hour in quiet time, you might use the book as a devotional, reading and meditating on a chapter every day for a week. McMinn's ambitious hope is that

> positive psychology and the church could be partners in promoting a new understanding of the good life in contemporary society, one that focuses more on virtue than pleasure, more on being good than on feeling good. (p. 165)

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THE NATURE OF ENVIRONMENTAL STEWARDSHIP: Understanding Creation Care Solutions to Environmental Problems by Johnny Wei-Bing Lin. Eugene, OR: Pickwick, 2016. 326 pages. Paperback; $38.00. ISBN: 9781610976206.

Why can't we agree on what excellent climate action looks like? This question drives *The Nature of Environmental Stewardship* by Johnny Wei-Bing Lin (BS and MS, Stanford University; PhD, UCLA; Senior Lecturer and Director of Undergraduate Computing Education at University of Washington Bothell). Lin weaves an allegorical story about a pastor struggling to mediate a disagreement over environmental stewardship. While doing so, he provides a useful taxonomy for discussing environmental stewardship and a structure to use when debates and conflicts inevitably arise.

Lin begins with clear biblical support for the existence of a creation care command before arguing that the creation care command lacks the clarity of other commands, such as "do not steal." This recognition sets the book apart from many others which may argue the opposite. However, this also makes the book particularly useful for those trying to understand what creation care looks like. He explains that, due to its complexity, obedience does not flow directly from the command. He enumerates criteria that are used to evaluate what obedience looks like. Finally, he sets

forth four "determinants" that influence the criteria. Lin spends most of the book breaking down these "determinants" into their component parts.

The four determinants for the creation care command, he argues, are worldview, ethical theories, science, and society. In the first, Lin explores a range of worldviews, both religious and nonreligious, before examining how worldviews affect the criteria for evaluating the creation care command. In the following chapters, Lin examines a massive range of ethical theories, understandings of science, political ideologies, and economic theories with a careful and analytical eye. He critiques and lauds each fairly, while often providing compelling alternatives to common ideologies. His goal in doing so is to bring to light these foundational beliefs with an understanding that all of them have much to say about environmental stewardship.

An immediate concern for some readers may be that Lin begins to fall into moral relativism or that he accepts any belief regarding creation care as legitimate. However, Lin does an excellent job of reiterating the goal of the book. Rather than placing a value judgment on beliefs, Lin understands that in order for effective dialogue to take place, all views must be presented fairly and entirely. A quick glance at the acknowledgments and citations shows a wide variety of individuals with passionately held beliefs, and Lin certainly holds his own. However, by bringing together a sizable breadth of topics, he emphasizes "that the path from principles to practice is often incredibly complex and multi-faceted, not simple, and requires the highest levels of creativity to bring together many different fields of study—with different kinds of authority and expertise" (p. 17).

Lin does not resolve this uneasy tension. He ends his book with guidelines for synthesizing a comprehensive understanding of environmental stewardship rather than presenting his own complete synthesis. As a reader, I was forced to accept his critiques of my own fundamental beliefs while better understanding the beliefs of someone with whom I may disagree. A voice like this is sorely needed today and his strategy for understanding issues can be broadly applied to issues other than environmental stewardship.

The book is a challenging read and heavily references outside texts. For a reader to fully grasp Lin's ideas, they should already be familiar with some of the philosophical, theological, and environmental literature. The book is also very dense and should be read with a focused eye and a pen to take notes. At times, Lin uses large words and complex sentence structure when simpler prose would suffice. For someone who is trying to improve conversations about environmental stewardship at their church, campus community, or neighborhood, this is an excellent resource. However, while there are discussion questions at the end of each chapter, it would still be a frustrating book for the average church or small group that is casually interested.

Some may see the word "stewardship" in the title and assume the book is outdated; while terms such as "reconciliation" may be more in vogue, this book is very timely. The end of the book draws heavily on reconciliation themes and helps address the concern that creation care discussions often lead to damaged relationships and division. Lin references familiar social psychology and Christian peacemaking sources to provide strategies for effective conflict resolution. Lin earnestly seeks peaceful living between individuals and groups, and this book provides strategies for the development of that peace. The ability to articulate effectively *why* a certain belief is held allows for people to find common ground and develop more stable policy solutions. He argues this effectively and provides the taxonomy for this to take place.

This book both made me think and changed how I think. If Lin's goal is to help us understand how we think about environmental stewardship, he achieved it. Lin's book is an effective solution to a common problem: we have forgotten how to talk about issues such as environmental stewardship with those with whom we disagree. Lin reopens the dialogue.

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History of Science

SCIENCE WITHOUT FRONTIERS: Cosmopolitanism and National Interests in the World of Learning, 1870–1940 by Robert Fox. Corvallis, OR: Oregon State University Press, 2016. 168 pages, 24 B&W illustrations and photographs, notes, bibliographic essay, index. Paperback; $22.95. ISBN: 9780870718670.

Begin with a truism about an earlier century: "… truth was indeed open to all. Yet it was only fully open to those who knew how to get at it" (p. 13). When Ben Jonson appealed to Seneca's adage (*Patet omnibus veritas*) in his seventeenth-century commonplace book, the sheer volume of printed material was already making one's access to truth increasingly difficult. How the sharing of knowledge across international and linguistic boundaries developed in the late nineteenth and first half of the twentieth century is the historical question that Robert Fox, Emeritus Professor of the History of Science at the University

of Oxford, tackles in this book. Initially delivered as a series of lectures at Oregon State University, they are now published in a highly polished and documented form. Fox, a well-known scholar in the history of the physical sciences in the eighteenth and nineteenth centuries, has now turned from an examination of science as practice to science as a model for society with international aspirations, a society in which real harmony, peace, and understanding set the tone.

