



ETHICS

MEDICAL ETHICS AND THE FAITH FACTOR: A Handbook for Clergy and Health-Care Professionals by Robert D. Orr. Grand Rapids, MI: Eerdmans, 2009. 474 pages, glossary, case reference index. Paperback; \$30.00. ISBN: 9780802864048.

This book is immanently practical, wise, and clearly written by an experienced clinician. Orr begins with an overview of essential and standard terms and concepts that is remarkably comprehensive for its twenty-five pages. This can quickly help clergy and health care providers get up to speed on the most influential concepts and usual vocabulary to express and consider ethical decisions in clinical practice. At appropriate points, Orr matter-of-factly references religious perspectives, modeling openness to such concerns, but not requiring agreement with his Christian convictions in order to gain from the book.

The bulk of the handbook is composed of one-page cases, each followed by two pages structured as discussion, recommendations, follow-up, and comment. The first section of case accounts vividly catalogs examples of decisions in regard to failure of heart, lungs, kidneys, eating, brain, and mind. The second section of scenarios addresses complications of cultural and religious beliefs, the neonatal period, children, reproductive technology, pregnancy, and organ transplantation.

The book is not exhaustively argued; rather, it expresses the direct and summary counsel of someone who has experienced and thought deeply. For example, there has been extensive discussion of whether intravenous hydration is a basic good akin to giving water to the thirsty and hence always required, or whether it is more a medical treatment that, as a treatment, is optional. Orr acknowledges that there has been discussion, and that the consensus is that intravenous hydration is a treatment; he then proceeds to work through several specific cases on that basis. I think he is right, but I note that the book is not designed to thoroughly describe and evaluate such debates. One will not be able to trace and weigh in the book all the lines of distinction and debate relevant to a particular case, granted that this brevity is supplemented by related cases and that an appendix with cross references to yet more relevant cases is included. The overall experience is like having a well-informed and trustworthy physician assist one with clarifications and sound focused advice, as one works through often convoluted matters of life and death decision.

While there are 131 scenarios, there could never be enough cases described to cover all the relevant details and vagaries of actual clinical practice. One could not depend on this handbook to provide a write-up for each situation one will encounter, but there are enough examples here to orient clinicians and pastors to the standard vocabulary and approaches most often encountered. This unique blend of accessible, clear, practical, thoughtful, and on-point advice is highly recommended. I plan to use this book as one of the required readings for a course I teach in seminary, a course designed to prepare pastors

for many of the clinical situations they will face with their parishioners, and also for another course that trains future physicians in medical school for such encounters with their patients. It is not often that I see both groups served so well in one book.

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AUTONOMY AND FOOD BIOTECHNOLOGY IN THEOLOGICAL ETHICS by Cathriona Russell. New York: Peter Lang, 2009. 290 pages. Paperback; \$54.95. ISBN: 9783039118380.

Does Christian theology bring a distinctive to the ethics of food biotechnology? In response, Cathriona Russell describes her Christian autonomy approach that emphasizes the moral capacity of the person as "the receiver of God's self-revelation and as a creature destined for ... salvation in divine fellowship." In this book, divided into four major chapters, the author advances Christian autonomy as a philosophical reflective approach to transgenics, environmental issues, and nature in general. The table of contents helpfully details the major topics in each chapter, giving the reader guidance in finding subjects of interest. A four-page index in the back, while identifying major themes and writers, could have profitably been expanded with more detail. The fourteen page bibliography covers essential works consulted by the author in preparing her manuscript.

In the first chapter, the author describes transgenic technology as used in plants and animals for food production. Her response to the use of this technology is cautious and largely pessimistic. She fails to portray the benefit of this technology, but rather sees biotechnology only in a negative light. In contrast, she argues that sustainability is a virtuous alternative approach that can be integrated into environmental ethics. She is not clear on how her understanding of sustainability can practically substitute for biotechnology in effective food production, but leaves that issue to the reader's imagination.

In the second chapter, Russell further clarifies her understanding of Christian autonomy by describing the contribution of three theological sources: divine command, Christian communitarianism, and natural law. In assessing the contribution of divine command or revelation of Scripture, her Christian autonomy approach separates faith and salvation from moral obligation. Consequently, moral obligation is justified philosophically rather than theologically. The described Christian autonomy approach is "open" to the insights of Divine morality but is not bound by it, since Christian texts are "esoteric and inaccessible outside of Christian contexts" (p. 80). Christian communitarianism is a social philosophy which "suggests" that life is grounded in an ecclesial community. The community is a qualified hermeneutical one, that is, it provides interpreters, not necessarily of Scripture, but of global issues that lead to environmental virtue ethics (p. 89). Thus the author comments that "ecclesial communitarianism focuses not so much on the Word of

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God in Scripture, but on the Word of God in community" (p. 91). This communitarianism is a guard against individualism and is an alternative to deontological or consequential approaches to ethics. Finally, natural law gives full status to creation and attributes human rationality as a moral guide. Reason is the authority that weighs the sources for natural law approaches (p. 122). Russell says that her Christian autonomy approach contains five dimensions: (1) informs our sensibility to what is good for human flourishing (p. 132); (2) is relevant to motivation for our actions and ultimate meaning; (3) has heuristic potential in morality since tradition provides cautionary fences; (4) integrates insights from faith tradition and human sciences; and (5) relativises moral insights (pp. 132–4).

Chapter three describes environmental theologies and the practice of stewardship. She describes theocentrism as a religious attitude toward the cosmos as God's creation. Using Rom. 8:19–23 (NRSV) "for the creation awaits with eager longing for the revealing of the children of God ... in hope that the creation itself will be set free from its bondage to decay ..." and providing a new reading of Jesus' ministry, the author points to a salvation promised for all creation. From the Christian autonomy perspective, the author interprets stewardship as service, rather than as domination or co-creation (p. 91). This understanding of stewardship can lead us to sustainability that is compatible with Christian ethics.

In the fourth chapter, the author examines and critiques several theological perspectives on nature: the systematic theology of Wolfhart Pannenberg, the natural law ethic of Michael Northcott, and the virtue ethic of Celia Deane-Drummond. In each case, she summarizes the perspective and critiques it from her Christian autonomy understanding. Finally, a short conclusion after the fourth chapter restates the essence of Christian autonomy.

Initially, I was very interested in this book; the title seemed intriguing and held promise for hidden treasures. However, I soon became weary of the pedantic and ambiguous verbiage used by the author. Rather than stating ideas forthrightly, she frequently obscures them with theological jargon, making the ideas inaccessible to non-theologians. In many ways, the book reads like a dissertation rather than an apologetic for a theological approach to bioethics. The title is misleading in that the "food biotechnology" portion is almost exclusively described in chapter 1 and not seriously revisited elsewhere in the book. A more accurate title would simply be "Autonomy in Theological Ethics." The arrangement of the chapters seems to be disjointed. For most readers who are trying to understand "Christian autonomy," defining and describing this view in the beginning would have been helpful. Then applying that articulated view to transgenic biotechnology (chap. 1) would provide more clarity for the reader as she did for environmental theologies (chap. 3) and theologies of nature (chap. 4). Granted, the author does briefly comment about her "Christian autonomy" view in the Introduction, but does not describe it adequately (pp. 11–2). The scholarly awareness of the author is commendable. From my perspective and understanding, she accurately depicted the perspectives of numerous theologians and bioethicists. The extensive bibliography,

which cited over 180 references, contained most of the important readings for this topic.

I conditionally recommend this book for general reading. If you are seriously interested in theological ethics, then this book is worth your consideration and should be on your reference shelf. If you are interested in the ethics of food biotechnology but are not a theologian, the first chapter gives a review of some of the issues involved in biotechnology, but does not clearly provide an ethical framework to reflect on these issues. If you are interested in environmental ethics but are not conversant in theological ethics, you will struggle to get through the material in this book. In the latter case, borrow the book from your library instead of buying it. Finally, if you are interested in medical ethics, this book does not directly describe those issues. However, the ideas of "Christian autonomy" as described by the author can be applied to biomedical situations.

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HISTORY OF SCIENCE

THE STRANGEST MAN: The Hidden Life of Paul Dirac, Mystic of the Atom by Graham Farmelo. New York: Basic Books, 2009. 539 pages. Hardcover; \$28.95. ISBN: 9780465018277.

Finally! In the past, I have read many books concerning the development of quantum theory, both technical and historical, and though I have read much concerning Bohr, Einstein, Heisenberg, Pauli, and others, and even personal reflections by them, rarely is there even a glimpse into the personal life of Paul Adrien Maurice Dirac. For so many years, his astounding achievements have been shrouded in mystery to me. Having waited a long time for such a book, this one did not disappoint. The book is replete with references to original material with which the author weaves together a cogent story. I will mostly try to recount some of the highlights.

Dirac was indeed a strange man. He was born (in Bristol, England, in 1902) to a Swiss father (Charles) and an English mother (Flo), and though I had known of his difficult childhood, I was shocked to find out how much his father mistreated him in many subtle ways. For example, at dinner he was made to eat alone with his father, and to speak only French though "he had no talent for languages" (p. 5), while two siblings, a brother Felix and a sister Betty were allowed to speak English with his mother. He did not like French, and his father made any request dependent on how well he did in French, so as a consequence, he did not say much. That became a habit which persisted throughout his life. He is sometimes known as the master of understatement. His father was an "unforgiving" teacher of languages (p. 5), which undoubtedly had something to do with the practice, but it is not clear why Dirac was singled out.

