## Environment

**LET CREATION REJOICE: Biblical Hope and Ecological Crisis** by Jonathan A. Moo and Robert S. White. Downers Grove, IL: IVP Academic, 2014. 187 pages. Paperback; $20.00. ISBN: 9780830840526.

At a time when Earth's environmental problems can seem insurmountable, Jonathan Moo and Robert White present a case for Christians to look forward with both hope and diligence in their efforts to care for God's creation. Their vision of biblical hope does not gloss over the grim realities of the damage that has been done to our world by human destruction, pollution, and overexploitation of resources. *Let Creation Rejoice: Biblical Hope and Ecological Crisis* is structured upon the idea that Christians are called to both joy and lament—to a hope based on the promises of God's kingdom and to groaning alongside all creation.

The reasons for lament come first in the book. Moo and White provide a whirlwind tour of the ecological crisis, carefully working through major issues that threaten the future of life on Earth, and, in the process, addressing the implications for the health and wellbeing of both people and the nonhuman creation. The authors find that, at its root, the brokenness of creation results from humanity's broken relationship with God. The first chapter in this section covers a range of topics including population growth, ecological footprint, nitrogen cycling, water use, and food production. The next chapter is dedicated entirely to the subject of climate change, walking the reader through the repercussions of a rapidly warming Earth, the evidence for human-caused climate change, and future prospects. They do not shy away from pointing out the ways that media coverage has highlighted flashy stories (such as investigations into fraud among climate scientists) rather than what can appear to be small increases in global average temperature (yet which still have major effects), or how corporations that make their profits from fossil fuels have sought to propagate uncertainty and confusion over the issue of climate change.

After lamenting the present state of the planet, the subsequent call to hope and joy is truly needed and appreciated. Moo and White stress that Christians do not work alone in addressing the ecological crisis: God continues to work in his creation. Christians also have hope in the future redemption of creation. This future hope can be misconstrued or misused to condone an attitude of indifference toward the groaning of creation, but the authors counter this misunderstanding with very convincing arguments for working toward the new creation. In this picture of future hope, they use recurring imagery of the *already* and *not yet* of God's kingdom. God's kingdom is here, yet much suffering is found on Earth. Christians are waiting for the full revelation and renewal of the earth, yet even now we have foretastes—which can be seen when we help the earth to flourish, such as through ecological restoration. During this time of waiting, we must be ready and active, preparing for the Lord's return.

This book highlights many reasons to care about creation, focusing on those particularly relevant to a Christian worldview. God is the Creator, and he shows his care for all creation; those who follow God should show this care as well. To care for human brothers and sisters (those of the future and those of today around the world), we must care for the environment. With their focus on the future, the authors provide considerable discussion of the end times and what will become of the earth. They argue that God will purify and renew the earth rather than simply destroy it: "*this creation*, this very earth, will not be left behind" (p. 111). Thus, as Christians work alongside Christ, they, too, should work toward the renewal of all creation.

The reader is challenged to consider whether his or her culture is like the kingdom of Babylon described in Revelation. Rather than rejoicing at the fall of Babylon at the end times, would Christians lament? Many stumbling blocks have led people to fall in step with the ways of Babylon and have prevented them from taking action to be better stewards of the earth. These impediments range from self-interests to economic incentives to consumer culture. In addition, our human perspective makes it difficult for us to deal with the long-term effects of our actions rather than just those of the short term. While some might hope for a specific plan of action from the authors, they did not go this route. Rather than provide specific prescriptions, they sound a call to serve Christ and others through positive interactions with creation.

Those considering this book might also consider (or might already have read) Steven Bouma-Prediger's *For the Beauty of the Earth: A Christian Vision for Creation Care* (2010). Both of these books provide an assessment of the state of our planet, give powerful arguments for Christian earthkeeping, and thoughtfully consider large scripture passages (as opposed to proof texting). Bouma-Prediger focuses on addressing specific accusations against Christians with regard to poor environmental stewardship, and

he covers a repertoire of reasons various people find to care for creation. For those looking for a book that excels in describing the Creator's handiwork in crafting different ecosystems and his covenanting with all of creation, Bouma-Prediger's book is stronger. On the other hand, while Bouma-Prediger also looks forward to the renewal of the earth, Moo and White go into much greater depth on what scripture says about the future and how that affects our current hope and understanding. Both books are excellent contributions to the discussion of Christian environmental stewardship, each with its own strengths.

The Christian story is one that looks forward to the time when Christ will come again. Rather than an excuse to neglect our responsibilities, his return is a call to be found ready and to participate in the renewal of creation in this time of the *already* and the *not yet*.

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## Ethics

**A POLITICAL THEOLOGY OF CLIMATE CHANGE** by Michael S. Northcott. Grand Rapids, MI: Eerdmans, 2013. 345 pages. Paperback; $30.00. ISBN: 9780802870988.

The core presupposition of this sprawling book is that the most alarming scientific claims currently being made about climate change are trustworthy. Northcott, a Christian ethicist at the University of Edinburgh who specializes in the environment, cites study after study, from all over the world, indicating that anthropogenic climate change is not only changing current weather patterns but also threatens to harm and finally destroy the very human civilizations that are producing it. We are facing "a slow catastrophe" (p. 4), a "climate emergency" (p. 160). Even though "slow change leading to catastrophic outcomes is … counterintuitive" (p. 6), a "climate apocalypse" is indeed coming. In the short term, climate change will affect different regions and populations unevenly, but in the long run, we may be looking at "the end of the human species within two hundred years" (p. 14).

Some readers will check out immediately in the face of this particularly alarming take on current climate science, either because they cannot bear to be told such things or because they simply do not believe them. But as this magisterial, interdisciplinary, and intellectually sophisticated work unfolds, it becomes clear that Northcott has a much bigger story to tell—and prescription to offer. One could ratchet back his scientific claims by a few degrees (pun intended) and still be swept up by his majestic political-theological-philosophical analysis of what has gone wrong with human civilization to get us to this point of climate crisis—and what still might be done about it.

Northcott is explicitly offering "climate apocalyptic" (p. 16). Like New Testament apocalyptic, he says, climate apocalyptic indicates the imminence of a moment of judgment on the present form of human civilization. Like all apocalypticists, climatologists and those analysts who extrapolate the implications offer an "unveiling" of the sins of our civilization, and "heral[d] judgment," but also put forward a last-minute call to moral and political transformation (p. 26).