Fox's thesis, in short, is

> that shared research goals and scientists' readiness to take advantage of the dramatically improved provision for communication across national and linguistic boundaries had much in common with contemporary internationalist movements extending far beyond the realms of science and technology. (pp. 2–3)

If you have ever wanted to learn how collaborative efforts and improved mechanisms of communication and information retrieval came into existence, this is the book for you. To Fox's credit this is not a mere cataloging of efforts, but a hard-won academic search for the cultural contexts that made such a retrieval of knowledge both invigoratingly delightful and, at times, frustratingly difficult. Political and cultural contexts matter. *Science without Frontiers* is a testament to that fact in the arena of knowledge acquisition and sharing.

Besides a brief introduction and epilogue, *Science without Frontiers* has three major chapters. The first, "Knowledge, the Cement of Nations," traces advances in scientific collaboration across linguistic and national boundaries from the mid-nineteenth century up to the First World War. This collaboration was fostered by the accelerated growth in international congresses and scientific societies. Such efforts also were funded by a search for a universal language (Esperanto), cataloging innovations such as the Melvil Dewey decimal system of classification, the creation in Brussels in 1895 of an Institut international de bibliographie (IIB), and the formation of international institutes and societies for geodesy, astronomy, chemistry, et cetera. It was a revelation to this reviewer to fathom how widespread these efforts actually were. The role that Belgium played in these endeavors, as a neutral country and as an assumed facilitator of knowledge between the Latin and Germanic worlds, was remarkable. These efforts to build and elaborate a "scientific internationalism" gave support to those focused on creating a global society in which information and values were shared.

The jarring reality of WWI as national governments increasingly sought to control the uses of science and technology brought a challenge to these international efforts. This is detailed in the second chapter, entitled "War as Watershed." Perhaps the most egregious event occurred early in the First World War. On October 4, 1914, ninety-three German intellectuals signed a patriotic manifesto, "A Call to the Civilized World," claiming the allies had stained German honor by suggesting that the German kaiser had wanted to go to war and that Germany had violated Belgium's sovereignty. About one fifth of the signatories were scientists, many of them Nobel Prize winners. Albert Einstein, ever the internationalist and pacifist, was the leading scientific holdout. The war, later hostilities, and latent prejudices brought a near halt to any cooperative endeavors.

In chapter 3, "The Legacy of a Fractured World," Fox advances the story up to 1940. Once the idealistic vision of an "all-embracing internationalism" was so savagely called into question, it would indeed take an extreme effort to reestablish international scientific cooperation. The agenda was set by a "national turn." Pride of place was given to national museums and exhibitions, as well as the number of Nobel Prize winners a nation had won. To be sure, there were still countervailing efforts to normalize relations between countries. The International Research Council (IRC), through its organs such as the International Astronomical Union (IAU) and the International Union for Pure and Applied Chemistry (IUPAC), sought to reestablish relations with the Central Powers, despite the prevailing French/German rivalry and the reluctance of Belgian academics to participate with Germans. Also, the increasing "totalitarian tide" in Germany and Russia in the 1930s made cooperation difficult. Just think, for instance, of the four-volume manual, *Deutsche Physik* (published in 1936–1937), by German Nobel Prize winner Philipp Lenard, as well as the pavilions celebrating and glorifying national contributions at the 1937 International Exposition in Paris.

A short epilogue highlights some of the more hopeful post-1940 developments, such as the resuscitation of the International Committee on Intellectual Co-operation in 1945. This was soon followed by UNESCO, the United Nations agency for educational, scientific, and cultural affairs. In our own century we have seen such ventures as the Google Books Library project, the Digital Public Library of America (DPLA), and global brain emerge. The question remains whether they will succeed in making truth open to all.

Who should read this book? Anyone interested in learning more about the social and cultural embeddedness of scientific international communication endeavors. And, equally, those interested in reflecting critically on the human hope that science and

scientific knowledge sharing and acquisition will lead to a promised land in which peace reigns unadulterated.

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ORIGINS

SAVING THE ORIGINAL SINNER: How Christians Have Used the Bible's First Man to Oppress, Inspire, and Make Sense of the World by Karl W. Giberson. Boston, MA: Beacon, 2015. 212 pages. Hardcover; $27.95. ISBN: 9780807012512.

In his latest endeavor to make a case for the coherence of evolutionary science and religion, Karl Giberson uses the biblical story of Adam as both a starting point and a framework for exploring the alleged "conflict" between religion and evolution in American culture. Giberson is a physicist who, in an earlier book (*Saving Darwin: How to Be a Christian and Believe in Evolution*) gives "a deeply personal account" of how he was raised as a fundamentalist whose ambition was originally to study science and to become an advocate for creationism, but who, in his scientific studies, discovered young-earth creationism to be indefensible. Yet, still a Protestant Christian, he felt compelled to justify his belief that one can both accept evolutionary science and remain Christian. Largely because of the rather negative reception of the *Saving Darwin* book in evangelical circles, he spent much time defending his views to critics and to the administration of his own evangelical college. Eventually, he quit his job (where he had taught for 27 years); he now teaches at a Catholic school that "welcomes examination of its own traditions." It was within this environment that Giberson was able to write the current book under review. He notes that several other scientists and friends at evangelical schools, who had also written books or articles about evolution as God's creative process or about how Christianity need not believe in a literal Adam, have been driven out of their teaching positions. Clearly, within the environment of an evangelical college or university, delving too deeply into this topic is a potentially risky task, although the scientists at many of these colleges have been trained at first-rate and elite universities.