Dirac had an obvious talent for math and science, and as a consequence, he followed his brother into the engineering program at the University of Bristol (p. 28).

His extraordinary abilities ultimately led him into a mathematics program (p. 47), and finally, when offered a sufficient stipend, he was able to go on to Cambridge for a doctorate in theoretical physics (p. 53). There we read of such things as how he became the expert in Einstein's relativity theory while still a student and how he became close friends with Peter Kapitza, a Russian student in experimental physics, through the "Kapitza Club" (p. 66), a weekly seminar for the post-graduate students following a good dinner. We then see how Dirac's sympathy for the communist movement arose, as Hitler came to power in Germany. Throughout, Dirac continued to be an emotionally detached loner in his physics and in his private life, though he was deeply moved by the suicide of his brother Felix (p. 78) who always felt inadequate in the face of his demanding father and his overachieving brother.

Gradually, we are brought through Dirac's unfolding life, how he practically reinvented quantum theory on his own while others were working it out on the continent. We read how he traveled to Europe, meeting the most famous physicists of the time and taking his place among them, and how he puzzled out the so-called "Dirac equation," which was a first success in uniting quantum theory with special relativity. In this latter context, Dirac as much as predicted antimatter. In his twenties he was already one of the most important physicists on the planet, and in turning down offers elsewhere, such as Manchester and Chicago, a special lectureship at Cambridge was eventually arranged for him to keep him there (p. 158). By the time he was 30, he was named Lucasian Professor (p. 207), the chair that Isaac Newton once held, and that is presently occupied by Stephen Hawking. Shortly after, in 1933, Dirac was awarded the Nobel Prize in physics (p. 234), the youngest theoretician up to that time to receive the award. We also follow his personal life, how he enjoyed making trips to Russia, and how he began studying Russian amid some infatuation for Rho Gamow, the wife of the well-known George Gamow (p. 250). We further read how he met his wife Margit, née Wigner, on a trip to Princeton (p. 253). She was the sister of the famous Hungarian mathematician Eugene Wigner who worked at Princeton at that time. Margit was the outgoing socialite who gave Dirac balance.

There are many other things of interest in this volume, for example, how Dirac's view of mathematics was essentially platonic, and how he thought the concept of God was vague. An interesting exchange with his Russian teacher (after Rho) is revealing on this score. She thought mathematics had been invented, while Dirac thought it had "always existed," and had been "discovered" by humans. When she asked, "Doesn't that mean that it was created by God?" his answer was, "Perhaps animals knew a little mathematics" (p. 252). For Dirac, his physics was always led by his mathematics.

In his later years, influenced by his wife and the desire to find a warmer climate, Dirac moved to Florida State University (FSU) in Tallahassee, Florida, where their daughter Mary's husband Tony (Colleraine) had been given tenure in the physics department (p. 390). Having worked at FSU myself in the late eighties, on a personal note, I immensely enjoyed reading how my former boss, Joe Lannutti, worked on wooing Dirac to the campus, even though, as the book says, FSU was "known best not

for its physics department but for its student parties and the high quality of its football team" (p. 389), a statement I cannot deny. Dirac, of course, brought instant notoriety in accepting the position of "Visiting Eminent Professor" in 1971 (p. 390). I also enjoyed learning more about Dirac's "eccentric" assistant, Leopold Halpern, who took me under his wing while I was in Tallahassee. Halpern became a close friend to Dirac, taking him on canoe trips up the Wakulla river, causing Margit to worry when they arrived home later than expected (p. 397). After a somewhat prolonged illness during which Halpern jockeyed with Margit over whether homeopathic or traditional medicine would be administered, Dirac died in Tallahassee in 1984 (pp. 410-3).

To quote Freeman Dyson concerning what made Dirac's work so unusual:

The great papers of the other quantum pioneers were more ragged, less perfectly formed than Dirac's. His great discoveries were like exquisitely carved marble statues falling out of the sky, one after another. He seemed to be able to conjure laws of nature from pure thought—it was this purity that made him unique. (P. 428)

With this assessment, I concur. As important as Dirac's contributions are in physics, seeing them in context was a rare treat. Apart from Dirac's actual contributions to physics, a lot of what I have summarized above was new to me. Before reading this book, I had only the barest sketch of the man, Dirac, but now I have a much clearer picture of him as well as an understanding of how he interacted (or didn't) with the rest of the physics community. And indeed, the strangeness of his personality certainly emerges in this work as the title suggests. Because of the rarity of information on Dirac, and because of how well the book is written, for a theoretical physicist like myself, this was every bit as intriguing and difficult to put down as any fast-moving novel.

You may have noticed that little has been said of Dirac's posture toward God and/or religion, as would be suitable in a review for this journal. The reason is that neither played much of a role in the book, nor in Dirac's life in general. His father was raised a Catholic, and did apparently rediscover the religion of his youth after Felix died, but religion had little influence on Dirac, particularly in view of his dislike for his father. Dirac did write a few notes concerning religion, faith, and belief, in early 1933, but in these he said the notion of God was "rather vague and ill defined" and thus difficult to discuss rigorously (p. 221). Later in life, he once surprised colleagues by suggesting that the question "Is there a God?" was "one of the five most important questions in contemporary physics" (p. 401), although he went on to suggest that in order to make the notion more precise, we would need to understand what a world with a God and one without a God would look like (p. 402), and then approach the question empirically. He followed up, in almost a nod to intelligent design, by saying "If future scientists demonstrated that the creation of life is overwhelmingly unlikely, then, in his opinion, this would be evidence for the existence of God" (p. 402). On the other hand, he was very critical of organized religion and thought it "the height of arrogance for any group of people to claim that they alone know the truth" (p. 402). So as Halpern later wrote, "there was 'no

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trace of religiosity' in Dirac" (p. 402). No wonder he paid very little attention throughout his life to science/religion questions. Nevertheless, Dirac holds a central place in the development of modern physics; if you are at all interested in the history of physics, and particularly in twentieth-century physics, I would highly recommend this book as an absolute must read.

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NATURAL SCIENCES

INSIDE THE HUMAN GENOME: A Case for Non-Intelligent Design by John C. Avise. New York: Oxford University Press, 2010. 222 pages including notes, glossary, index. Hardcover; \$19.95. ISBN: 9780195393439.

Many of the readers of *PSCF* have heard this interesting story: a Harvard student sits in the office of the chaplain and confesses that he just does not believe in God. The chaplain responds, "Well, tell me about this God you don't believe in. I probably don't believe in him either." The veracity of the tale is dubious, but its lesson is centrally important, whether one is considering aspects of the divine or merely contemplating a challenging new idea. Which god are we confessing or rejecting or blaspheming? Which theory are we addressing or debunking? With whom are we agreeing or disagreeing? Readers of this book would do well to keep such questions before them as they consider Avise's ideas, which vary from the profound to the pedestrian, depending on the target of analysis.

Avise's project is twofold. His goals, spelled out repeatedly throughout the concise but frequently redundant text, can be discerned from this characteristically blunt remark on page 65, in a section entitled "Errors and Forgiveness":

A proverbial sentiment is that "To err is human, to forgive is divine." If the kinds of harmful mutations described above are to be attributed to an intelligent and otherwise revered agent (i.e., an omnipotent deity), then the popular phrase needs revision: "to err is divine, to forgive is human." Few people would blame a loving and all-powerful God for purposefully inventing deleterious mutations; that would be blasphemous.

Avise's first goal is to detail the myriad ways in which the human genome—in function and in architecture—is an exemplar, not of intelligent design, but of its apparent opposite: a "Byzantine contrivance" with features that were "accumulated stepwise by sloppy tinkering forces" (p. 74). Mere proneness to occasional disastrous mutation would not establish that conclusion, but Avise takes his case much further and to greater effect, pointing to fundamental features of the organization of the human genome that encourage and even facilitate dysfunction on various scales.

One full chapter examines various aspects of genomic complexity, ending with a focus on the peculiar fact that many of the genes controlling mitochondrial function are housed in the mitochondria themselves. This arrangement

is inefficient and fraught with danger (genetic material is housed next to a prolific generator of mutagenic reactive oxygen species), and Avise labels it "downright ludicrous." He notes that common descent nicely explains this design, but his chief aim is not to promote evolutionary explanation. It is to point out "logical problems" with the argument that genomes evince design by a wise and benevolent "supreme intelligence."

Another chapter describes the multitudinous repetitive elements that characterize the human genome, including hundreds of thousands of mobile elements that account for fully one third of every person's genetic endowment. These elements wreak havoc in several ways, causing malfunctions via effects ranging from subtle alterations in gene expression to catastrophic destabilization of whole chromosomal regions. Avise adds that many of these effects probably remain unaccounted for: mobile elements are particularly active in germ cells, and their action is expected to kill embryos very early in development. He notes that some mobile DNA elements have apparently been put to good use during evolution, but concludes that their huge numbers result in a genome that is "grotesquely infested with parasitic elements" (p. 130). Importantly, Avise asserts that the disorders arising from such features of the human genome are not merely "aberrations from a genetic blueprint of optimal design" (p. 127). They are outcomes to be expected in the presence of that grotesque infestation.

And so it goes. Avise's case is very strong. The human genome does seem to me to be a "genomic jungle" and a "Byzantine contrivance." Its imperfections are legion, and they are caused by "universal architectural flaws." These failures cannot be dismissed as minor glitches that have marred an initially perfect creation, nor can they be effectively described as necessary precursors to—or byproducts of—designed features or necessary functions. Avise concludes that "inevitable imperfection" is better established than irreducible complexity.