Impressively fluent in biblical studies and theology, science, ecology, and western intellectual history, Northcott's grand narrative begins with the claim that the very brief history of human civilization took a fundamental turn when humans moved from hunter-gatherer civilizations to agrarian economies (the "agrarian fall," reflected perhaps in Genesis 1–3), that were then able to support ever-larger cities. The Bible is written against the backdrop of this agrarian-urban transformation, beginning about 8,000 years ago, which marked the first and much more modest stage of deforestation, raising of domestic animals (with their emissions), large-scale rice-growing, and other changes which began the slow anthropogenic rise of carbon dioxide and methane in the atmosphere.

But the change from the "Holocene" era to the "Anthropocene" (e.g., our unintentional transformation of Earth into a place where humans became a greater influence on climate than the tilt of the earth in relation to the sun) accelerated around 1750 with the industrial revolution and the dramatic rise in the use of coal, a story Northcott describes in chapter 2. From 1750–1950, not only because of coal but also oil (chap. 3), carbon dioxide levels went from 270 to 310 ppm; but from 1950 to the present, the numbers have spiked upwards exponentially from 310 to 400 ppm. This latter "great acceleration" has brought humanity into "new climatic territory" (p. 2) with already-visible effects, guaranteed global temperature rises, and potential catastrophe in the future.

Alongside this eco-history, Northcott also offers a fascinating parallel intellectual history. A core theme is that ancient biblical political theology offers resources for reconnecting humanity to creation, which were displaced for centuries by desiccated

forms of modern philosophy and political economy. Northcott suggests that ancient Jewish and historic Christian communities (as well as others, in their own ways) believed in a fundamental connection between God, humans, and the natural-meteorological-seasonal-agricultural rhythms on which human life depended. This looked different for biblical Israel than it did for early Christians or medieval Christendom, but all had in common a belief in active divine sovereignty over both nature and culture as well as a belief that human behavior affects and interacts with creation and its well-being.

However, in the period we often call "modernity," this integral understanding of a relationship between God, humanity, creation, and culture splits apart. Ranging widely across the landscape of modern science, philosophy, and political theory, Northcott shows how, in various ways, the modernists split nature and culture, drove God out of any involvement with creation, and reconceived humans as the scientific explorers, masters, exploiters, and manipulators of a spiritually empty natural world—all of which proved highly convenient in underwriting the birth of modern industrial capitalism as well as the vast western colonial and imperial projects.

This was the path we took to building the high-tech, fossil-fueled, private-property-fixated, autonomy-driven, "growth"-oriented, free-market capitalist, prosperous (for a few) world that we now live in, governed by nation-states viewing themselves as responsible only for their own territory and prosperity. We did this with everyone apparently assuming the inexhaustibility of the "natural resources" and unchangeability of the "natural world" on which this way of life depends. This intellectual, material, and political culture continually proves itself impotent to respond to obvious environmental distress.

But now our climatologist-apocalypticists are telling us that our ideological-economic-political assumptions were wrong, and that our way of life cannot be sustained—and soon enough (unless we change) our cities will be drowned and food supply ruined as nature roars back and takes control once again over wayward, recalcitrant humanity. The ancients, it turns out, were wiser than we are in seeing a connection between nature and culture, between humans and creation. Now, far more quickly than is comfortable, individuals, communities, nations, and humanity as a whole must respond immediately to the "ecological limits" the planet is revealing to us. Part of the needed response is a new political theology—and related ecclesial and communal praxis—with much greater interconnection between God, creation, and the nations, with greater humility before ecosystem boundaries and ecological limits, and an awareness that if humanity is to have a future, we must choose it right now.

Such a choice must mean an end to consumerism, fossil-fuel-based economies, economic "growth" as the measure of prosperity, much of what we understand to be private property, and most personal autonomy related to environmental and economic choices. It also means an end to the ideologies that have undergirded this way of life, ideologies with partisans that push back fiercely, even today, as such dramatic changes are proposed.

I hope that Northcott's reading of the science is wrong to the extent that human civilization has more time to make the changes that, I agree, we need to make. I fear that the lifestyle changes he says are mandatory ask too much of us, absent a spiritual and moral revolution that sweeps the planet.

But if Northcott is right, and we do not, in fact, change our thinking and our practices, and God does not swoop in *deus ex machina* and rescue us, this terrifying, brilliant book is one of a handful I would nominate for placement in the proverbial time capsule to be read by whatever life form visits Planet Earth a thousand years from now and tries to find out what happened to the profligate species that used to live here.

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**THE PERIL AND PROMISE OF MEDICAL TECHNOLOGY** by D. Gareth Jones. Oxford, UK: Peter Lang, 2013. 280 pages. Paperback; $71.95. ISBN: 9783034307758.

Medical technology, present and projected, is amazing: assisted reproductive technologies, organ transplants, artificial organs, brain stimulators, imaging devices, designer drugs, individual genomic sequencing, gene therapies, and genetic engineering, just to illustrate a few. These technologies have revolutionized medicine. Ideally, they are profound blessings promoting health and human flourishing by improving the quality of life and extending life expectancy. But they also invoke significant costs, not just economically, but also socially, ethically, and theologically. And now there is the distinct possibility that technological interventions might so alter us as to call into question whether the very essence of being human will be changed.

Gareth Jones, an ASA Fellow, is familiar to persons interested in Christian perspectives on bioethical issues. Now an emeritus professor at the University of Otago, New Zealand, his career as a thoughtful Christian neuroscientist and bioethicist has spanned the rise of bioethics and led to his publication of *Genetic Engineering* (1978), *Brave New People: Ethical Issues at the Commencement of Life* (1985), *Manufacturing Humans: Challenge of the New Reproductive Technologies* (1987), *Designers of the Future: Who Should Make the Decisions?* (2005), and *Speaking for the Dead: The Human Body in Biology and Medicine* (2009). This, his latest work, *The Peril and Promise of Medical Technology*, is published as volume 8 of the New International Studies in Applied Ethics. It continues his quest for theological guidance on difficult issues while being attentive to scientific analysis and insights.

For the framework for his theological insights, Jones draws heavily from the late Allen Verhey, theological ethicist from the Reformed Christian tradition, suggesting that Verhey's "interpretive rules" are better understood as "directives." The first directive is a call to humility. No individual or faith tradition, regardless of the richness of their heritage, strength of their commitment, or declarations of their church hierarchies, has the most assured answer on any bioethical issue. The second directive is to avoid interpretive arrogance. We must keep in mind what the biblical writers had in mind and be cautious about asserting positions as scriptural that are drawn upon nonscriptural viewpoints. As examples, he specifically cites the inclination to assert that (1) since God saw and knew the psalmist before birth, the human "soul" must be present from conception, and (2) that since all human beings are created in the image of God, this must be true from conception, and we should derive that all embryos image God and possess a right to life. The third directive is to avoid privatization of ethical deliberation. Ethical deliberation cannot be done by individuals or only by biblical scholars, theologians, and ethicists. Rather, the broader Christian community must be involved, including, the author insists, scientists and clinicians as well as others, including theological scholars.