The Adam of the Old Testament is only rarely mentioned in the biblical texts after Genesis. Christians, however, have focused on Adam as the ultimate source of sin, death, and evil among humans. Furthermore, says Giberson, Adam is seen as establishing the social order regarding heterosexual marriage, free will, observation of the Sabbath, use of the earth's resources, condemnation of nudity, and the assigning of subordinate roles to women and non-whites in modern society, as well as influencing people's views of evolution and big bang cosmology. However, Adam would probably have remained a relatively minor character had it not been for the Apostle Paul, whose theology cast Christ as the "Second Adam" and whose role is to undo the damage done by the first one. Giberson next recounts the roles of early Christian apologists in developing this viewpoint. The question arose: Did Adam's sin stain all of humanity and make it impossible for any of us to avoid sin, or was Adam simply an example for each of us, that we all have the free will to either sin or to avoid sin? The Pelagian heresy, advanced by the early Christian ascetic Pelagius, took the second view. According to Pelagius, Adam was merely an example of each of us. Adam's sin was his own; infants are born into a state of innocence and Christians need not be overly concerned with Adam's sin to the point of hopelessness.

The definitive Christian answer to this question was put forth by the early theologian Augustine of Hippo (St. Augustine) who, says Giberson, was the most influential Christian in the Western church after Paul. Augustine argued for "original sin" with which we are all born due to Adam's sin, and for Christ as the "Second Adam." This arises from his affirmation that salvation can only come from the church through the sacrament of baptism. Any other path claimed for salvation, such as through good works, would suggest that Christ had died in vain. Therefore, seeing Adam as simply an example of the temptations faced by "Everyman" is insufficient to explain the passion of Christ. But, if all are born inheriting Adam's transgression, then infants must be baptized as well. It made sense to Augustine that the suffering of innocent infants who have disease and deformities is the result of the sins they inherited, not any they had as yet committed. Furthermore, as babies mature, he noted, they always commit sins in their actions as if they are actually unable to choose the good over sin. As such, Augustine established the role of Adam as the source of original sin and Christ as the only path to salvation. Thus, Christ himself became the only character in the entire Bible that is more significant than Adam.

From here, Giberson brings in the medieval topic of dualism. As Christianity moved into the late Middle Ages, Thomas Aquinas argued that while Adam's fall had indeed impaired the ability to resist sin, it had not affected human reason. Thus, through the study of natural philosophy, humankind can learn to understand God's grand design on a cosmic scale. Aquinas taught the centrality of the unmov-

ing earth as the locus of God's great acts of creation and redemption, but that the earth was surrounded by moving heavenly spheres which reflect God's untainted mathematical perfection of creation. This "Christianized cosmos" led to the search for Adam's language as the common source of all other human tongues and for the location of the Garden of Eden. Furthermore, if Adam was indeed the first man, then European histories were necessarily extensions of Old Testament chronologies which were thought to extend back to around 4000 BC to Noah, who descended from the first man, Adam. This meant that no national history could extend back before that time and that all humans of all nationalities must have diverged from Noah's (and Adam's) lineage.

The birth of modern science began to challenge these views. In the mid-1500s, Nicholaus Copernicus postulated that the corrupted earth actually moves through the uncorrupted heavens, an idea which was later advocated by Galileo. Anatomists Andreas Vesalius and Paracelsus challenged the long-established teachings of the Greek physician Galen, practicing in the Roman Empire, whose ideas of anatomy had stood for over one thousand years. These new scientists met with strong resistance because the general opinion was that God had imbued Adam with complete knowledge and that ancient texts (especially the Bible), being closer in time to Adam, were wiser, closer to God, and therefore more accurate. Giberson notes that it took centuries to dislodge these old ideas. New sciences that challenged the old biblical accounts were suppressed, denounced, and viewed as unorthodox.

Giberson argues forcefully that a person can be a Christian without believing in a literal Adam and Eve. Since anthropologists find it impossible to trace all humans back to a single pair of ancestors in the Middle East some six thousand years ago, this indicates that humans are *theologically*, not *biologically*, descended from Adam. The biblical accounts of creation and the flood are clearly retellings of Babylonian creation and flood myths, *Enuma Elish* and the *Epic of Gilgamesh* (based on an even earlier myth of *Atrahasis*), which were written centuries before the two different creation and flood stories in Genesis.

The "Book of Nature," however, clearly has no Adam, as the process of natural selection and the fossil record documenting evolution do not require it. Although Darwinian evolution was initially challenged by other hypotheses, modern evidence clearly indicates that Darwin was correct in his description of evolution by natural selection. The fact that evolution has been firmly established within the scientific community triggered three modern responses in the twentieth century. The *Modernists* saw evolution and modern biblical scholarship as undermining older Christian views, indicating a need for a new post-Enlightenment Christianity. The *Fundamentalists*, on the other hand, insisted that a literal reading of the Genesis accounts, including Adam and Eve as real persons, was necessary, and that any scholarship that uproots this is to be rejected. A third group, which Giberson calls *Traditionalists*, tried to make small theological adjustments to accommodate the discoveries of science without calling for a new understanding of Christianity. Over time, the fundamentalist view evolved into the pseudoscience of "scientific creationism" that is still popular among conservative Christians. However, this triggered another extreme cultural backlash; the "anti-religious culture warriors," such as Richard Dawkins, began using evolution as an argument against religion. The above disagreements are the source of the current conflict.