These challenges to intelligent design thought, along with some clear and well-written descriptions of evolutionary theory, are the strongest contributions of the book, and make it a worthwhile read for those interested in questions of design and optimization in biology. But do Avise's challenges refute, or weaken, design arguments? Surely the book undermines any rosy story of a benevolent designer carefully crafting a masterwork of exquisite design, but that is a caricature of many of today's design proposals. Avise is fair on this point, claiming mostly to shift attention onto flaws and evident failures of design and focusing on the concept of a loving and omnipotent God as the Designer. Nevertheless, the book should not be taken as a new or particularly effective rebuttal to typical claims of intelligent design theorists.

Avise's second project, however, is less successful and less valuable. Having shown that the human genome's deep flaws lead to widespread suffering and death, he moves to conclude that this fact brings some significant resolution to Christianity's struggle with the problem of evil, arguing (as have Francisco Ayala and others before him) that "evolution by natural causes emancipates religion from the shackles of theodicy" (p. 157). How does evolution accomplish this? On page 158, he answers,

No longer need we blame a Creator God's direct hand for any of these disturbing empirical facts. Instead, we can put the blame squarely on the agency of insentient, natural evolutionary causation.

This reasoning will strike many readers of *PSCF* as basically flawed. While some may agree that natural causation rules out the work of God's "direct hand," the suggestion that this shifts responsibility away from him completely, does not follow. After all, one need not wield a weapon with one's own hands to be held culpable for a crime. I suspect that most Christians would agree with me that there is little if any distinction between causing pain and standing by while it is caused by someone or something else. Blame-shifting just does not help: once we confess an omnipotent deity with the means to intervene, we put that deity right back on the hot seat of theodicy. Perhaps Avise has a different god in mind when he seeks to absolve the divine. In any case, assessing his success requires identifying this god *a priori*.

Avise has argued successfully against the proposal that the human genome is an example of excellent design, or even a product of a little bit of optimization, and his case is worth examining. And while his attempt to bring some peace to the struggles between evolution and some sectors of Christendom is a decent thing, few of us would have thought that the problem of evil could be so easily dispatched.

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ROUTES OF LEARNING: Highways, Pathways, and Byways in the History of Mathematics by Ivor Grattan-Guinness. Baltimore, MD: The Johns Hopkins University Press, 2009. xii + 372 pages, with index. Paperback; \$35.00. ISBN: 9780801892486.

Ivor Grattan-Guinness has enjoyed a long and illustrious career as a prominent historian of mathematics. Since 1970, after receiving his doctorate in history of science, he has authored several large books and numerous articles, and he has edited both a massive two-volume survey work (*Companion Encyclopedia of the History and Philosophy of the Mathematical Sciences*) and a work containing extensive primary source material (*Landmark Writings in Western Mathematics, 1640–1940*). In addition, he has delivered hundreds of invited addresses worldwide, been an editor for several important journals in the history of science and mathematics, founded and edited *History and Philosophy of Logic*, and held high offices in professional organizations related to history of mathematics.

Grattan-Guinness's special interests and scholarly output lie mainly in the history of calculus (foundations and physical applications), mathematical logic, and foundations and philosophy of mathematics. While his primary focus has been nineteenth- and twentieth-century European mathematics, some of his writings treat earlier developments and other cultures, such as Greek geometry, and he has also written a general work on the history of mathematics. His entry into the field of history of mathematics was, as was my own and others', prompted by dissatisfaction with the way undergraduate mathematics is typically

taught—with little reference to central motivating questions and almost no discussion of its historical development or human involvement. This experiential background manifests itself in Grattan-Guinness' keen interest in the meaning and use of history of mathematics, in his passion to make history of mathematics serviceable to mathematics educators.

Routes of Learning reprints (occasionally, revises) some of Grattan-Guinness's earlier articles. These go back as far as 1972, but the book is certainly not a *best of career* reproduction, showcasing what he has been engaged with over the last forty years. In fact, very few of the eighteen chapters touch on the topics for which Grattan-Guinness is best known. None deal with the history of mathematical physics, calculus, analysis, mathematical logic, set theory, or foundations of mathematics, except in an incidental or illustrative manner. *Routes of Learning* has instead a more philosophical or epi-mathematical bent, containing reflective essays on the value and use of history of mathematics and its connections with matters somewhat off the beaten path.

The book begins with an introductory autobiographical piece on how Grattan-Guinness came to the field of history of mathematics, a field he wryly categorizes, with regret, later in the book (chap. 6) as being "too mathematical for historians and too historical for mathematicians" and "both too historical and too mathematical for philosophers," undoubtedly along with everyone else. Nevertheless, interest in history of mathematics has increased over the last half century, if the rise of the field as a bona fide profession (documented in chap. 3) is any indication.

Part 1: Highways in the History of Mathematics explores various historiographic issues, broadly considered. The questions it implicitly takes up in seven essays are the following: What is history of mathematics, and how does it differ from mathematical heritage? Who should (and does) do history of mathematics? Whom and what is it for? How is it related to mathematics? to the history of science? Does mathematics develop historically in qualitatively different ways from physics and other sciences? Does it include revolutions and radical paradigm shifts or only convolutions (Grattan-Guinness's term for a more complex sort of change)?

Part 2: Pathways in Mathematics Education looks at ways history of mathematics can enrich and inform mathematics education. Grattan-Guinness discusses this in general terms, but he also investigates specific fields and topics (Greek geometric algebra, number concepts and computational procedures, calculus), and he sketches out a history of mathematics course he once developed for teachers.

Part 3: Byways in [the History of] Mathematics and Its Culture traces the multifaceted relations connecting mathematics and religion, and the various numerological ties linking mathematics and music. We will say more about this section shortly.

Part 4: Lollipops is a peculiar supplement tacked on to the end of the book. It consists of one ten-page chapter, devoted to an exposition of *Four Pretty but Little-Known Theorems Involving the Triangle*. This might be of some interest to mathematics educators, but little hinges on it from a historical or philosophical perspective.

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Taken together, the essays in this book give the reader a good picture of what has motivated Grattan-Guinness's tireless work as a historian of mathematics. It presents the author's personal viewpoint on a number of historiographic and interpretative issues that have been debated by historians of mathematics over the last generation or so. The book is rich in references and allusions to historical topics that Grattan-Guinness has spent a lifetime researching, but at times one wishes he would share more of the wealth of his knowledge to flesh out off-hand comments or bare-bones assertions not readily comprehended by outsiders, such as the claim that Descartes' algebraic geometry was not coordinate geometry (p. 199) or that Piaget misunderstood Bertrand Russell's program (p. 207). However, for those interested in Grattan-Guinness's take on the topics under consideration here, this volume provides them with an easily accessible source.

Back now to the book's less-traveled byways, what some might consider oddball connections between mathematics and religion. Readers of this journal might be more interested than most in Grattan-Guinness's essays on mathematics and religion or mathematics and numerology/Freemasonry. One essay details numerological features of the music of Mozart and Beethoven, while two longer essays are devoted to connections between mathematics and different Christian traditions (here called "the Christianities"). Noting that this topic remains largely outside the pale of normal historians' interests, Grattan-Guinness makes a case for why it deserves more attention than it has been given.

His main focus in the first of these essays is the influence of mathematics through special numbers and shapes on Christian sacred writings, doctrines, and architecture. The second essay explores the decreased linkage between mathematics and religion since the time of the Enlightenment (with certain notable exceptions), attributed to the secularization of mathematics and science in Western cultures. Grattan-Guinness finds this public silence by mathematicians on religion somewhat puzzling, however, since debates over the relation of science and religion have never completely disappeared, and he wonders whether further historical research into the phenomenon would clarify or modify our picture of this development. He recognizes to some extent that there still are Christian mathematicians and educators, particularly in English-speaking countries, who desire to give a greater role to Christian faith in their work. The annotated *Bibliography of Christianity and Mathematics* edited by Gene Chase and me in 1983 is cited in a footnote, but he nevertheless seems unaware of the Association of Christians in the Mathematical Sciences, which has been in existence in the USA since 1977 and has had an online presence since 2004. While he recognizes that many mathematicians now and earlier have held private religious beliefs, he asserts that this has had no real impact on their view of mathematics or its practice.

Grattan-Guinness is fascinated by the possible mystic connections between faith and mathematics, but he lacks sympathy for those who would embrace closer connections between the two: "My own logical stance is, God save us from religions [i.e., organized faiths], especially the aggressive ones" (p. 242). This negative attitude notwithstanding, those taking a different approach to this

topic will still want to read what Grattan-Guinness has to say about it, for not much has been written on Christianity and mathematics from a scholarly historical viewpoint.

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PHILOSOPHY & THEOLOGY

BELIEF: Readings on the Reason for Faith by Francis S. Collins, ed. San Francisco, CA: HarperCollins, 2010. 352 pages. Paperback; \$19.99. ISBN: 9780061787348.

Francis Collins wants you to believe in God, not in any particular religious tradition's understanding of God—it would seem—just the general concept of God. And he is persuaded that you are more likely to believe in God if you can first believe that it is not irrational to do so.

Collins has both experience and credibility to make this argument, despite his repeated protestations in this volume that he is neither theologian nor philosopher and therefore an unlikely editor of a collection of readings on the rationality of belief. Currently the director of the National Institutes of Health and former director of the National Human Genome Research Institute, Collins wrote *The Language of God: A Scientist Presents Evidence for Belief*, a 2006 memoir of his own intellectual journey from atheism to Christian theism, which subsequently became a *New York Times* bestseller. In other words, people are reading Francis Collins, and they are specifically reading his thoughts on the existence of God. HarperCollins was thus wise to publish *Belief*.

