



**CREATION ETHICS: Reproduction, Genetics, and Quality of Life** by David DeGrazia. New York: Oxford University Press, 2014. 234 pages. Paperback; \$26.95. ISBN: 9780190232443.

*Creation Ethics* provides a broad perspective on the challenging topics of reproduction, genetics, and the quality of life. The author, David DeGrazia, carefully inspects various viewpoints on controversial reproduction issues, such as prenatal moral status, along with the implications these conclusions pose. Throughout the text, he remains open to examining a variety of views on the topics, and provides his own perspective on these issues, often incorporating arguments from multiple perspectives.

After an introduction, chapter two presents the author's tripartite framework, from which he argues in favor of abortion and embryonic research. The first point in his argument is the biological view of human identity. DeGrazia claims that human persons come into existence when the organism is born, and their identity remains throughout their lifetime. He discusses other points at which arguments are made for the beginning of human personhood, such as conception, the 16-cell stage, and two weeks post-gestation. The second part of his framework questions sentience, or the ability to perceive feelings. DeGrazia states that the potential for sentience is enough for someone to have moral status, and argues that this begins in the third trimester. The third part of his framework is the TRIA (Time Relative Interest Account), which states that when looking at the harm from death, one should evaluate the value of the future life along with the psychological connection of the one who dies with the possibility of their future. He therefore maintains his support of abortion and embryonic research by arguing that death would not be a great harm to a fetus, because it does not have psychological connection with their future.

Chapter three focuses on human identity and human nature in the context of genetic enhancement. After genetic enhancements, a person's narrative identity (how they characterize themselves) might change, but their numeric identity (their quantitative person) will not. The chapter concludes by asking what risks genetic enhancements could have on humanity. He notes that, at the extreme, genetic enhancement could create a group of people so advanced they would either enslave or obliterate the unenhanced human population. He argues there is nothing inherently wrong with advancements that could eventually sur-

pass humanity; nonetheless, there should be moderate regulation of genetic enhancements.

Chapter four looks at the challenge of reprogenetics which involves using reproductive and genetic technologies to modify and select embryos for enhancement (p. 96). There are three primary types of interventions on fetuses, embryos, and gametes: prenatal genetic diagnosis (PGD), prenatal genetic therapy (PGT), and prenatal genetic enhancement (PGE) (p. 96). One of the main arguments against PGE is that genetic enhancements could change a person's genome so significantly that they are no longer the same numeric person. To counter this, DeGrazia presents a Robustness Thesis that claims that once someone comes into existence that person will always be numerically the same. Nevertheless, he does believe genetic enhancements could promote stereotypes, and therefore government funding should not be allotted for such research.

Chapter five addresses the question of whether it "wrongs someone to bring him into existence and, if so, how can we coherently explain the nature of the wrong" (p. 139). DeGrazia presents the claim that in standard wrongful life cases, such as completely debilitating disabilities, procreation is wrong. In cases with imposition of harm, procreation is strongly wrong. However, in cases with simply exposure to harm, procreation is weakly wrong (p. 155). Through this description, he makes the important distinction between imposing harm and exposing a child to harm.

DeGrazia opens chapter six with the difficult question of what parents owe their children. He determines parents owe their children a life worth living, one in which their basic needs are met. He applies this to having children who parents know will have disabilities. He examines three situations: (1) same-individual choices wherein the parent has a child with disabilities or has the same child without disability, (2) different-number choices in which a child will be born with a disadvantage, or not born at all, and (3) same-number choices which leads to the nonidentity problem where parents could have a child with disability, or they could choose to abort or delay conception and have a different child (p. 164). To address the nonidentity challenge, DeGrazia notes that it is important to disregard the notion that every form of wrongdoing harms someone. In these situations, he states, there are many cases of victimless harm.

The final chapter of the book asks what obligations we have to future generations. DeGrazia concludes that our obligations to future generations are based on justice, and we should not think of the interests of

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future generations as less important than our current interests, just because of temporal distance.