Saving the Original Sinner is a well-written, well-researched, readable history of the origins of the conflict between religion and evolution in contemporary society. And certainly, other scholars have written about this topic from scientific and religious viewpoints. But the uniqueness and the heart of this book (where I can, from experience, empathize with the author), lie in the *introduction*, in *chapter 11*, and in the *conclusion*. Here, Giberson discusses his own struggles: first, as a Christian academic who left fundamentalism to accept evolution, and secondly, as a faculty member at an evangelical college, struggling to teach that there is, in fact, no conflict. He met constant resistance both from the college administration and from the "gatekeepers"—the outspoken individuals who were not associated with the college, but insisted that any concession to accepting evolution is a reason to steer Christian students away from that college.

A Christian can accept modern science, Giberson insists, including evolution. But the task is difficult. Giberson notes that, in contemporary America, the anti-evolution movement has grown stronger and more conservative over the past century, whereas in the scientific world, evolution has become firmly established. Evolution is no longer just a chapter in the back of a biology book, but has become the central, organizing principle of biology. Therefore, the challenge remains: to resolve the problem of how to take "God's Two Books" (Divine Revelation and the Book of Nature) seriously. Says Giberson, "The task is beginning to look impossible from any perspective." A historical Adam has become an essential component of Christian theology—as a part of creation, the Fall, and Christ's redemption. And no

Christian scholar has found a more satisfactory resolution to the origin of sin. Yet, the physical evidence clearly indicates that the human body evolved from an earlier form. But he argues that "the Book of Nature (science) need not bow down every time they disagree" and that "Christianity does not need an inerrant Bible."

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Science and Religion

REASON AND WONDER: Why Science and Faith Need Each Other by Eric Priest, ed. West Conshohocken, PA: Templeton Press, 2017. 224 pages. Paperback; $14.95. ISBN: 9781599475264.

The book *Reason and Wonder* consists of thirteen chapters, each of which arose for the most part out of the James Gregory public lectures on science and religion at the University of St. Andrews, Scotland, funded by the John Templeton Foundation. The chapters are on diverse subjects relating science and religion. The topics in the book address the question: Do science and religion need each other? Of course, being a Templeton-funded project, the answer in every case is, in some sense, yes.

The first chapter, by Eric Priest, the editor of the volume, is an introduction to the general problem of relating science and religion. It stresses that science and religion are not at war, invoking Ian Barbour's taxonomy of the relation between the two. After that, there are chapters on the New Atheism (by Keith Ward), natural law and reductionism (Eleonore Stump), the origin and end of the universe (David Wilkinson), the universe of wonder (Jennifer Wiseman), evolution, faith and science (Kenneth R. Miller), evolution and evil (Michael J. Murray and Jeff Schloss), "Is there more to life than genes?" (Pauline Rudd), psychology and science (David G. Myers), being a person and neuroscience (John Wyatt), science, spirituality and health (John Swinton), miracles in science (Mark Harris), and "Can a scientist trust the New Testament?" (N. T. Wright). For readers of *PSCF*, many of the authors and much of the ground covered will be familiar, even if written from a slightly different slant.

Given the breadth of the book, this review will focus on a few of the essays, and respond critically to two others.

In his chapter, Keith Ward questions how plausible it is for the New Atheists to believe that the universe started from a quantum fluctuation in a preexisting quantum vacuum. If true, it would seem to suggest that the quantum vacuum must be eternal. This would mean that the universe depends upon a timeless reality beyond itself. But how could this possibly fit within scientific explanation? It would seem that this is no more scientific than asserting that a timeless God created the universe. Furthermore, to quote Ward, "Belief in God is rational, because it is based on our knowledge that consciousness and intentional agency are fundamental features of reality" (p. 45). In other words, not all relevant evidence is testable in the scientific sense. Ward points out three basic problems with the arguments of Richard Dawkins. First, it is sheer dogma to deny that consciousness could arise in any other way than through a long evolutionary process. Second, Dawkins argues that the universe of simple elements is more probable than the complex mind that God represents. But, again, this is a dogmatic assertion with no scientific foundation. Third, the idea that there needs to be an explanation for God is no greater a problem than the need to explain a universe that exists in and of itself. In summary, Ward suggests that

> the final irony is that it is belief in a rational God that makes science possible, whereas in an atheistic universe it is a complete surprise that there is any rational structure to the universe, or that human reason can make any sense of it. (p. 53)

Eleonore Stump provides a critique of the "secularist scientific picture" (SSP), which, she says, is a reductionism of everything to the laws of physics. Her claim is that "research in various areas is making inroads against some parts of this view" (p. 54). While noting that it is highly counterintuitive that such things as love, fidelity, creativity, and the progress of science could come out of such a reductionist view, she contrasts that view with the scholastic view of natural law. In the latter view, "natural law is a participation on the part of a human person in the eternal law in the mind of God" (p. 56). She goes on to say that the challenge for SSP is "the construction of the personal out of the impersonal" (p. 58). Some examples illustrate further problems, for instance, protein folding (the function of which depends on structure), and the dependence of an infant on a caregiver to allow for proper development. The essay concludes, "The rejection of reductionism leaves room for the place ordinary intuition accords persons in the world" (p. 63).