Who has been buying and reading *The Language of God*? Are they atheists or agnostics who are genuinely interested in hearing how one of their own came to faith? Are they wavering believers who have been jolted by the assault of the new atheism over the past decade? Or are they devout believers in God whose own confidence in their faith is bolstered by the testimony of a celebrated, respected, and highly educated scientist? I suspect that a significant majority of Collins' readers represents that third demographic. In an era in which scientists often carry the authority of a secular priesthood, Collins' conversion story has had a salutary effect, particularly for his fellow evangelical Christians, many of whom have believed themselves increasingly marginalized in American culture.

Whoever has been buying *The Language of God*, this new volume is explicitly directed at a market of unbelievers, specifically those who have given up on the rationality of faith. To make the argument, Collins amasses a collection of readings from a few historic but mostly contemporary philosophers, theologians, and other writers. They are an impressive and varied array of voices, including quite a few who were alive and active in the early twenty-first century. These include N. T. Wright, Annie Dillard, the Dalai Lama, Os Guinness, John Stott, Desmond Tutu, Elie Wiesel, Tim Keller, John Polkinghorne, Art Lindsley, Keith Ward, Madeleine L'Engle, Alister McGrath (who assisted in the selection of readings), Hans Küng, Paul Brand, Alvin Plantinga, and Antony Flew. It is interest-

ing, given Collins' own credentials and the nature of the objections he is attempting to counter, that Polkinghorne is the only recognized scientist on this list. (McGrath has scientific credentials but is recognized primarily as a theologian.)

If one adds to this list of contemporary authors those whose voices spoke primarily or solely in the twentieth century (C. S. Lewis, Thomas Merton, Elton Trueblood, Dorothy Sayers, Mother Teresa, Dietrich Bonhoeffer, Martin Luther King, Viktor Frankl, Mahatma Gandhi, and G. K. Chesterton), the tilt of this volume toward recent voices becomes very plain. The historical "contributors" include two ancient Greeks (Plato and Aristotle), three medieval theologians (Augustine, Anselm, and Aquinas), and two Enlightenment philosophers (Locke and Pascal), all of whom, it may be noted, are in the Western tradition. As a historian, I would be gratified had more historic voices been introduced, but I understand the logic of this selection in the light of what would appeal to a contemporary audience.

The contributors are largely Christian but not entirely so, which is one of the confusing aspects of this book. Is Collins arguing for theism broadly understood? If so, his inclusion of the Greeks, of a couple of Jewish authors (Frankl and Wiesel), and a couple of "Eastern" religious leaders (Gandhi and the current Dalai Lama) makes sense. But they are not well integrated. For instance, the chapters are arranged by topic (e.g., "Faith and the Problem of Evil and Suffering," "The Harmony of Science and Faith," and "The Irrationality of Atheism") except for the one simply labeled "Voices from the East." Do Gandhi and the Dalai Lama have nothing to contribute to any of these topics? And where are the voices from the South? Africa and Latin America (as well as the Middle East and East Asia) are entirely missing from this volume.

Or does he want to bring his readers specifically to some kind of monotheism? Why no Muslim authors then? And Gandhi and the Dalai Lama might be considered monotheistic only by stretching the term beyond its usual boundaries. But if the goal is broad monotheism, then why is the list so heavily populated with Christians? Truth be told, Collins is writing primarily to American and British readers, and it is obvious that he is hoping to introduce them to at least an elementary Christian theism, which is particularly evident in how the essays he has chosen address issues of suffering, justice, and truth. And that is all well and good, given who he is. His book might have greater coherence had he simply said so, and then organized his readings to lead to that conclusion.

Having said that, his choices are, for the most part, good. Some are classics and familiar, but others I had not previously encountered and enjoyed. Most are short enough to be readable, accessible enough to be appreciated by an educated layperson, and provocative enough to stimulate further thinking. Yes, I have offered my quibbles about who is in and who is not, and others will have their own; Collins acknowledges this. But since his primary goal is to present a rational basis for belief, the readings are directed toward that aim. And, depending on the particular intellectual objection that a reader may have toward faith, there will likely be a reading that will address it. Will this volume persuade anyone to believe

in God, like Lewis's *Mere Christianity* did for Collins (and others)? It is doubtful. But if it eliminates an obstacle or two, if it encourages a few to dig more deeply, if it mitigates a little the shrill voices of atheism in our culture, perhaps it will constitute at least a minor contribution to a long, long conversation.

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SCIENTIFIC AND PHILOSOPHICAL PERSPECTIVES IN NEUROETHICS by James J. Giordano and Bert Gordijn, eds. New York: Cambridge University Press, 2010. 374 pages. Paperback; \$50.00. ISBN: 9780521703031.

Giordano is a Fellow of the Centre for Philosophical Psychology, University of Oxford; and Gordijn, a professor of ethics and secretary of the European Society for Philosophy of Medicine and Health Care. Their eighteen-chapter anthology contains reflections and beliefs involving the conceptualization and application of neuroethics to our ever present desire to live longer, healthier, or even enhanced, earthly lives.

The book states that it is written for researchers and graduate students in neuroscience and bioethics; however, without a sound and extensive knowledge base in the discipline of philosophy, including recognition of the ideas, terminology, and historical contexts of the world's greatest philosophers, a reader would be trudging through the chapters with a dictionary, encyclopedia, and/or internet access in order to appreciate what Walter Glannon describes in the afterword as "fascinating perspectives on multiple dimensions of basic and applied neuroscience." Upon acquiring or having some semblance of the necessary background knowledge in biology, neurology, psychology, sociology and philosophy (the forte of the branch of medicine called psychiatry), the reader will find that the book is a compilation of opinions or statements that were presented as factual, but were, in several cases, specious or at least subject to argument.

The introduction states that the purpose of the book is to examine three core questions: the direction of neuroscientific inquiry, how neuroscience has, to date, affected scientific and philosophical ideas, and what the potential ethical issues are now and in the future. After slowly, painstakingly, and diligently reading the book, I still cannot answer these questions any differently than I would have before I read the book. What I can say is that I have refreshed my undergraduate learning related to epistemology, empiricism, ontology, Kant, material reductionism, Cartesian interactionism, exigency, interiority, heuristic, hermeneutics, deontic logic, idealism, emergentism, physicalism, reductionism, and phrenology; all of these I had to research on my own as the book has no glossary to assist the reader. I can also say that I learned a new word, "exjuvantibus," which means making an inference about a disease cause from an observed response to treatment.

The book was divided into four domains: (1) the history of neuroscience, chapters 1-3; (2) issues of ethics, chapters 4-8; (3) development of neurotechnology, chapters 9-14; and (4) neuroethics in the worldview, chapters 15-18. Each chapter has its own contributor or

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contributors. The credentials, degrees, or qualifications of the contributors are not included; therefore readers must again either do their own research or depend on a previous knowledge of the authors. The contributions are all over the place in presentation, ranging from simple statements such as defining a nerve cell to very complicated discussions of neuroimaging techniques. The reader is constantly having to reset reading pace—from trudging through tedious discussions of “details” to racing past what seems obviously simple.

What was missing of greatest importance for the titled themes was any succinct or memorable discussion of the purpose of life. This teleological discussion is absolutely necessary in any discussion of ethics as it pertains to human health and well-being. The book covered topics ranging widely from medical interventions for pain, paralysis, and brain injury, all the way to aesthetic enhancements and the potential to engineer a “super mind”; yet what was missing was a forthright discussion of the commonly accepted principles of health-care ethics and, most importantly, the essence of faith, hope, and love in directing humankind in the pursuit of knowledge and ultimate wisdom. I end by saying that I do respect the contributors for their knowledge and effort.

Reviewed by Sharon Winters, Child and Adolescent Psychiatrist, Daytona Beach, FL 32129.

ABSENCE OF MIND: The Dispelling of Inwardness from the Modern Myth of the Self by Marilynne Robinson. New Haven, CT: Yale University Press, 2010. 158 pages, index. Hardcover; \$24.00. ISBN: 9780300145182.

Marilynne Robinson, the brilliant and admired writer of award-winning novels, joins a long line of distinguished thinkers from a variety of disciplines who have challenged the aggressive reductionism of scientific materialists. Those who have read her three novels, *Gilead*, *Home*, and *Housekeeping*, are already keenly aware that Robinson is one of the best writers of our time, certainly one of the most theologically attuned. But she has also written on a variety of topics, including a sharp critique of modern thought in her anthology of essays *The Death of Adam* (1998, 2005). In the spring of 2009, she delivered the prestigious Dwight H. Terry Foundation Lectures on Religion in the Light of Science and Philosophy at Yale University—the same lecture series that gave us John Polkinghorne’s *Belief in God in an Age of Science* (1998)—published in 2010 as *Absence of Mind*.

Robinson’s argument is simultaneously clear in its contours, subtle in its nuance, and elegant in its unfolding. She takes on vintage positivism for excluding from its model of reality “whatever science is (or was) not competent to verify or falsify” (p. xii). By banishing metaphysics in favor of reductionistic materialism, positivism and the modernist consensus it has helped to forge are cut off from the rich insights not only of the religious narrative but also of the classical and humanist traditions. The result is a very truncated conversation about what it means to be human. Claiming to speak with the authority of science, the current crop of science popularizers and new atheists has done little to enrich the conversation and has

produced a conceptually derivative and unsatisfactory “parascientific” literature.