In weighing the appropriate role for the Bible and other sources of concepts and thinking, Jones identifies four possible scenarios: (1) the Bible alone provides a complete guide to ways in which Christian decision making should be framed, making scientific input irrelevant; (2) the Bible is one of a number of sources of concepts and information, but is the major determinant whenever there is conflict or confusion; (3) the Bible is one of a number of sources of concepts and information, and helps to inform decision making, but may not be the major source; and (4) the Bible is irrelevant and hence can provide nothing of any interest to scientists or ethicists.

The author illustrates how the first three approaches might differ with respect to the reproductive decision making of a Christian couple who are contemplating more children and whose first child has cystic fibrosis.

In chapter 2, Jones compares and contrasts issues in the reproductive realm (which are fairly extensively addressed by Christian ethicists) with those arising in the realm of neuroscience (which are less extensively addressed by Christian ethicists). He notes that many of the tensions and complexities are similar while acknowledging that reproductive choices may involve choosing one life over another and neuroscience choices may involve changing human functioning of individuals for their entire lives.

In the ensuing chapters, Jones examines specific medical technologies from the foundational issues addressed in the first two chapters. In chapter 3, he looks at assisted artificial reproductive technologies, noting the profound blessings of children for couples who previously were infertile, alongside the vexing issue of left-over frozen embryos. He observes how key issues have evolved since the inception of IVF-ET in the late 1960s with the rise of embryo freezing, oocyte freezing, preimplantation genetic diagnosis, and embryonic stem cells. In chapter 4, he examines genes and self-identity, noting the urge to search for genes for all our traits including, for example, alcoholism, homosexuality, obesity, and religiosity. Here he focuses on the rise of personalized medicine that portends new and better treatments for many patients, but also has led to the direct-to-consumer market of DNA sequencing with variable and insufficient attention to issues of privacy, accuracy, and education about genetic risks. Subsections address the relative roles of genes and environmental factors, genetic determinism, genetic lottery, and genes and the person.

In chapter 5, Jones moves toward neuroscience and the potential to modify our brains. Whereas traditional Christian anthropology has emphasized a dualism of body and soul, developments in neuroscience focus on the brain and the person. Critiquing the neural determinism of Francis Crick, Jones notes the contributions of Donald MacKay, Malcolm Jeeves, Joel Green, and Nancey Murphy to incorporate the ongoing discoveries of neuroscience into a Christian framework. Jones proceeds to work from a

physicalist position, noting how brain damage may have a profound effect upon an individual's personality and value systems. From this vantage point, he presents a framework that incorporates observations on the effects of injury and disease on the brain with the capacities of learning and adaptation, which can be subject to both human and divine influences. In chapter 6, Jones moves to address the potential for biomedical enhancements of morality. While current efforts such as deep brain stimulation and transcranial direct current stimulation are relatively crude means of altering brain function, they create an anticipation that someday we may be able to create much more specific changes, not just by repairing damage, but also by working toward specific goals such as morality. Jones presents a framework for endorsing therapeutic interventions, while strongly criticizing moral enhancements as an abrogation of our responsibility as image bearers of God.

In chapter 7, Jones looks at ageing and human bodies, distinguishing four categories of our efforts to alter ageing: (1) overcoming the appearance of ageing; (2) overcoming the accompaniments of ageing; (3) decelerating the process of ageing—increasing lifespan; and (4) overcoming the process of ageing—achieving immortality. The chapter proceeds to look at theological insights into ageing and immortality, but then focuses on the challenges presented by the preservation and presentation of the dead through plastination (i.e., the *Body Worlds* traveling exhibition of plastinated human bodies). In chapter 8, he turns to our increasing dependence upon technology, moving from regenerative medicine to cyborgs to post-persons, acknowledging the transition from realistic and therapeutic to the speculative.

In a concluding chapter, Jones articulates a means to move forward with medical technology from a Christian perspective. Here he develops an appropriate relationship between God's care and human care, the discerning features of what it is to be human, and how to live with an unknown and uncertain future. As he does throughout his book, Jones articulately advocates taking both science and theology seriously toward a hopeful future consistent with God's intent.

*The Peril and Promise of Medical Technology* is a thoughtful and formidable work that deserves a wide reading and consideration from undergraduate students to professionals, scientists, and theologians alike. It is a significant contribution to Christian perspectives on these topics in biomedical technology. The publisher has chosen to publish this book (and series) as a fairly expensive paperback, affordable by many libraries, but not individuals; it would be most helpful if the publisher would make this book available as a significantly discounted e-book to reach a much larger audience.

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## History of Science

**INVENTING CHEMISTRY: Herman Boerhaave and the Reform of the Chemical Arts** by John C. Powers. Chicago, IL: University of Chicago Press, 2012. viii + 260 pages, notes, bibliography, index. Hardcover; $40.00. ISBN: 9780226677606.

Ideas may travel, but so do techniques, procedures, pedagogical approaches, and strategies. These may be carefully crafted, publically demonstrated, and minutely described in lectures and textbooks. That, in brief, is the moral of the book *Inventing Chemistry* written by John C. Powers, assistant professor in the Department of History and co-director of the Science, Technology, and Society program at Virginia Commonwealth University. The focus is on Herman Boerhaave (1668–1738), a Calvinist medical and chemistry professor at the University of Leiden, who was famous in the eighteenth century as the man who taught Europe chemistry, and whose influence even reached to the American colonies.

Boerhaave institutionalized chemistry by bringing it out of the academic shadows as an ancillary subject in medical instruction to claim its rightful place in the university curriculum. One could say, employing a term first introduced by William Newman and Lawerence Principe, "chymistry" became chemistry by way of medical instruction and pedagogy. Powers wants the reader to take the title of the book quite literally: *Inventing Chemistry* details Boerhaave's educational philosophy and its role in making chemistry a discipline not only relevant to medicine, but also one respected in the broader university curriculum. Powers expertly traces this development beginning with Boerhaave's student days in Leiden through his publication of *Elementa Chemiae*, first printed in 1732, with forty separate printings through 1791. In short, Boerhaave created a new philosophical chemistry in which he "sought to generate knowledge as well as things, by establishing and organizing the precepts and principles of the art" (p. 201). As an important teacher in Europe, Boerhaave's work inspired at least two generations of chemists. One can think of influential chemical textbooks: Antoine Lavoisier's *Traité Élémentaire de Chemie* (1789), Wilhelm Ostwald's *Lehrbuch der Allgemeinen Chemie* (1891), Linus

Pauling's *The Nature of the Chemical Bond* (1939), come readily to mind, but none with the widespread appeal of Boerhaave's volume.