Perhaps my favorite essay was the one by Murray and Schloss entitled "Evolution and Evil." This chapter offered an argument on the problem of evil, borrowing a page from the book of skeptical theism. The first step is to recognize that one does not need evolutionary theory in order to observe that

there is apparent evil in nature—as this would have been evident before Darwin. The claim the authors wish to challenge is that since evil in nature exists for no good reason, therefore God does not exist. Rather than apply a direct argument, the authors suggest that all we really need is a good explanation of evil that is true "for all we know" (p. 101). A good explanation "makes it clear that the evil that is permitted is a necessary condition for the occurrence of an outweighing good" (p. 101). After dismissing some popular explanations they regard as weak, the authors offer two explanations that comport well with the scientific story. One relates to our lack of understanding of animal consciousness; the other reasons that the possibility of law-like regularity, producing beings such as us, would necessarily require the kind of history that we see from remnants past.

Space does not permit me to summarize the book further, but I do want to raise a couple of questions about a few of the other essays in the volume. To start with, Myers's article raises a number of issues related to religiosity and psychology, with several of the points not well supported by the data. For example, with little evidential support, Myers states that sexual orientation is "natural," that is, largely biologically influenced. The problem is what is meant here by "natural." Conditions such as substance abuse can have genetic components as well. Would we then say that they are "natural" too, and therefore acceptable, or would we recognize that the world is broken because of the Fall and interpret them in light of that? This is reminiscent of Abraham Kuyper and his "two sciences." If creation is fallen, then we must take that into account in our explanations. It follows that there is no such thing as a category called "natural" that allows us to conclude that what appears in nature can be judged simply as part of the "good." Myers tells us he comes out of the "Reformed and ever reforming" tradition, but perhaps his "ever reforming" in this case has gone too far.

Swinton's essay also suffers from some surprising misunderstandings. When I read that he thought his methods for studying spirituality and health ("randomized control variables, statistical analyses and modes of research that follow the principles of falsifiability, generalization and replicability") were the measure of why he thought the research should be considered "hard science," I was taken aback. As anyone who does research in the hard sciences knows, it is not that the methods make the conclusions reliable. It is rather the constricted subject matter of the investigation that is so constraining as to qualify as "hard science." This does not lend confidence to the conclusions Swinton draws from his investigation.

In light of the criticisms noted above, the reader should realize that the quality of the book's essays is variable; some are more substantial, others less so. Who would find the book of interest? Anyone who is following the writings of particular authors in this collection might like to pursue their essays. Beyond that, those who do not have a substantial background in the issues involved may find the essays as a whole an interesting introductory read. However, as many of the edited Templeton volumes seem to be, I would suggest that there is little here that one cannot find in more depth elsewhere.

Reviewed by Donald Petcher, Department of Physics, Covenant College, Lookout Mountain, GA 30750.

MY SEARCH FOR RAMANUJAN: How I Learned to Count by Ken Ono and Amir D. Aczel. Switzerland: Springer, 2016. 238 pages. Hardcover; $29.99. ISBN: 9783319255668.

"But what does a mathematician actually *do*?" It is still as likely as not that the lay person who asks this question will be pointed, first of all, to G. H. Hardy's *A Mathematician's Apology*, first published in 1940. In the third paragraph of that elegant but elegiac work,

the author describes himself and his literary task thus: "A man who sets out to justify his existence and activities."

No sensitive Christian reader can pass over those words without a profound sense of sadness. True, Hardy's "justification" is not exactly the δικαιοσυνη of the Epistle to the Romans. Yet, true also, Hardy does not welcome the idea that the real justification at the heart of life is received as an unmerited gift. Indeed, *A Mathematician's Apology* is poignant precisely because it combines the defense of mathematical fame (for those few who are capable of achieving it) with the fear that even this "safest and soundest of investments" may not endure. "How painful it is to feel that, with all these advantages, one may fail …"

Ken Ono's heart-wrenching autobiography bears a subtitle with a double meaning: "How I Learned to Count." On one level, this is a capsule description of the combinatorial aspect of Ono's mathematical work. "Combinatorial" refers to counting patterns or arrangements of some kind, such as the *partitions* which are frequently mentioned in the text: a partition of an integer (such as 6) is simply a way of writing it as a sum of smaller integers (such as 1+2+3). The number of different ways of partitioning a given integer, like 6 in our example, is called $p(6)$, and the behavior of p, the *partition function*, has many surprises and unexpected depths. On another level, this is the story of how the author learns that he himself counts as a human being, and that (contrary to what a reading of Hardy might perhaps suggest) his significance is not measured simply by the abundance of his mathematical achievements. These stories are interwoven with one another and with a third one: Ono's interaction with the work of the enigmatic genius Srinivasa Ramanujan, who was "discovered" by European mathematicians when he wrote to Hardy in 1913 and who, upon his early death from tuberculosis, left for posterity a huge collection of mysterious formulae (most without a sketch of a proof, most subsequently turning out to be both true and profound) which he believed had been revealed to him by the goddess Namagiri. (Ramanujan's story was recently dramatized in the movie *The Man Who Knew Infinity*, and the story of Ono's work as mathematical consultant to this movie serves as a kind of coda to his autobiography.)