Robinson is especially critical of how parascientists from both the neo-Darwinian and Freudian camps explain away the mystery of human consciousness without accounting for the reality of lived experience. Why do they do this? In part, it is because modern intellectuals can only account for the stubborn persistence of faith by resorting to what Robinson calls a “polemic against the mind” (p. 74). Faith is a delusion of the mind, so parascientists must argue that the mind is not to be trusted. “The experience and testimony of the individual mind,” she contends, “is to be explained away, excluded from consideration when any rational account is made of the nature of human being and of being altogether” (p. 22). And what “great new truth” are we given to replace the pervasive errors in previous thought, particularly those that assumed the God of traditional Western religions? We are told that the world is “a creature of accident, that it has climbed Mount Improbable incrementally and over time through a logic of development, refinement, and elaboration internal to itself and sufficient to account exhaustively for all the complexity and variety of which reality and experience are composed” (pp. 22–3). Anything smacking of human exceptionality is sheared from serious consideration, and the very idea that we ever imagined that humankind held a special place in the universe is viewed as preposterous. Such an unsatisfying view, based as it is on a “hermeneutics of condescension” (p. 14) that discounts felt experience as mere subjectivity, is grossly and arrogantly dehumanizing.

Early on, Robinson suggests that an honest inquirer into the nature of religion would do well to “spend an afternoon listening to Bach or Palestrina, reading Sophocles or the Book of Job” (p. 14). Doing so, it would seem, might make it very hard to take the parascientific project seriously. But clearly there are very bright people who do. The pervasive persistence of faith should not be dismissed as a delusion, but what are we to say about the stubborn resistance to interiority and mystery in the name of reductionism? In recent years, a number of very good books have attempted to address this question. *Absence of Mind* may well be one of the best of the lot, in large part because of rich sentences such as, “Subjectivity is the ancient haunt of piety and reverence and long, long thoughts” (p. 35). Robinson’s argument that reality, as experienced by the mind, is infinitely more complex, mysterious, and intriguing than the flat, parascientific dogma, as dished out by the materialist monists, is eloquently convincing.

Reviewed by Donald A. Yerxa, senior editor of Historically Speaking, Boston, MA 02215; editor-designate of Fides et Historia and Professor of History Emeritus, Eastern Nazarene College, Quincy, MA 02170.

PAUL IN ECSTASY: The Neurobiology of the Apostle’s Life and Thought by Colleen Shantz. New York: Cambridge University Press, 2009. 267 pages. Hardcover; \$85.95. ISBN: 9780521866101.

Theologian Colleen Shantz wrote *Paul in Ecstasy* to draw attention to religious experiences such as visions or revelations. Shantz believes that these experiences define an im-

portant “feature of Paul’s life and impetus to his thought.” She convincingly demonstrates that religious ecstasy is rarely taken up as a category of Pauline studies—and when it is addressed, it is done so using negative terms. This oversight troubles her because she believes strongly that the pervasive bias against religious ecstasy as a legitimate phenomenon worthy of study has diminished our capacity to fully understand Paul’s writings. If *experience* is not recognized as a valid construct to explore, Shantz believes we lose the ability to ask important questions regarding Paul’s ministry, such as, “How did Paul come to know this?” and “What kind of knowledge is it that arises out of (bodily) experience?” Past as well as contemporary New Testament scholarship has emphasized “what Paul said” with a premium placed on knowledge that could be put into words, sacrificing Paul’s experience of religious ecstasy, which does not lend itself to language-based descriptions.

The book appears to have originated from a doctoral thesis. In its current form, it still reads like a dissertation. Although the book is clearly an academic work written with a theologically informed audience in mind (e.g., there are over 900 references cited), those within the scientific community would appreciate a discussion of how cognitive neuroscience can be brought into the discussion to elucidate Pauline studies.

A number of books that attempt to integrate divergent bodies of literature, such as science and religion, tend to fall into one of two categories: books that lack theological rigor yet possess a strong scientific foundation, or books that articulate deep theological insights, but sacrifice scientific rigor. *Paul in Ecstasy* does not fit either of these two extremes. This theologically rich book does an excellent job of bringing in credible studies and models from brain science (mostly from neurology and cognitive neuroscience). The book stretched me in terms of my theological background and language preparation; however, I could comprehend enough of the arguments to come away with a deep appreciation for what the author is trying to communicate.

The book contains an introduction followed by five chapters. The introduction sets the stage for studying Paul’s ecstatic experiences by drawing upon “neurological, exegetical, and social anthropological perspective approaches” (p. 18). Chapter one dissects our cultural bias against religious ecstasy and attempts to understand why biblical commentators (particularly Protestant scholars) ignore or downplay its significance. Paul’s dramatic conversion experience, according to Shantz, is frequently used as a “catchall” by systematic theologians to lump together several other ecstatic experiences described in the scriptures. Chapter two explores other disciplines that have taken a more accepting and inquisitive view of religious ecstasy. The author turns her attention to cognitive neuroscience and neurology. *PSCF* readers will feel drawn into the debate at this point, since scientific methodologies and research are brought to bear on the topic and integrated with biblical constructs. We also learn what kinds of experiences are regarded as religious ecstasy: speaking in tongues, visions and/or revelations, ecstatic prayer (Rom. 8:23, 26), sign and wonders, and Paul’s ascent account (2 Cor. 12).

Chapter three addresses specific types of ecstasy (e.g., visions) along with their corresponding scriptural passages. Shantz’s exegesis leads to several interesting conclusions one such being that ecstatic speech was much more prevalent in Paul’s day than what is currently communicated by New Testament scholars. Chapter four looks at the practice of ecstasy within social groups. The question “How is religious ecstasy controlled and interpreted within communities?” becomes a central focus. Chapter five is brief and is used to summarize points made earlier. Shantz also makes it clear that the “aim of this study has not been to replace conventional ways of reading Paul with some sort of neurological reading ... but rather to suggest that we make a greater attempt to add experience” to our discussion.

PSCF readers should appreciate her attempt to use relevant scientific findings to broaden important theological questions that affect how scripture can be interpreted. *Paul in Ecstasy* could serve as a model for other scholars to tackle interesting questions concerning how religious Scripture intersects with scientific knowledge. *PSCF* readers will be aware that over the past thirty years an enthusiastic and refreshing movement has emerged to support serious, thoughtful scholarship on the interplay between science and theology. Shantz’s book is a welcome addition to this genre.

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RELIGION & BIBLICAL STUDIES

HOW GOD ACTS: Creation, Redemption, and Special Divine Action by Denis Edwards. Minneapolis, MN: Fortress Press, 2010. xiv + 207 pages. Paperback; \$27.00. ISBN: 9780800697006.

Edwards is an Australian Roman Catholic theologian who has long been engaged in the science and theology dialogue. In brief, he defends the notion of “special divine action,” albeit within a noninterventionist model. In other words, God does act to create and redeem the world, but neither by breaking in upon creation from the outside nor by overturning, disrupting, or bypassing the laws of nature. Instead, if creation itself is understood as the kenotic “self-bestowal of God,” then God both enables and empowers evolutionary emergence and creaturely autonomy to flourish in and through the chance and lawful processes of the world.

At first glance, Edwards’s thesis might seem counter-intuitive: if God works according to and within the limits of creaturely processes, then how can he insist that God also acts “especially” to redeem the world? Part of Edwards’s response is to say that talk about “special divine action” is warranted when specific effects—e.g., the emergence of life—are intended by God as outcomes of the world’s evolutionary history. Another aspect of his reply is that divine noninterventionism therefore occurs through secondary causes (God as primary and ontological cause is an ancient notion in the western theological and philosophical tradition). Once we understand that God acts through secondary causation, then Edwards’s

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argument can be situated within the broader framework of his trinitarian theology of creation—as exemplified in his *Jesus and the Cosmos* (Paulist, 1991), *The God of Evolution: A Trinitarian Theology* (Paulist, 1999), and *Breath of Life: A Theology of the Creator Spirit* (Orbis, 2004) among other single-authored and edited volumes—that has been forged over the last twenty years in dialogue with a wide range of theologians and natural scientists.

How God Acts thus presumes both the long (13–14 billion year) evolutionary history of the world and the broad biblical narrative of the Christ event that includes the Incarnation, ministry, death, and resurrection of Jesus—the whole Christ-Event, as Edwards says—and his subsequent giving of his Spirit in saving, redeeming, and deifying transformation. Thus, the last few chapters of the book unpack God’s special actions of resurrection (especially of Christ), redemption from (original) sin, final (eschatological) fulfillment, and responses to prayers of intercession. In the case of the resurrection of Jesus, for example, the emergence of life from out of death is already immanent within the evolutionary process. Jesus’ coming back to life from the dead is thus comprehensible as the initial representation of the ontological transformation of the created order *from within* (rather than occurring from without, transcendently), which effectively transforms creatures through the post-Easter experiences of the disciples and their bearing witness to the risen Christ. Thus Christ is the sacrament and first fruits of salvation in which creation, beginning with the disciples, participates and, through such participation, experiences redemptive transformation now in anticipation of the final consummation. Similarly, intercessory prayer enables humanity’s participation in the creative and redemptive work of God, allows for us to share what matters with God, and is a means through which we entrust ourselves to God and express our desire for God and for God’s will to be done. Thus God answers prayers variously through interfacing with us as secondary causes who carry out or effect God’s will in the world.