But how did Boerhaave set out on this reform of chemistry? The narrative of *Inventing Chemistry* spells this out in chapters two through seven detailing Boerhaave's chemical teaching, both the philosophical rhetoric used to systematize his investigations and the important role instruments played in ways of demonstrating and understanding chemical events. We gain good insight into the development of eighteenth-century chemistry, from the didactic chemistry initially taught at Leiden, the incorporation and critical examination of some alchemical practices and procedures, to the philosophical chemistry expounded by Boerhaave in his *Elementa Chemiae*. Note that all of these chemical developments happened prior to the later work of Lavoisier (1743–1794) with which most readers are more familiar.

What may interest readers of *PSCF* are Boerhaave's motives in pursuing science, and the religious viewpoints which shaped his chemical philosophy. This is presented in the second chapter entitled "Medicine as a Calling." Powers discusses Boerhaave's religious and philosophical background. He wishes to straddle (or perhaps amalgamate) two strands of thought: the philosophical and the theological, giving roughly equal weight to each. He gives a bow to Harold Cook for his analysis of the philosophical contextual debates of the day and to the general Calvinist (Protestant) "mind-set" of working out one's sense of being part of God's elect with an appeal to Max Weber's "Protestant ethos." Powers does mention Rina Knoeff's work recently presented in *Herman Boerhaave (1668–1738): Calvinist Chemist and Physician* (Amsterdam: Royal Netherlands Academy of Arts and Sciences, 2002), but he does not explore her theological interpretation in any depth. Nor does Powers interact with Peter Harrison's *The Fall of Man and the Foundations of Science* (New York: Cambridge University Press, 2007). Knoeff maintains that we need to go beyond a "general religious sensibility" to a more specific Calvinist interpretation of Boerhaave's position. Two motives, she argues, dominate Boerhaave's thinking: (1) the idea that nature provides insight into God's design of creation (an appeal to Article II of the Belgic Confession), and (2) the idea that the human intellect is affected by sin, and by itself cannot arrive at true knowledge. The noetic effects of the Fall caused Boerhaave to assume an anti-Cartesian and anti-Spinozist position, in contrast to trumpeting the power of human reason and intellect. Rather, much like Francis Bacon, Boerhaave advanced an empirical/inductive role for pedagogy, experiment, and demonstration in the chemical arts. For a Calvinist like Boerhaave, to live a life of obedience as a thankful response to God's grace and as a calling for a studied examination of God's creation is not, in the first instance, a charge to develop a "natural theology" or the construction of an apologetics providing reasoned evidences for God's existence.

*Inventing Chemistry* is a well-written book filling a lacuna in the study and understanding of eighteenth-century chemistry. It does, however, in my opinion, underestimate Boerhaave's theological background. All in all, it is good to hear a Dutch voice profiled since so much of the history of science has been subject to an Anglo-Saxon hegemony in which many non-English contributions have been both undervalued and frequently misunderstood.

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## Medicine

**MEDICINE AND RELIGION: A Historical Introduction** by Gary B. Ferngren. Baltimore, MD: Johns Hopkins University Press, 2014. 256 pages. Paperback; $24.95. ISBN: 9781421412160.

The interchange between science and faith is a much discussed topic in the lay setting and among medical professionals. In this regard, *Medicine and Religion: A Historical Introduction* by Gary B. Ferngren, certainly provides a context for religion's influence in medicine throughout world history. Ferngren is a professor of history at Oregon State University and has previously written books evaluating the interaction between religion, including Christianity, and the sciences and medicine.

The aspect of this book that most impressed me was the author's ability to provide an in-depth analysis of the development of medicine as a science with clarity and succinctness. The author makes it very clear he wishes to avoid "Whiggism," which consists of viewing past practices through our present abilities. This fallacy can lead to an artificial diminution of medical ability in the ancient world by ignoring the very real fact that modern medical technology is a relatively recent development.

The book starts off quickly by exploring medical care in Mesopotamia and Egypt, which tended to place an emphasis on magic and cosmic forces while at the same time providing some of the first written records of both medical and surgical care (for example, use

of peppermint to help with birth). Some of the first trappings of Hebrew medicine are discussed as well: for example, the idea that disease is not necessarily due to someone's actions (i.e., sin), the importance of hygiene, and sustaining human life in order to preserve the image of Yahweh.

Similar care is spent on exploring the relationship between medicine and religion in ancient Greek and Roman culture. As in many ancient cultures, both Greeks and Romans emphasized illness as a form of retribution from the gods, and medical care, especially chronic care, was influenced as a result. Hippocrates and the resultant tradition of his influence lead to the "Hippocratic Oath" in all of its variations as well as to the beginning of empirical care of patients in a format similar to what we would see today as a case report or case series. Although the use of standardizing rational thought in medical care was a significant advance, progression to clinical research outcomes was very different from today and did not go past the equivalent of "level of evidence 4" defined by the Oxford Centre for Evidence-Based Medicine (http://www.cebm.net).

In a similar manner, the Romans personified illness, which led to worship of specific deities such as the goddess Febris (as in "fever"). Galen (c.129–c.217) comes to the forefront during the Western predominance of Roman culture, and Ferngren does a good job of describing his contributions to the field of medicine. An imposing figure historically, Galen not only combined philosophy and medicine to a degree that codified a scholastic aspect of medicine, but his medical ideas continued to persist for over a thousand years. I was fairly familiar with Galen before I read this book, but it did strike me that he likely is overlooked as one of the world's great thinkers in the same category as Newton or Einstein, even if some of his medical theories were incorrect.