Ono shares with us that he was raised by Japanese-American "tiger parents" determined that their son follow the path they had marked out to the goal they had determined was best for him: that of becoming a distinguished professional mathematician. He writes:

> They wanted their boys to be hungry for success, so they starved us of praise … At school, I was a star student; at home, nothing I did was good enough. [My parents] saw no point in acknowledging such insignificant achievements as straight A's on a report card … I awoke each day with painful thoughts. I will never be good enough. I am an impostor. My parents will never love me because I can never live up to their expectations … And so I dropped out. (p. 11)

Today, Ono is indeed a distinguished professional mathematician, although he did not arrive by the path his parents had mapped for him. His book contains heartfelt tributes to friends, family, and professional mentors who helped him recover his life's purpose. Behind all of these stands the figure of Ramanujan, whose story Ono retells in this book: a story which deeply influenced his father's life and subsequently his own. "Ramanujan's story showed me that there might be a way to earn my parent's respect that didn't require following the rigid script that they had written for me" (p. 49). In fact, Ramanujan's story opened his heart, and perhaps his family's heart, to the possibility of grace.

How do I count? How do I *know* that I count? I suggest that in the parables of Luke 15, Jesus shows us that to count is to be embraced by the love of Abba, the Father who runs to welcome the strayed one home. Jesus warns us also, through the figure of the elder son in the story, that we can misperceive this love; we may regard it as something to be earned or "slaved for," and as a result live with a sense of hollowness, of never having done enough. Ono courageously describes his own journey from this hollowness to this grace, and he (raised agnostic from the cradle) chooses to conclude the story with his request to receive baptism and join a church community in 2004, in his middle thirties. This is a brave and passionate autobiography, combining the academic and the deeply personal. Strongly recommended.

Reviewed by John Roe, Professor of Mathematics, Pennsylvania State University, University Park, PA 16802.

THEOLOGY AND SCIENCE FICTION by James F. McGrath. Eugene, OR: Cascade, 2016. viii + 113 pages, bibliography, no index. Paperback; $17.00. ISBN: 9781498204514.

Is there a Creator God who made all that exists out of nothing? Has God evolved along with the cosmos? Are godlike beings actually advanced aliens whose science and technology appear supernatural? Will humans develop godlike power? Will we be superseded by artificial super-intelligences? Will robots develop souls? Will Christianity survive encounters with extraterrestrial cultures in the spacefaring

future? How will earthly religions change in centuries to come? What if some alien worlds never fell from grace? Such big questions have long been raised by philosophers and scientists, as well as by theologians and science fiction writers.

That science fiction and theology intersect in many ways may surprise, but it shouldn't. Both often express a sense of wonder, and even awe. Both seek self-understanding and awareness of our place in the cosmos. Both are fascinated with the Other and the New, with intimations of the sacred, the transcendent, the divine—with the Mystery beyond human knowing and imagining. Both are curious about life and death, origins and endings, the deep past and far future. Both address changes and continuities in ideas, beliefs, values, and practices. Both address our hopes and fears, anxieties and dreams. When science fiction writers wrestle with moral questions, with the search for "forbidden knowledge" or the powerful possibilities and pitfalls of "playing God," with utopias or dystopias, with vivid apocalypses or epic, multigenerational journeys, with demons or messiahs from the heavens, they signal a deep debt to the Bible as an ancient and continuing source of images, characters, plots, tropes, and themes for storytelling. I have long used my training in biblical exegesis in the analysis and interpretation of science fiction (and scientific) texts; this is but one reason why I found the background of the author of this brief but stimulating discussion so appropriate.

James McGrath is a New Testament scholar and science fiction enthusiast who previously edited a wonderful collection of scholarly essays, *Religion and Science Fiction* (2011), as well as *Religion and Doctor Who* (2013). The slim volume under review (there are only 92 pages of text, with the first and last pages of each chapter filling only a half-page or less—not counting a short preface and three concluding, very short fictions) is full of interest and insight. Each chapter ends with questions for reflection. Mary Shelley completed her incredibly influential novel *Frankenstein* in 1817; it at once established science fiction as *the* literature of the modern age of science and technology and set it upon a century-spanning trajectory of engagement with the world of myth and religion. Sadly, there was no space for McGrath to reflect on this, nor to provide much context or description of texts the reader might not be familiar with.

In his helpful introduction, McGrath defines his terms and the limits of his study. He regards Ian Barbour's famous four-fold typology of science-religion relations as useful for his purposes. I would agree that it makes a good starting point for analysis,

although the model is quite problematic from a history of science perspective. In his second chapter, McGrath offers a good introduction to the nature of canonicity with respect to the Bible, *Star Wars*, and *Dr. Who*. Also included are practices such as pilgrimages and ritual clothing, which cut across the worlds of religion and science fiction/comic book fandom. "Science Fiction against Theology and as Theology," the focus of chapter three, is a fine discussion deserving of a book-length analysis. Antireligious science fiction is not really addressed, nor satires such as John Kessel's *Good News from Outer Space* (1989) and Marcos Donnelly's *Letters from the Flesh* (2004). A few quibbles: it was shocking to find no account of Olaf Stapledon's mind-blowing 1937 masterpiece, *Star Maker* (see the 2004 scholarly edition, edited by Patrick McCarthy). On p. 45, Christmas is mentioned, but no classic science fiction stories are cited. On p. 46, McGrath quite rightly states that Christians have many ways of incorporating the discovery of extraterrestrial intelligences into their theologies. But he cites none of the theological literature produced by Ted Peters and others; for a recent example, see *Theology and Science*, vol. 15 (May 2017). In a comprehensive treatment of this subject, one would learn about D. G. Compton's *The Missionaries* (1972), Philip José Farmer's *Father to the Stars* (1981), and many other examples.