We might anticipate various responses to *How God Acts*. Those who emphasize the hermeneutical character of discerning God’s special acts—in other words, that any claims to special divine action can be made only in faith, given certain theological presuppositions about God and about the nature of God’s relationship with and to the world—would not appear to have to make any major adjustments to their views. Some of the participants in the theology and science dialogues on divine action might complain that Edwards does not seem to consider proposals of divine action based on God’s communicating information to the world (as opposed to God’s energetic interface with the world). A third group of more evangelically inclined Protestants might be put off by Edwards’s reliance on Karl Rahner as his major theological dialogue partner throughout the volume.

But all in all, I recommend this book because its author writes clearly and accessibly (including to interested lay people), he is informed about the debates and about what is at stake, and his proposal strives to be faithful to the biblical witness and the Christian faith even while attempting to do justice to the nature of the universe as understood by modern science. The pastoral sensitivity reflected in Edwards’s ecological theology—including *Jesus the Wisdom of God: An Ecological Theology* (Orbis, 1995) and *Ecology*

at the Heart of Faith (Orbis, 2006)—is here also exemplified. Students and scholars will benefit from this book, even if in different ways.

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RELIGION & SCIENCE

SUBJECTIVITY, OBJECTIVITY, AND INTERSUBJECTIVITY: A New Paradigm for Religion and Science by Joseph A. Bracken. West Conshohocken, PA: Templeton Press, 2009. 234 + xiv pages. Paperback; \$27.95. ISBN: 9781599471525.

The stated aim of this book is to contribute a new framework for understanding subjectivity, objectivity, and intersubjectivity in the dialog between religion and science. The book approaches this goal using as a guide the traditional metaphysical problem of the One and the Many—and in particular, Alfred North Whitehead’s approach to this problem. According to Bracken, Whitehead focused on self-constituting subjects of experience rather than enduring substances as the most really existing things in the universe (p. 5). However, Bracken criticizes Whitehead’s metaphysics for remaining committed to philosophical atomism (p. 5). The main theoretical orientation of the book then is that a corrected Whiteheadian metaphysic can help resolve some of the problems that emerge at the intersection of religion and science by providing a new framework for understanding the natural world and our knowledge of it (p. 6).

In the first seven chapters, Bracken highlights several threads running through the history of philosophy that are in some way connected with objectivity, subjectivity, and intersubjectivity and the problem of the One and the Many. Chapter one discusses the late medieval shift to nominalism and the way that this opened the door for subjectivity in philosophy and the natural sciences. Chapter two presents Descartes and Locke as moving this turn toward the subject forward in the early modern era by focusing epistemology on the knowing subject and the process by which it comes to know the world. Chapter three discusses Berkeley, Hume, Spinoza, and Leibniz in regard to their views of matter, substance, and the natural world. Chapter four deals with Kant’s view that sense experience is structured by *a priori* categories and his Analogies of Experience. The fifth chapter discusses post-Kantian transcendental idealism, focusing on Fichte, Schelling, and Hegel, and explains how each philosopher can be seen to be responding to Kant’s fortification of the Cartesian turn to the subject. Chapter six describes what Bracken takes to be attempts by Kierkegaard, Levinas, and Buber to overcome systems thinking. And finally, chapter seven looks at Heidegger’s metaphysics, which takes events rather than things as most fundamental.

The remaining four chapters (not counting the conclusion) take on contemporary topics in philosophy of science and theology. Chapter eight examines the doctrine of the Trinity, arguing for an interpretation on which the interrelation [*perichoresis*] of persons in the Trinity serves as a model for understanding the relationship between con-

crete individuals in the natural world. Bracken argues that this helps explain how existent things separately retain their individuality while remaining part of a larger universe. Chapter nine discusses self-organizing systems in relation to the theories of Ervin Laszlo and Stuart Kauffman. Chapter ten argues that a Whiteheadian view of the part/whole relationship can be used to come to terms with contemporary field theories in physics and biology. Finally, chapter eleven addresses the fruitfulness of the concept of a block universe as a beginning point for understanding time and eternity and God's relationship to the created universe. The theme that unites these divergent topics seems to be emergence—how it is that the whole can be more than the sum of its parts and how it is that individual elements remain part of a larger whole without losing their individuality. Bracken presents these questions as applications of the traditional problem of the One and the Many.

The strength of the book lies in its use of Whitehead's metaphysics to frame established problems and entrenched debates in a new way. This is much more true of the second half of the book because of its focus on contemporary topics rather than on history of philosophy. For instance, in chapter seven, there is a very interesting extended comparison of the respective metaphysical theories of Whitehead and Heidegger. Furthermore, chapter nine contains an illuminating discussion of how Whitehead's theory of actual occasions can be used to complement Kauffman's work on self-organizing systems (pp. 151–2).

The main drawback of the book is that the breadth of its scope within such a confined length prevents deep exposition of any one topic and leads to a sense of lack of focus. Throughout the book, Bracken brings a number of disparate problems in widely divergent contexts under the broad heading of "The One and the Many." Yet these topics do not often cohere very well, and the interconnections between them are sometimes merely assumed rather than explained. More could have been done to motivate the use of the One and the Many as the locus for discussing issues that emerge at the interface of science and religion. This drawback is reflected in the coverage of the topics in individual chapters. The presentation of much of the historical material in chapters one through six tends to be derivative and is not connected explicitly enough to the aim of the book. Of the topics expounded in chapters seven through eleven, the reader is often left desiring a deeper and more sustained discussion. Finally, the subtitle of the book promises "a new paradigm for religion and science," suggesting a new theoretical or methodological perspective for understanding the relationship between science and religion. Yet the book fails to significantly engage contemporary debate on the latter relationship, because it does not clearly enough define the problem that it is trying to solve.

Despite these flaws, the book sketches a unique theoretical approach to understanding a number of diverse topics that are currently of interest to religious believers—especially Christians—who are engaged in reflection on contemporary science. It could well be used as a text for discussion in upper-level undergraduate courses—for instance, in doctrine of creation or perspectives on science classes—provided that it be supplemented with

texts that more explicitly address the relationship between faith and reason, religion and science, and the ongoing conversation between proponents of science and religion.

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DECODING THE LANGUAGE OF GOD: Can a Scientist Really Be a Believer? by George C. Cunningham. New York: Prometheus Books, 2010. 247 pages. Paperback; \$18.00. ISBN: 9781591027669.

Francis Collins' *The Language of God: A Scientist Presents Evidence For Belief* (2006) dropped like a bomb on the American scene. When has a scientist of such national prominence given his "personal testimony" and offered a case for Christian faith, and how he relates this faith to his scientific life? *The Language of God* appeared at a time when the so-called "new atheists," R. Dawkins (2006), S. Harris (2006), D. Dennett (2006), and C. Hitchens (2007), were prominent in the media. That flood continues.

It was a field day for reviewers, bloggers left and right, Christians of all flavors, the press, and talk shows. After a couple of years of public discussion, things quieted down until Collins was nominated by President Obama to head the National Institutes of Health. The pundits re-emerged to consider whether the "Christian" Collins was worthy of filling the post. The *New York Times* cited his significant scientific and administrative achievements but warned readers that "praise for Dr. Collins was not universal or entirely enthusiastic," because of his book and public discussion about his conversion experience and his "evangelism." Nonetheless, he was readily sworn in as Director on August 17, 2009.

Now Cunningham, the retired chief of the Genetic Disease Branch of the California State Department of Health Services, weighs in on the discussion:

I found Collins' arguments and "evidence" that religious beliefs can be reconciled with scientific truth, unconvincing. I focus on the evidence that Collins uses to support his belief that Jesus Christ is the creator God who desires fellowship with humankind. Collins' book attempts to convince readers of two propositions: first, it is rational to believe in a personal God who desires fellowship with humans and second, this personal God is the historic Jewish teacher, Jesus. I intend to show how Collins' attempt fails and to demonstrate that no one can simultaneously accept belief in a personal God and still claim to be a logical and rational scientist without engaging in magical thinking. (P. 14)

... the arguments he uses are not rational, logical, or consistent with modern science. In truth, they are rationalizations for blind, unsupported, faith. (P. 15)

While using Collins as the prototype for believing scientists, Cunningham includes K. Miller (2007), F. Ayala (2007), D. Falk (2004), J. Roughgarden (2006), and C. S. Lewis (Collins' hero) as guilty of the same flaws.

Evangelist Cunningham asks his readers "to set aside a lifetime of cherished beliefs for a few moments and approach the discussion in this text with as open a mind as they can. To seek true knowledge one must question the

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unquestionable and challenge the unchallengeable" (p. 21). Perhaps know the unknowable? (Reviewer)

Cunningham argues against the core beliefs of typical evangelicals—the divinity of Jesus, the Bible as a reliable moral guide, miracles, the efficacy of prayer, and an after-life of reward and punishment—in short, against a supernatural reality (p. 25).

His chapter "From Belief to Atheism" recounts a tale of a bright, depression-era, Catholic boy brought up in the arms of the church struggling with "the idea of a personal God, virgin birth, resurrection, and to reconcile God with the existence of so much evil and the negative effects of religious excess" (p. 30). Abandoning his faith, he stopped attending mass after undergraduate school. Like Collins, he moved from a PhD program to medical school. There, Collins was challenged by the religious questions asked by his patients, but Cunningham found no answers in religion (p. 32). In 1965 he joined the California State Department of Public Health to initiate a Hereditary Defects Unit, finding opportunity "to influence the health and welfare of literally millions of newborns and their families" (p. 33).