The book then covers both Christian and Islamic influences in medicine. I found it fascinating to consider that early Christian beliefs, including caring for the poor and proper burial of the dead, were important factors that led to the Roman Empire adopting Christianity. Early hospitals also were started by Christians, although such buildings would have no resemblance to modern-day hospitals since they were mainly used for charity care. Ferngren does point out that inpatient facilities and even the first semblance of early professional care developed in these first hospitals. As Christianity grew across Europe in the Middle Ages, monasteries began to be the main "data centers" for medical texts (especially among the Benedictines). Some of the first schools which we would recognize as "medical schools," as well as licensure, also began to form during this time. Shortly afterwards, as medicine became more professionalized in the High Middle Ages, physicians were criticized for wanting money—eerily similar to our modern conception of some physicians. In a similar manner, Islamic medicine advanced during the European Middle Ages. I was struck by the faster advancement in the understanding of pathophysiology and professionalization of medicine in Islamic countries compared to their Christian counterparts. In fact, I found Chapter 6 ("Islam in the Middle Ages") to be one of the better chapters of the book simply because it covered information with which I was very unfamiliar.

The latter parts of the book entail the early modern time period and focus on differences between Protestant and Catholic influences in the field of medicine. Laypersons in Protestant countries, in particular, developed an interest in doing their own medical care, and ideas such as home remedies grew very quickly. I was struck by the similarities of this type of care to the modern complementary alternative medicine (CAM) movement. At the same time, however, practicing medicine became very similar to today's care model with physician specialization and secularization of care, namely, the use of the scientific method as opposed to religious ideas, such as prayer, to cure disease. I found it interesting that the Protestant Reformation led to an emphasis on "experimentation and the search for natural causes," which seems to run counter to the current distrust of science and modern medicine often seen in evangelical Christian circles.

The book ends by looking at medicine in the nineteenth and twentieth centuries, wherein the author points out areas of debate quite current in our understanding of medicine and medical ethics, such as professionalization of nurses, use of evolutionary naturalism as a way to study disease, use of the Flexner Report to improve teaching standards in United States medical schools, and hospice care, just to name a small number of issues covered. Of note, the epilogue which examines the positive and negative issues that occur in the interaction between medicine and faith is very well written and worth reading.

Overall, this book is quite wonderful. I have recommended it to many of my friends in the medical field. It covers a large amount of history in the setting of a relatively short book, but the information that is contained in the eight chapters and epilogue is incredibly well presented in an easy-to-read manner.

My only quibble with the book is that some important individuals in the pantheon of medicine, such as Andreas Vesalius and Ambroise Paré, are only briefly mentioned. For more detail on individual physicians and their influence on scientific discovery in the history of medicine, I would recommend books in the line of Nuland's *Doctors: The Biography of Medicine* (New York: Alfred A. Knopf Publishing, 1988). However, there is such a wonderful quantity of information covered in this book that Ferngren likely has much fertile ground for future books if he wants to concentrate on other aspects of the history of medicine. I recommend this book for anyone who wants an outstanding review of the ever-entwining, ever-fascinating relationship between faith and medicine.

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## Religion & Science

**THE SECRETS OF ALCHEMY** by Lawrence M. Principe. Chicago, IL: University of Chicago Press, 2012. 281 pages, 12 color plates. Hardcover; $25.00. ISBN: 9780226682952.

Alchemy is enjoying a renaissance spurred on by the popular interest in the mass media (think of Harry Potter) and, for our purposes, by an exponential growth in the number of scholars and publications devoted to the history of alchemy. One could say that the best alchemical secret is how radically our knowledge of alchemy has changed over the past few decades. Marcos Martinon-Torres's recent review of developments in the historiography of alchemy (*Ambix* 58 [2011]: 215–37), which employed a word cloud search for "alchemy" in JSTOR, identified some of the leading scholars responsible for this development: William Newman, Lawrence Principe, Bruce Moran, Pamela Smith, and Tara Nummedal. The most seminal and widely cited paper in the literature that Martinon-Torres mentions is one written by William R. Newman and Lawrence M. Principe, entitled "Alchemy vs. Chemistry: The Etymological Origins of a Historiographic Mistake" (*Early Science and Medicine* 3, no. 1 [1998]: 32–65).

What mistake? To the popular mind, alchemy is synonymous with the activity of charlatans making outlandish claims about transmuting baser metals into noble metals such as gold, of endless secretive and futile searches for the "Philosophers' Stone," or of activities involving the invocation of supernatural vitalistic and theological principles in the preparation of alchemical elixirs. This is not to hold that such activities or claims never occurred. But stated this baldly, it is far too easy to dismiss alchemy as "pseudoscience," at odds with more sophisticated modern scientific methods. For recent scholars, that claim would be a mistake. To view the history of "esoteric" alchemy as being at odds with "scientific" chemistry would run counter to the fact that, prior to the eighteenth century, the two were indistinguishable. In the above-mentioned article, Newman and Principe suggest that instead we use the term chymistry to denote this state of affairs. If we critically consider this early modern interest in "experimenting" with nature (creational givens), it then has an important role to play in the development of what we take to be modern science. Even Robert Boyle, often described as the father of modern chemistry, spent countless hours practicing alchemy. Earlier interpreters who solely understood him through mechanical philosophical eyes have misread him (see, for example, Lawrence M. Principe's book, *The Aspiring Adept: Robert Boyle and His Alchemical Quest* [Princeton, NJ: Princeton University Press, 1998]).

Now to the book at hand. Lawrence Principe, professor of organic chemistry and history of science at Johns Hopkins University, is one of the foremost chroniclers and interpreters of alchemy. In *The Secrets of Alchemy*, he situates alchemy in its important role in human history and culture. The book is written at two levels: for nonspecialists and for those inclined to follow up on the extensive endnotes. Besides historically detailing the practices of alchemists as craftsmen or experimentalists with their often cryptic and arcane recipes, Principe displays how, in fact, alchemy has impinged on art, literature, theater, and religion. The first few chapters of the book describe the historical development of alchemy in (almost) chronological order: the first three chapters describe ancient Greco-Egyptian origins of *chemeia*, the Arabic development of *al-kīmiyā'*, and the medieval Latin science of *alchemia*. Chapter four skips ahead in time to describe the developments in alchemy from the eighteeenth century to the present. Chapter five is devoted to the golden age of alchemy: practicing chymistry in the early modern period (1500–1700). The following sixth chapter focuses on two of the major areas of concentration in chymistry: chrysopoeia (metallic transmutation) and chemiatria (pharmaceutical medicine or medical chymistry).

One thing that makes this book so interesting to read is that Principe not only gives an account of the development of alchemy, but also experimentally demonstrates procedures described in the vast alchemical literature. Much of medieval and early modern alchemy is, in fact, repeatable. No, Principe

does not make gold, but by interpreting alchemical texts, complete with allegorical language depicting certain operations (such as solution, sublimation, putrefaction), as well as providing some photographs of the outcomes (such as the golden glass of antimony and the Philosopher's Tree), he convinces one that there is method and forethought in the work of these often enigmatic practitioners of the art of separation and combination.