Chapter four, "Theology against Science Fiction and as Science Fiction," is another brief but illuminating angle on the relationship, addressing such questions as apocalypse, afterlife, miracles, and how theological ideas can be expressed in science fiction. The discussion, given the publisher's constraints on the author, is good, but is neither specific nor detailed enough. The fifth chapter, on philosophical/ethical issues (e.g., soul/mind/sentience/personhood, the Golden Rule, eternal life, digital immortality) is also very interesting—if too general for my taste. The scholarly literature is ignored, as are countless primary texts (to be fair, the author's modest aims are made explicit, e.g., p. 80). The sixth and last nonfiction chapter, on how science fiction can inform theology, and how theological science fiction can critique scientism and dogmatism, was my favorite. McGrath's message of treating "the alien" with hospitality, love, justice, and humility is—given the global refugee crisis—both timely and biblical.

McGrath's bibliography has eighty-three items, with curious omissions. The short story occupies a central place in the field, so it is quite right that *Other Worlds, Other Gods: Adventures in Religious Science Fiction*, edited by Mayo Mohs (1971), is mentioned. But it is a shame that there was no room to cite Roger Elwood's anthologies *Flame Tree Planet* (1973) and *Strange Gods* (1974); or Harlan Ellison's *Dangerous Visions* collections (1969–1972); or *Wrestling with Gods* (2015), edited by Liana Kerzner and Jerome Stueart, to name a few. Apocalyptic/post-Apocalyptic stories cut a huge swath in the literature of religious science fiction. Examples are legion: perhaps the classic atomic-age text is *A Canticle for Leibowitz* (1959) by the Catholic writer Walter M. Miller Jr. It is missing from McGrath's book, but I would recommend it highly, along with Rose Secrest's scholarly study *Glorificemus* (2002). C. S. Lewis's *Out of the Silent Planet* (1938) makes the bibliography, but not the rest of his *Space Trilogy: Perelandra* (1943) and *That Hideous Strength* (1945), nor his story collection *The Dark Tower* (1977), nor his essays *Of This and Other Worlds* (1982). McGrath cites Dan Simmons's *Hyperion* (1980) but not the rest of the saga: *The Fall of Hyperion* (1990), *Endymion* (1995), and *The Rise of Endymion* (1997). Mary Doria Russel's brilliant first-contact-with-intelligent-extraterrestrials meditation on faith, science, and theodicy, *The Sparrow* (1996), is included but not its perspective-shifting sequel, *Children of God* (1999). Robert J. Sawyer's *Calculating God* (2000) is listed, but none of his many other books wrestling with moral and theological questions. Although the idiosyncratic beliefs of science fiction giant Philip Dick receive scant attention, McGrath does cite Gabriel Mckee's *Pink Beams of Light from the God of the Gutter: The Science-Fictional Religion of Philip K. Dick* (2004); another scholarly source is the annotated tome, *The Exegesis of Philip K. Dick*, edited by Pamela Jackson and Jonathan Lethem (2011).

McGrath references Frederick A. Kreuziger's *The Religion of Science Fiction* (1986) but neglects his equally pioneering *Apocalypse and Science Fiction* (1982). Also missing are *The Intersection of Science Fiction and Philosophy: Critical Studies,* edited by Robert E. Myers (1983); Stephen May's *Stardust and Ashes: Science Fiction in Christian Perspective* (1998); and Richard A. Burridge, *Faith Odyssey* (rev. ed. 2003), which is a nice companion to George Murphy's 2005 *Pulpit Science Fiction*. Greg Garrett's *Holy Superheroes!* is cited, but not the revised and expanded edition of 2008.

Jewish science fiction, an important subgenre, gets a nod with the citation of *Wandering Stars*, edited by Jack Dann (1974), but not *More Wandering Stars* (1981, also edited by Dann), or *People of the Book*, edited by Rachel Swirsky and Sean Wallace (2010). Among the many missing are Phyllis Gotlieb's collection *Blue Apes* (1995), which begins with the death of the last Jew in the universe; and Paul Levinson's *Borrowed Tides* (2001), which depicts what I believe is the first Passover seder in space.

There is a significant subgenre one might call either acidic satire, anti-religious, or even anti-Christian science fiction. Well-known examples of this challenge to McGrath's creative interaction thesis include Michael Moorcock's *Behold the Man* (1969); James Morrow's linked series *Only Begotten Daughter* (1990), *Towing Jehovah* (1994), *Blameless in Abadon* (1996), and *Bible Stories for Adults* (1996); Gardner Dozois, ed., *Galileo's Children: Tales of Science vs. Superstition* (2005); and Thomas Disch, *The Word of God* (2008).

A few typos appear in McGrath's text, but they are easy to spot. For instance, carbon monoxide (p. 89) should be carbon dioxide. As I have suggested, the author was operating under tight publisher's constraints, limiting his discussion of significant stories and his ability to provide a more comprehensive list of relevant references. The multidisciplinary literature on the complex relations of theology and science fiction is huge, to match the deep and wide primary literature (and filmography). For a brief, sound, interesting introduction to the field, I can certainly recommend this book.

Reviewed by Paul Fayter, a retired pastor and historian of science, theology, and science fiction. He taught at the University of Toronto and at York University in Toronto for thirty years. He lives in Hamilton, ON.