He begins with a chapter "Evidence and Rules of Engagement" which sets forth the traditional ways that scientists go about their work. He finds Collins lacking in the use of "references, sources, clear definitions, and omitting and underanalyzing crucial evidence" (p. 35). Was Collins writing the end—all in apologetics? (No). Could he have been more careful? (Maybe). Collins is also judged lacking in terms of valid evidence—of "failing (along with the greatest philosophers and theologians in history to produce a valid logical proof of the existence of the supernatural being called God" (pp. 42–3). At one point, the author chides the Apostle Paul for misusing the word "evidence" (p. 38).

Chapter three addresses what Collins called four "particularly vexing" barriers to belief by scientists: (1) wish fulfillment (a Freudian wish for a perfect father in place of imperfect human fathers), (2) harms done by religion, (3) the existence of evil, and (4) miracles. Cunningham knocks down Collins' use of the moral argument by questioning its existence, and then suggesting that moral law might be an unintended consequence of evolution (p. 88). He errs in stating that the divine was "suddenly added into first-century humans" (p. 89). Collins is tarred with "God of the Gaps" thinking even when expressing openness to new evidence, while Cunningham offers a similar pious hope for further evidence against an interventionist deity.

The chapter "Cosmology—Origin of the Universe" finds *The Language of God* woefully deficient on the Big Bang, and anthropic coincidences.

Answering *all* the interesting questions about the universe is an impossibly high standard, but surely science has the best answers to date. Does religion provide satisfying answers ... ? The recurring answer that an incomprehensible god did it is an answer that explains nothing. It's like the answer. It's magic." (PP. 112–3)

Cunningham has a field day in "The Bible" chapter. In his Catholic youth, he was taught that the Bible was to be

interpreted by the church, not by individuals as the cafeteria Christianity offered by Protestants. He gleefully notes Isaac Asimov's quip, "Properly read, the Bible is the most potent force for atheism ever conceived" (p. 117), and notes, "It is almost certain that Paul had an attack of temporal lobe epilepsy on the road to Damascus and experienced visual and auditory hallucinations presumably sometime after Jesus' death" (pp. 125–6). Many of the usual objections are trotted out along with some modern twists of interpretation.

Chapters seven and eight pose naturalism vs. supernaturalism. *The Language of God* is found wanting along both lines. For Cunningham,

The impossibility of God, most especially a personal God, has been reduced to a point close to absolute certainty. In the end, it is the evidence and methods of science that provide satisfying natural explanations for the universe. (P. 179)

Cunningham discusses the problems of being made in the image of God. He concludes, "There is no way to communicate with an impersonal god, even if such a god exists, it is irrelevant to humans because it does not care what they do during their brief lives" (p. 222).

While I find little to commend in this work, the ASA reader may find it useful to brush up on contemporary atheistic ploys and reflect on the ever challenging place of apologetics, personal experience, Scripture, and the Holy Spirit in our witness for the Gospel.

For the Apostle Paul, "I pray that out of his glorious riches he may strengthen you with power through his spirit in your inner being, so that Christ may dwell in your hearts through faith" (Eph. 3:16–17, NIV).

Reviewed by John W. Haas Jr., Emeritus Professor of Chemistry, Gordon College, Wenham, MA 01984.

GOD'S BRAIN by Lionel Tiger and Michael McGuire. Amherst, NY: Prometheus Books, 2010. 238 pages. Hardcover; \$25.00. ISBN: 9781616141646.

Lionel Tiger is the author of several best-selling books including *The Decline of Males*, *The Pursuit of Pleasure*, and *Optimism: The Biology of Hope*. He is the Charles Darwin Professor of Anthropology at Rutgers University. Michael McGuire is the author or editor of ten books, including *Darwinian Psychiatry*. Formerly, he was a professor of psychiatry and biobehavioral sciences at the University of California at Los Angeles and editor of the journal *Ethology and Sociobiology*.

The authors state that their main reason for writing this book was their "discontent with the most salient explanations of religion's power and incidence." They acknowledge that partial explanations have been offered (religion evolved because it enhanced the survivability of religious groups while the irreligious failed to prosper, or that religious behavior helps groups to function more effectively, or even that a "God gene" somehow generates religious dogma and behavior). But the authors go on to argue that there is another possible explanation for the power of religion which needs to be further explored. For Tiger and McGuire, this explanation focuses upon the relationship

between religion and human brain function. This book is therefore devoted to answering the question: What does religion do for the human brain?

The main thesis of the book is that religion has a comforting effect on brain chemistry and body physiology. The authors explain in detail how three significant features of religion (positive socialization, rituals, and religious beliefs) are able to offset many of the effects of stress. Religion relieves stress by providing answers to otherwise unanswerable questions, by elevating self-esteem, by providing a meaningful place in this world and perhaps the next, by facilitating social relationships, by improving credibility among certain groups, and by giving meaning to the relatively mundane tasks of everyday life. The authors often use the word "brainsoothe" to describe the relationship between religion and the human brain, and one chapter even attempts to explain how a "brainsoothe score" can be determined.

The book's conclusions are mainly based on recent research in primate behavior and human neurobiology. The chapter entitled "Is Religion Monkey Business?" explains how human morality may have developed from a variety of behaviors which have been documented in chimpanzees. The chapter entitled "The Elephant in the Chapel Is in Your Skull" describes how religious socialization, ritual, and belief impact the levels of various neurotransmitters in the brain. While the information summarized in these and other chapters is supported by numerous research articles that are cited in the endnotes, it is presented in a way that even the general public can understand. The writing style is concise, interesting, and even quite entertaining at times. What could have been a technical tome in evolutionary theory and neurobiology has been transformed into an informative book that even nonscientists can comprehend.

The authors are to be commended for generally viewing the effects of religion in a positive way. Their conclusions, however, are entirely rooted in psychological, biochemical, and evolutionary forms of analysis. There is no mention of any kind of spiritual or supernatural explanation for religion's power and incidence. The title of the book, *God's Brain*, is also misleading, because in the minds of the authors, the idea of God is simply a creation of the human brain. The brain creates religion and its varied conceptions of God, and then feeds on its creation to satisfy neurological and social needs. The authors finally state unequivocally on the last page of the book that God's brain is nothing more than our brain. This is a conclusion which simply cannot be accepted by anyone who believes in a God who transcends human existence.

Reviewed by J. David Holland, Associate Professor of Life Science, Benedictine University at Springfield, Springfield, IL 62702.

MAKING SENSE OF EVOLUTION: Darwin, God, and the Drama of Life by John F. Haught. Louisville, KY: Westminster John Knox Press, 2010. 163 + xviii pages. Paperback; \$19.95. ISBN: 9780664232856.

It is an article of faith for many Americans that evolution and belief in God are incompatible. Some think that Darwin's theory threatens basic Christian faith while

others claim that it implies the impossibility of believing in a God who is involved with the world. These views are held in the teeth of the evidence: many religious believers understand and accept evolution and some have argued for a Christian understanding of it. Prominent among them has been the Roman Catholic theologian John Haught, Professor Emeritus at Georgetown University, whose previous books include *God after Darwin* and *Deeper than Darwin*.

Making Sense of Evolution: Darwin, God, and the Drama of Life is aimed at a general audience and assumes no special knowledge of science or theology. As the subtitle indicates, Haught wants to make sense not only of Darwinian evolution but also of how it fits with belief in God. Haught organizes his eleven chapters alliteratively: Darwin, Design, Diversity, Descent, Drama, Direction, Depth, Death, Duty, Devotion and Deity. The book's first set of chapters describes basic scientific concepts in a theological context. The second half discusses the Depth and Drama that result from considering Darwin's theory in the context of Deity.

In the first chapter, Darwin's scientific views and his movement from traditional Christianity to what Haught calls "scientific naturalism" are considered. Throughout the book, Haught points out ways in which the ideas that underlay this move continue to appear in today's debates. But he also emphasizes Darwin's courtesy and desire to avoid offense, in contrast to the polemics of some contemporary Darwinians. Haught points out that with natural selection, Darwin offered a scientific answer to the question of "Design," which had previously been considered theological. The critical error of both ID proponents and scientific naturalists is choosing between scientific and theological description. The old and important idea of "layered explanation," illustrated with the question of why the page you are reading exists, emphasizes that there can be multiple answers to the question of why something happens.

A failure to appreciate layered explanation is one example of scientific naturalism's lack of Depth. Insistence that natural selection and other components of evolutionary theory are the *only* explanation of life is superficial. The God who creates, following Paul Tillich, is seen as the depth of the world rather than as a cause within the world. Unwarranted assumptions about divine characteristics also skew many arguments about Diversity of life and the supposed wastefulness of evolution. Haught refers to Tillich's sermon "Holy Waste" as he points out that we have no reason to think of God as a cosmic efficiency expert. He also cites Aquinas to show that theologians long before Darwin were aware of the diversity of living things and gave reasons why God would maximize it. Critics of theology should at least learn something about it!

At the heart of Haught's connection between Darwin and Deity is Drama. *The Origin of Species*, he observes, "tells the story of a long struggle accompanied by risk, adventure, tragedy, and by what Darwin called 'grandeur.' A Christian theology of evolution locates this drama within the very heart of God" (p. 53). Theology brings out the depth and significance of evolution but does not replace the scientific account. In fact, it is largely

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from evolutionary science that theology has learned to see creation as “a narrative unfolding in time” (p 54). A genuine dialogue between science and theology enriches both. Haught, of course, chose Darwin to speak for evolution, and those familiar with his other work will not be surprised that he chose Pierre Teilhard de Chardin, one of the first to attempt a full-fledged theology of evolution, to speak for Deity. This Jesuit paleontologist’s understanding of Christian faith saw God involved with a world in development, a process theology. Such a theology does not simply accept, rather it demands, some kind of evolution.