The last chapter, seven, seeks to "put" alchemy in its cultural place. Entitled "the wider worlds of chymistry," this chapter shows that despite its "shaky cultural and intellectual position," being "both condemned as fraudulent or useless and praised as powerful, even sacred, in almost every context" (p. 178), chymistry found its way into literature and art, poetry, and religious literature. Allegorical and alchemical imagery abounds, both in literature and in the reading and interpretation of the Scriptures. For practitioners, alchemy is seen as a "gift of God," enabling one to divine God's way with Nature.

If you want to understand the development and appeal of alchemy, the intellectual and religious contexts that nurtured it, by all means read this well-written book. The book may challenge views of the "Scientific Revolution," which usually fixate on astronomy and the mechanics of motion complete with mathematical description but usually undervalue the experimental and craftsmanlike know-how of alchemists. In addition, the subsequent blossoming of the discipline of chemistry will remain an enigma without a good knowledge of its alchemical roots.

*Reviewed by Arie Leegwater, Professor of Chemistry Emeritus, Calvin College, Grand Rapids, MI 49546.*

**TOUCHING A NERVE: The Self as Brain** by Patricia S. Churchland. New York: W. W. Norton & Company, 2013. 304 pages. Hardcover; $26.95. ISBN: 9780393058321.

Patricia Churchland has written an excellent, accessible overview of the most recent findings in the areas of neuroscience. Though she is referred to, on the dust jacket, as a "trailblazing neurophilosopher," there is relatively little philosophy in this book. It is more a book on the science of the brain and the search for "platforms" (parts of the brain) that serve as the material basis for human conscious and unconscious activities. Philosophically, Churchland tends toward reductionism and naïve realism. She holds both that reality consists of what (neuro)science tells us is really "out there," for example, the brain and its neural circuitry, and that any layer of reality or causality beyond the brain and its electro-chemical workings are epiphenomenal, that is, illusory as cause.

Churchland has a winsome, down-to-earth style indicative of her upbringing on a farm where, confronted with urgent, practical problems on a daily basis, there was no time for contemplative lollygagging. One must assess, solve, and act. Her no-nonsense character comes through in the general tenor of her handling of the scientific and philosophical issues of the book. This is both an asset and a liability, since there are some problems in science that require this sort of work-a-day attitude, but she also appears to be tone deaf to some of the depths to which philosophy should and must go.

She speaks of science as "an extension of common sense," as "common sense gone systematic" (p. 264). I cannot agree with her here. Common sense is "the sun rises and sets." Science is "the earth rotates on its axis in relation to the sun." The history of science shows us that individuals and cultures struggled to overcome commonsense thinking in order to arrive at scientific conclusions. Churchland overestimates the reach of common sense and common sense solutions. She does not appreciate that some things are not, properly, the purview of the reasoning appropriate to plumbing or carpentry.

In chapter one, Churchland makes it clear that she favors the view that she, as a person, is co-extensive with her brain. I suppose this is no surprise since the subtitle of the book is, "the self as brain." But it is a little disturbing that Churchland rarely refers to herself or to others as "persons," preferring to speak of the brain as the subject of this or that activity. There is an underlying tone of impatience with stick-in-the-mud humanists and philosophers who refuse to come clean about the plain facts revealed by neuroscience and cling to outmoded worldviews. She tells a story of an "anti-Enlightenment" individual at a bioethics conference who wagged his finger at her, chastising her naïve trust in scientific solutions to social problems (p. 23). Churchland will have none of it. She claims that such anti-Enlightenment ambivalence stems from insulation from the harsher realities of life, such as life on a farm.

Chapter two takes aim at dualists, who persist in believing in some nonmaterial component of the self, independent of the body and continuing after death. Churchland does a good job of showing the difficulties with the dualist position and how neuroscience points in the direction of psychosomatic unity. It is interesting to note here that, while Churchland is condescending or dismissive of religious thought,

the Hebrew understanding of the person also favored psychosomatic unity, opposing the Platonic and Cartesian dualism she opposes. It would have been helpful had Churchland discussed her position in relation to other physicalist, but nonreductionist positions on the soul-body issue, for example, the dual-aspect monism of Warren S. Brown, Stuart J. Judge, Nancey Murphy, or John Polkinghorne.

Chapter three consists of a general debunking of near-death experiences. Her assumption seems to be that the existence of heaven stands or falls with the validity of these experiences. Churchland argues that individuals reporting such experiences were probably not brain dead but in a coma, and their experiences can be explained in terms of lower oxygen levels (inducing strange feelings and perceptions) along with the release of "endogenous opioids" (p. 70) causing feelings of euphoria and peace. Other forms of religious experience are really just so much "neural funny business," completely explainable within the physical order. Pascal's overwhelming conversion experience of 1654, for example, comes down to a migraine headache (p. 76). Anticipating dismay and resistance, Churchland counsels us with almost evangelical fervor to resist the self-deception of giving credence to what we know ain't so, and to "Stand in the truth" (pp. 80, 166, 262). This is good advice, but one wonders what could possibly be the scientific basis of Churchland's unwavering commitment to Truth, and, more pressingly, where would the neural basis of her stance be located?

In chapters four and five, she gives neuroscience's take on morality, sex, and aggression. Again, on so many issues, Churchland furnishes much valuable and interesting information on the neurochemistry of the brain and its functioning. What appears to be lacking is any sense that giving the necessary, physical basis for some function, supplying the mechanism as it were, can sufficiently account for the whole ball of wax. So, for example, when giving an account of why mammalian mothers "go to great lengths to feed and care for their babies," Churchland tells us that oxytocin and vasopressin are "central characters in the explanation of mammalian other-care." One could have wished for a fuller analysis, even of nonhuman, motherly love.

Chapter six, on war, offers a more nuanced view on the role of culture in relation to human biology than previous chapters. Here, Churchland stresses the multivalent quality of causal relations between genes, the brain, and culture in her discussion of aggression and self-control.

Chapter seven discusses whether human beings have free will and can be held responsible for their actions, then considers the question of punishment for criminal offense. Churchland rejects a dualism which holds that we can be free only if there is some break in physical causality in which the nonphysical soul may operate. She opts, instead, for a definition of free will as "freedom from external constraint, not from internal causality" (Stuart J. Judge, "Nothing But a Pack of Neurons?" p. 3). This position is consistent with her earlier argument about the unity of body and soul. She discusses, at length, the issue of criminal responsibility and the many shades of gray that exist here, given her belief that chemical and neurophysiological causes can influence the status of intention as well as action.