Technology

THINKING MACHINES: The Quest for Artificial Intelligence and Where It's Taking Us Next by Luke Dormehl. New York: TarcherPerigee, 2017. 275 pages, including bibliographic references and index. Paperback; $16.00. ISBN: 9780143130581.

Thinking Machines is a book that gives you the facts about artificial intelligence (AI) in a well-written and enjoyable way. The book is a good read for those who know little about AI and want to see what all the fuss is about. In this small volume, author Luke Dormehl (author of *The Formula: How Algorithms Solve All Our Problems … and Create More*, and contributor to *Fast Company*, *Wired*, etc.) introduces the reader to the history of AI, where AI can be found today, and where AI seems to be going in the future.

Chapters 1 and 2 are about the history of AI. AI has had a somewhat "on again, off again" past, with many early attempts to build systems that seemed promising, but ultimately were disappointing. The chapters explain this history and how, ultimately, advances in neural networks led us to where we are today, and the development of tools like Siri, self-driving cars, and Roombas.

Chapter 3 talks about the rise of cognitive agents all around us—in our phones, cars, houses, watches, stores, and work. The author has a brief discussion of the ethics of information collection. What kind of data should we allow others to gather about us? Who owns that data? Will the information collected about us be used to serve us or to serve the companies that collect it? The author ask many questions, but gives no answers.

In chapter 4, Dormehl discusses the rise of service-oriented AIs, such as virtual assistants, Microsoft's Clippy, and others. The chapter contains many entertaining stories and then ends with a discussion of therapeutic, childcare, and eldercare robots. Dormehl makes no mention of the ethics of using these robots or the effects they might have on society and relationships between humans.

What will be the impact of AIs and robots on occupations? Chapter 5 speculates about how AIs and robots will revolutionize the job market, eliminating jobs that are dangerous (mining) and tedious (assembling smartphones), but also those that require a high level of knowledge in a limited domain, such as the practice of law. The author argues, however, that new kinds of jobs are on the rise, especially in the creation of content. The number of jobs is growing by nearly 10% per year in some areas such as vlogging, answering online queries that an AI cannot interpret, and game design. Dormehl argues that jobs like these, jobs that require creativity and social intelligence, will always be what humans are good at and computers are not. Finally, the author notes the rise of products made by humans, such as pottery, that are not all identical and have an artisanal touch.

Chapter 6 contains many fascinating stories about attempts to program computers, robots, and AIs to create. It briefly explores the definition of creativity. One fascinating question is whether a computer can create an invention that can be patented, as a patent requires an "illogical step" from existing invention, and making illogical steps is not a computer's forte.

Chapter 7, "Mindclones," follows, with information about attempts to duplicate a person's mind in a computer. The goal of various projects is to cheat death by storing a person's experiences, through personality capture, lifelogging, and neural networks, to duplicate the human brain. Again, the author describes how these efforts are being done, but never questions whether they could or should be done.

The final chapter of *Thinking Machines* looks at the future, and future risks, of AI. Dormehl notes that visionaries in the field of AI have begun to emphasize the need for safety protocols and ethics panels to guide AI scientists. The author states, "The threat

comes from AI that is smart enough to work with other connected devices, but not smart enough to question its own motivations" (p. 223). He then goes on to speculate about who is responsible when an AI goes wrong and breaks the law, and whether an AI has any rights.

Is Luke Dormehl's book one that you should have on your shelf? If you are looking for a book to introduce you to the past, present, and future of AI in an entertaining way, this is a quick and worthwhile read. If you are looking for a book that struggles with the hard questions surrounding AI, you will be disappointed. Dormehl only dips his toes into the ocean of questions that AI begs us to ask. In most cases, he is giving us "just the facts," without analysis of the ethical or sociological implications of the technology. For Christians, many of these are important questions. What does it mean to be made in God's image? What effects will AI have on relationships and community? What does God say about the importance of work and service, and which occupations and vocations should we give to AIs to handle? To get answers to these and other questions, one has to go elsewhere.

Reviewed by Victor T. Norman, Associate Professor of Computer Science, Calvin College, Grand Rapids, MI 49546. ✭

Call for Papers

Artificial Intelligence: Discerning a Christian Response

Derek C. Schuurman (PhD, McMaster University) is a professor of computer science at Calvin College where he holds the William Spoelhof Chair. *Shaping a Digital World: Faith, Culture and Computer Technology* (InterVarsity Press, 2013) is his most recent book. He describes for us, on the ASA and CSCA web sites, the latest developments and challenges in artificial intelligence. That focus calls for our attention to the promise and threat, at hand and in the near future, for issues such as job enhancement and displacement, building in guidance for systems that will then act autonomously, and what it is to be a person.

Schuurman's essay is intended as an invitation. Readers are encouraged to take up one of the insights or questions, or maybe a related one that was not mentioned, and draft an article (typically about 5,000–8,000 words) that contributes to the conversation. These can be sent to Schuurman at dschuurman@calvin.edu. He will send the best essays on to peer review and then we will select from those for publication in an Artificial Intelligence theme issue of *Perspectives on Science and Christian Faith*.

The lead editorial in the December 2013 issue of *PSCF* outlines what the journal looks for in article contributions.

For best consideration for inclusion in the theme issue, manuscripts should be received electronically before August 31, 2018.

Looking forward to your contributions,

James C. Peterson, *Editor-in-Chief*