The case set out here for compatibility of evolution and Christianity may not convince many of those belonging to the groups to which I referred initially. Many conservative Christians think that theologians like Tillich and Teilhard abandoned too much of fundamental Christian faith, and many militant atheists are unwilling to engage any serious theology at all. Certainly, questions can be raised about some of Haught’s arguments. For example, the extent to which Teilhard “accepts” the Darwinian understanding of evolution (p. 138) is open to question, and not only “timid theological minds” (p. 141) will object to some aspects of Teilhard’s theology. But those who are at all open-minded should be able to see in Haught’s presentation a coherent argument for the compatibility of Darwinian evolution and Christian faith.

Reviewed by George L. Murphy, Tallmadge, OH. Murphy has also reviewed this book for Reports of the National Center for Science Education, forthcoming.

RELIGIOUS IDEAS FOR SECULAR UNIVERSITIES by C. John Sommerville. Grand Rapids, MI: Eerdmans, 2009. 208 pages. Paperback; \$18.00. ISBN: 9780802864420.

Religious ideas and approaches to the individual, society, and the relationship between them, are regarded by many as, if not irrelevant, at least increasingly quaint. Church attendance in the first world is declining. More and more books and essays are being written about the post-Christian society, in which the only suitable language for public discourse is secularism. Can one credibly contend that religion has any meaningful part to play in addressing the most pressing issues of modern society?

John Sommerville thinks the answer is yes, and has written a very thought-provoking book exploring this question. The title of the book is a bit misleading—while the author’s concern is with the relationship between religious ideas and secular universities, the book is really about the relationship between a self-consciously secular society and the role of religion in it. Yet it begins and ends with the importance of universities in modern society, and of the essential role that scholarly inquiry plays in nurturing and advancing civilization. This role, contends Sommerville, cannot properly be carried out unless the secular academy listens to religious voices.

Beginning with the premise that universities over the past fifty years have moved from discovering reality to applying knowledge, Sommerville argues that the academy has lost its way. Shifting the balance from discovery to application is not bad in itself, but application should

be for human good. But what is that? Making more money? Living longer? Understanding human good is a fundamentally religious question, since it entails asking what ought to be of ultimate concern. What is worth dying for? What is the best division between family and state for the care of children? How do we delineate the ethical boundaries of genetic manipulation and enhancement of the unborn? Unfortunately, claims Sommerville, universities have confined religious thought to an academic museum, thereby narrowing debate on these and many other questions, so that only secular voices are heard.

A new paradigm for universities—and for society—is needed, and the book explores what this paradigm might look like. It will involve a shift in thinking in both what universities are for and about, and in what the proper relationship is between religion and secularism. Part of this will involve a mutual recognition of the need that each has for the other. This is particularly important for Christianity, as the author argues that it goes beyond mere coexistence with secularism to mean that one is *more* Christian for being an active participant in a secular world. The amphibious nature of being Christian entails an engagement with the world in such a way that it may rub off on others.

Sommerville makes this case from several viewpoints. For example, he contends that universities need to counter structural distortions in the news industry and that high schools need to counter our “bottom feeding entertainment industry.” It is a Christian voice that will offer a rationale for human good, without which both high schools and universities will come up short in addressing these issues. From another perspective, he argues that while most entertainment leaves you where it found you, serious art takes you to another place. Christian voices can remind a secular society that “worldly” art is not as worldly as it seems.

One cannot discuss modern secularism without discussing science. While not extensively exploring the ramifications of scientific thought in the new religious/secular paradigm, Sommerville does offer a number of provocative insights. He contends that assuming a transcendent rational perspective in judging religions would be a terrible mistake. Scientific naturalism remains too strange for anyone to live by, given our intuition that other personalities exist. It is the news media that decide who the scientific experts are that merit public consultation, and not the scientists themselves. And science cannot simply mean “truth,” since scientific discoveries of previous centuries have been superseded by new ones.

But fundamentally, this is not a book about science and religion. Rather, it is a book about scholarship and religion, with scholarship covering all of the many lines of academic inquiry used and addressed by universities. While the religious ideas discussed in the book go beyond Christianity, it is clear that the author regards Christian faith as playing a pivotal role in the development of a new relationship between the ivory tower and the sacred temple. This is a very important book for Christians to read, whether they are in science or not.

Reviewed by Robert B. Mann, Professor of Physics, Department of Physics & Astronomy, University of Waterloo, Waterloo, ON N2L 3G1.

QUESTIONS OF TRUTH: Fifty-One Responses to Questions about God, Science, and Belief by John Polkinghorne and Nicholas Beale. Louisville, KY: Westminster John Knox Press, 2009. 180 pages. Paperback; \$16.95. ISBN: 9780664233518.

John Polkinghorne is an accomplished physicist and a theologian who is ordained in the Church of England. He has written extensively (26 books) on the topic of science and religion and was awarded the Templeton Prize in 2002, among many other accolades. Nicholas Beale is a social philosopher and a long-time collaborator with Polkinghorne. He also manages the website where Polkinghorne explains his views on science and faith and answers questions. This book, *Questions of Truth*, is a clear and concise set of responses to questions about God and science. Both authors offer responses which are identified by their initials, so a couple of perspectives are provided for several of the questions. Overall, this is a helpful, though brief, introduction on addressing questions at the intersection of science and faith. It could be useful to help prepare for dialogue with skeptics, especially scientists, engineers, or other intellectuals who are familiar with modern science.

In the foreword, Nobel Prizewinner Tony Hewish emphasizes Polkinghorne's view that science and religion are not in conflict, but are in fact complementary, and that both are vital for the deepest understanding of our place in the universe. He also points out that if aspects of particle physics, for example, are nonintuitive and defy rational common sense, then we should be prepared to accept that the most profound aspects of our existence may go beyond our common-sense intuitions as well. The first chapter (Leading Questions) sets the stage by summarizing nine fundamental issues that underlie the questions and answers of the subsequent chapters. The question-and-answer format is very effective in providing maximum apologetic impact in the areas of the concept and existence of God, the universe, evolution, evil, the human being, and religion. This is followed by a conclusion and three appendices on anthropic fine-tuning, the brain and mind, and evolution. The chapters are brief so at the end of each chapter is a helpful list of books for further studies. Additional helpful resources are also found after the appendices in the endnotes, glossary, and selected bibliography.

Readers should appreciate the humility reflected throughout this work. The authors do not hesitate to admit their ignorance when it comes to areas in which there is still much to learn. They are hopeful that new areas such as complexity theory have the potential to provide additional answers in the future. They suggest that the emergence of creative behavioral patterns in complex systems encourages the idea that there are holistic laws of nature, at present unknown, for which the key concept may have more to do with "active information" than with energy. Even so, the fact that the universe is rationally transparent to science and also turns out to be rationally beautiful argues for belief in God. The authors suggest that we have an ability to see

the deep order of the world—a world shot through with signs of mind, one might say—as being indeed a reflection of the truth that the mind of the Creator

is revealed in this way. Science is then understood to be possible because the universe is a creation and we are creatures made in the image of the Creator.

Thus, they seem to be saying that the universe shows signs of being intelligently planned or engineered. As an engineer, I personally find this perspective to be intriguing and worthy of further study.

However, the authors are very careful to outline exactly what, and what does not, constitute legitimate scientific evidence for the existence of a transcendent mind. In the chapter on evolution, they are quick to appropriately emphasize the compatibility of evolutionary science and Christianity. As an engineer, it is exciting for me to consider how God is glorified by his ability to "make all things make themselves." It is even more exciting to study living systems, and in the spirit of biomimetics, begin to take baby steps in developing the technology of self-deploying and adaptive artificial systems. I would expect that many engineers relate to God at a deep level through this shared role as a creative problem solver. Thus I was somewhat troubled to come across the authors' suggestion that it is unfortunate that people think of God as a designer. They even assert that, "God is never spoken of as a 'designer' in the Bible." On the contrary, many texts could be cited, such as Psalm 139, that state that each of us was knit together by God in our mother's womb. Obviously, God's engineering capabilities and methods are well above and beyond ours, but we are made in his image and he reveals himself to us in ways that allow us to relate to him; this includes categories such as "designer." The strength of the evidence for a Christian worldview appears to be in the cumulative case. We should take care not to denigrate evidence that adds to that case, and that certain groups of people might find particularly compelling.

Reviewed by Dominic M. Halsmer, Professor of Engineering and Dean of the College of Science and Engineering, Oral Roberts University, Tulsa, OK 74171.

Letters

Neuroscience or Neuroscientism?

I found Paul Moes' article, "Minding Emotions: The Embodied Nature of Emotional Self-Regulation," Kevin S. Seybold's article, "Biology of Spirituality," and D. Gareth Jones' article, "Peering into People's Brains: Neuroscience's Intrusion into Our Inner Sanctum" (*PSCF* 62, no. 2 [2010]: 75–87, 89–98, and 122–32 respectively), to be very controversial.

Given a limited space, I will only engage Moes' and Jones' articles based on points of philosophical interest. Both Moes and Jones appeal to developments in the mainstream neuroscience (among others) to talk about aspects of the human nature.