Chapter eight discusses some very interesting research on the relation between the conscious and nonconscious brain and its role in decision making and acts of self-control. Churchland claims that the "real you" comprises both your conscious and nonconscious elements.

Chapter nine considers the question of sleep and why all mammals engage in it, as well as an attempt to furnish a neuroscientific framework for explaining consciousness itself. The basic platform, according to Churchland, is a combination of very well-connected neurons called "rich club" neurons that are capable of integrating enormous amounts of information, "global ignition" in which external stimuli reach areas at the front of the brain, and the central thalamus neurons firing at about 40 hertz and enabling us to achieve a kind of focus and awareness of things in particular.

In the epilogue, Churchland addresses some of the charges commonly levelled against her brand of materialism: reductionism, scientism, atheism, meaninglessness. She exhorts us, again, to face facts and embrace the real world, not the world of our fantasies:

> I have told you a little about how I see things, but that is only how I see things. Longing for heaven and preparing to enter heaven seem much less pressing to me than making a difference here and now. I am more grateful to George Washington and Thomas Jefferson than I am to the monks who spend their time praying for their own souls in hopes of going to heaven. I am more grateful to those who invented safe and effective contraception than I am to those who merely warned that my soul was doomed if I used it. (p. 265)

The world of Patricia Churchland is clean, simple, and flat.

*Reviewed by Lloyd W. J. Aultman-Moore, Waynesburg University, Waynesburg, PA 15370.*

## TECHNOLOGY

**ALONE TOGETHER: Why We Expect More from Technology and Less from Each Other** by Sherry Turkle. New York: Basic Books, 2011. 384 pages. Paperback; $16.99. ISBN: 9780465031467.

Sherry Turkle makes the profound statement, "Technology is seductive when what it offers meets our human vulnerabilities" (p. 1). This strikes at the very heart of the matter: we humans crave intimacy but fear the risk and vulnerability that come along with it. Turkle's focus is the constant yet shallow technological connectivity of today's youth culture (particularly high school and college students), and its significant impact on interpersonal relationships as well as on the whole of our society.

The author touches a nerve with both the young and the not-so-young in this work that is both incisive and insightful. Turkle herself admits to loving technology (in a 2012 TED talk she refers to getting an encouraging text from her daughter as being "like getting a hug"), but insists that too much can be problematic. Texts are convenient, and can be useful and even uplifting, but they do not work very well for truly getting to know someone.

In the internet's early days, Turkle recounts that users would occasionally unplug, step back, and learn from the virtual world how they could be better human beings in the real world. With the more recent proliferation of mobile devices, she says that we are now allowing these technologies to take us to places we never wanted to go.

Real-life human relationships are rich, as well as messy. In our high-tech age of constant connection through the web, we assume the make-believe persona of avatars interacting in a virtual world. Online we can edit and re-touch the thoughts and images of the versions of ourselves that we present to others. We hide behind our profiles, showing each other only the attributes we want others to see, rather than the real, whole person that each of us is. This absence of vulnerability results in a world lacking in true intimacy: a world in which one neither knows nor is known by anyone else.

We are fearful of being alone, but also fearful of the risks associated with intimacy. Turkle implicates the sense of control offered by technology in masquerading as the antidote to our fears and vulnerabilities. Even as we complain about the distractions of multitasking and never having anyone's full attention, our mobile devices offer us a façade of control. They allow us to control exactly where we put our attention; to make sure we always have an audience (via our texts, posts, shares, etc.); and to always be connected, however superficially. Additionally, technology offers us distraction from a sometimes painful present reality, allowing us to postpone or even completely avoid contemplation or self-reflection. Turkle revises René Descartes's famous line, "I think, therefore I am," into the more contemporary descriptive, "I share, therefore I am."

The author points out that this controlled virtual connectedness gives us the illusion of companionship without the demands of real-world friendship. A step beyond online communities and social media, robot pets and companions appear to fill the need for someone who listens and shows compassion, but it is merely the clever pretense of programmed artificial intelligence.

Ironically, our technological ability to satisfy the need to be heard has turned us into very poor listeners and friends to anyone or anything other than what we selfishly find attractive and interesting. Turkle observes that it is in listening to the boring and imperfect parts of real human conversations that we really get to know each other.

Turkle worries that this pervasive craving for constant connection exacerbates our inability to be alone, asserting that if we are not able to be alone, we are only going to end up more lonely. Prescriptively, the author asserts that we need to create the time and space for greater awareness, reflection, and conversation about how technology is changing us individually and as a society. Furthermore, we must insist that technology lead us back to the real world and our real lives.

As Christians, we have an even higher calling to make sure that our use of technology demonstrates love for our fellow humans, rather than exploiting our fellow humans through our love of technology.

*Alone Together* is a very well-written, thought-provoking, and enjoyable read. It is written in an engaging yet scholarly style, easily accessible to a broad audience.

*Reviewed by Leslie Wickman, Center for Research in Science, Azusa Pacific University, Azusa, CA 91702.*

# Book Reviews

## Theology

**THE ENTANGLED TRINITY: Quantum Physics and Theology** by Ernest L. Simmons. Theology and the Sciences series. Minneapolis, MN: Fortress Press, 2014. ix + 205 pages. Paperback; $39.00. ISBN: 9780800697860.

**THE MYSTERY AND AGENCY OF GOD: Divine Being and Action in the World** by Frank G. Kirkpatrick. Minneapolis, MN: Fortress Press, 2014. xvii + 163 pages. Paperback; $39.00. ISBN: 9781451465730.

These two books from Fortress Press can be read as complementary: what is argued by Simmons from the "bottom up" level of quantum mechanics can be understood also in light of Kirkpatrick's more "top down" philosophical-theological approach. Both are trained philosophers of religion who seek to clarify divine presence and especially activity vis-à-vis the world. The difference might be that the former's panentheistic model of the God-world relationship is extended by the latter's personalistic commitments.

Those who have followed developments at the theology and science interface will recognize Simmons's contribution to the discussion in various journal articles and book chapters over the last two decades. This volume deepens ideas he has written about, but, more importantly, sets them within a broader framework that includes (in part I) clarification of underlying epistemological, methodological, and foundational issues on the one hand, as well as (in part II) substantive explication of the history of trinitarian theological reflection on the other hand. The result is a useful book that can be used in advanced undergraduate courses in theology and in seminary curricula.

The basic thesis builds off the application to theology of the phenomenon of quantum entanglement proposed in the last decade or so (by John Polkinghorne and Kirk Wegter-McNelly, among others) and seeks to extend such to understanding the doctrine of the Trinity. Simmons's argument is that the entanglement and superposition of nonlocal quantum phenomena (at a distance) provides a physical metaphor and model for understanding how the immanent trinitarian perichoresis (indwelling) of divine persons is intertwined also with the economic Trinity as creating, redeeming (in the incarnation), and sanctifying the world. In this framework, the world participates in, panentheistically, the triune reality of God. Consistent with the process and Whiteheadian philosophical assumptions prevalent among some at the vanguard of the theology and science conversation, the concomitant proposal is that given this immanent-and-economic trinitarian interrelationality, God can be understood to evolve as interwoven with the world. The important point, however, is arguably practical: that the entangled Trinity invites creatures like human beings to cooperate vocationally with God, which is the appropriate response of those who follow Simmons in seeing theology and science as mutually informative and creatively interactive.

If Simmons's springboard is developments in quantum physics, Kirkpatrick's motivation throughout his long career as a philosopher of religion and a philosophical ethicist (the volume under review is his eighth book publication) is the quest for a religiously satisfying God as personal agent in a scientific age. If scientific integrity seems to demand a noninterventionistic deity, an overly transcendent deism fails to meet human need and does not square with human experience. In conversation with philosophers of action (especially John Macmurray, Raymond Tallis, and Edward Pols) who have explored the metaphysics of at least human agency, the solution proposed is of God as primordial and personal agent whose direct actions create, supervene upon, and utilize cosmological laws, events, causes, and creatures to bring about divine intentions. Just as only human intentionality and agency can intervene amidst or comprehend a whole sequence of interactions, so also divine activity similarly operates transcendently (to the cosmos) but no less personally (vis-à-vis personal creatures) upon and pervasively within the infrastructure of the whole socio-temporal-material world.

What is being sought is an appropriately anthropomorphic conception of God, one that makes sense of what monotheistic scriptural traditions assert about a self-revealing deity, but yet also is plausible for late modern minds. By and large, the author seems to agree that discernment of divine acts in history, while inferentially possible (albeit not because the causal joint between the divine agent and any cosmic event is identifiable), occurs most dependably in the light of scriptural attestations to such activity. Attempting to chart a *via media* between deconstructionists and Barthians who decry metaphysics (albeit for different reasons) on the one side and pietists and dualists who affirm supernaturalistic divine agency (again, for different reasons) on the other side, Kirkpatrick suggests a metaphysically robust account of God as personal agent, but yet not exactly in the same sense as human agents.

Whence then the mystery of God noted in the title of Kirkpatrick's book? While not deploying eschatological notions, the argument tends precisely in that direction: that, in a Pannenbergian sense, any attempt to grasp divine being and action in the world proceeds not least from a posture of faith, one that is open to confirmation (or not) in the end. From this perspective, one might say that Kirkpatrick provides a primordial theory of divine action that is simultaneously also eschatologically and teleologically oriented according to patterns discerned by scriptural traditions of inquiry. The divine character illuminated in such cases is not uncontested, of course, but such contestation is surely what should be expected when attempting to define personality from agency. The point is that any primordial divine activity is nevertheless fully intelligible only against an eschatological horizon, or according to the overarching telos or design, to use philosophical terminology.

*The Mystery and Agency of God* is a sustained argument in philosophical theology while *The Entangled Trinity* is fundamentally a theological reflection approached from various angles (methodologically, historically, and scientifically). If the author of the former might urge the latter to consider more personalistic conceptions of divine agency, the latter might suggest to the former that quantum metaphors and analogies might fill out the mysterious character of such divine being and action. Fortress Press is to be commended for facilitating such potential conversations even if it might be pressured by market demands to publish otherwise.

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# Letter

## Concordism vs. Context

In a recent paper (Harry Lee Poe, "The English Bible and the Days of Creation: When Tradition Conflicts with Text," *PSCF* 66, no. 3 [2014]: 130–9), the thesis is advanced that since the days of creation in Genesis 1 do not have a definite article in the original Hebrew, they should be translated not as "the second day," "the third day," and so forth but "a second day," "a third day," et cetera. Poe says that the "absence of the definite article with the days of creation almost certainly means that the days are meant to be understood as not occurring in immediate succession to one another without any intervening time" (p. 137). In fact, Poe argues that, although the days were probably 24-hour days, the text allows for "an indeterminate time span between days" (p. 130) which could cover the fourteen billion years which modern science assigns to the age of the universe.

Poe's interpretation is thus concordist: there is concord between the Bible and the findings of modern science. I question some of Poe's grammatical points. For instance, almost all of his examples to show that the word "day," when modified by an ordinal, usually takes the Hebrew article, do not seem comparable to Genesis 1, because unlike Genesis 1 they employ a prepositional phrase (usually "on the ordinal day") while, except for the seventh day, Genesis 1 does not employ a prepositional phrase. But my interest is not in refuting Poe per se but rather in using his work as an illustration of how concordism takes verses of Scripture out of context in order to interpret them as agreeing with modern science.

The first relevant contextual datum for the interpretation of the days of Genesis 1 is Genesis 2:3: *"Then God blessed the seventh day and sanctified it, because in it He rested from all His work which God had created and made."* This verse, along with the sequence of six days in Genesis 1, ties Genesis 1 to Exodus 20:9, 10: *"Six days you shall labor and do all your work, but the seventh day is a sabbath of the LORD your God; in it you shall not do any work …"* This is a commandment that the Israelites had to obey. How long a period of time did they think the six days of labor covered? Is there any real question that they thought those days covered six immediately consecutive 24-hour days? How long and when did the Israelites think God wanted them to do no work? Was it not for the twenty-four hours of the seventh day which immediately followed the six days of labor?

Having set forth this scenario of seven immediately consecutive 24-hour days, Exodus 20:11 continues with an explanation of why the Israelites were commanded to work six days and rest the seventh: *"For (meaning because) in six days (which the context has just defined as immediately consecutive days) Jehovah made heaven and earth, the sea, and all that is in them, and rested the seventh day …"* The ancient Israelites, to whom all this was addressed, had no problem accepting as fact the creation of the universe in six immediately consecutive 24-hour days, but a modern concordist cannot accept this because it is so clearly contrary to the scientific evidence. So, the modern concordist (apparently unconsciously) ignores the biblical context, sets the offensive biblical passage into the context of modern science, and then figures out a way to make the passage agree with (or at least not disagree with) modern science.