DeGrazia does not shy away from addressing difficult issues in this book. His arguments are clear and well supported. I appreciated that DeGrazia addresses arguments from opposing views, noting both their strengths and their weaknesses. This approach makes the book accessible to readers who do not agree with all of his conclusions. Many of the arguments presented throughout *Creation Ethics* lead to implications about what Christians believe on the highly emotional issues of abortion, embryonic research, and genetic modification. DeGrazia argues that abortion should be allowed, but also cedes, saying, "I believe that a broadly pro-life approach remains standing as a reasonable option" (p. 43). Therefore, pro-life or pro-choice Christians can read DeGrazia's book and find some arguments that will resonate with either perspective.

DeGrazia's writing style is heavily laden with philosophical and scientific terminology that readers need to be prepared to encounter. I would recommend this book to someone who is interested in learning more about philosophical questions of reproduction and who is familiar with or interested in learning more about reproductive technologies and philosophical arguments.

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## HISTORY OF SCIENCE

**DEBATING DARWIN** by Robert J. Richards and Michael Ruse. Chicago, IL: The University of Chicago Press, 2016. xvi + 267 pages, including bibliography, index, and 21 figures. Hardcover; \$30.00. ISBN: 9780226384429.

The "debate" of the title of *Debating Darwin* is both intriguing and an enticement. What is the meaning of this brief title? The debate at hand is over the character of Darwin's intentions, argumentation, and self-understanding as a natural historian. The debate is prosecuted by Michael Ruse, who situates Darwin within the world of British empiricism, Paleyan Natural Theology, and nineteenth-century social progressivism, and by Robert J. Richards, who constructs a case for Darwin as an intellect profoundly influenced by continental European Romanticism and *Naturphilosophie*.

The formal schema of the book is indeed that of a debate. After a short introduction, Michael Ruse presents Darwin as a consummate nineteenth-century

Briton (80 pp.). Next, Robert J. Richards documents the extensive influences of the Continent on Darwin the explorer and theory builder (67 pp.). Each then provides a reply to the other (25 pp. each). Finally, a joint Epilogue outlines the central areas of agreement and contention (30 pp.). The engagement is cordial, but unyielding.

Both authors rely on their respective multi-decadal, focused examination of nineteenth-century evolutionary science. Extensive notes provide introductions to their previous work as well as to that of other scholars. Both back their claims with relevant quotes from Darwin's correspondence, notebooks, diaries, and autobiography.

One of the beneficial results of the tight format of the initial chapters is the composition of a tidy and eminently readable short biography of Darwin. In order to build their respective cases, Ruse and Richards examine Darwin's family background, education, reading, scientific friends and correspondents, and expressed opinions. Of particular significance are Darwin's own statements regarding what he felt he had accomplished and what he felt others had missed in his arguments. The bifocal format yields a stereoscopic view of Darwin the scientist. I highly recommend this book if for no other reason than its utility as a concise Darwin biography.

But there is more. For one, we are introduced to the broader cast of characters who influenced Darwin. Ruse invokes William Paley, William Whewell, John Herschel, Charles Lyell, and (distantly) Adam Smith, among others. Richards points toward Alexander von Humboldt, as well as the German morphological systematization typified by Goethe and Carus and their English spokesman, Richard Owen. Alfred Russel Wallace is not neglected by either of our debaters.

Several conceptual issues yet besetting biological evolutionary theory were initially addressed by Darwin, Wallace, and their immediate successors. What is (are) the unit(s) under selection? To what extent are teleological explanations permitted for a science of organisms? Does the history of life demonstrate some sort of progress? To what degree are human sociality and religion influenced by our biological substrate and deep-time history? What is the role of chance in natural systems? In what sense does the discipline of evolutionary biology carry forward the atomistic-mechanistic program for the physical sciences begun in the seventeenth century? Does this mechanistic program really render God "irrelevant" (cf. Ruse, in his "reply to Richards," p. 178)? The authors outline the outworking of these problematic issues for our present situation, especially in the Epilogue. In the

process, they introduce the makers of the neo-Darwinian synthesis and their accomplishments. New arguments surrounding group selection and sociobiology are summarized.

The last two sections of the Epilogue address the phenomena of (1) human consciousness and (2) religion and God. The penultimate section argues for an (evolutionary) emergentist origin of mind; it includes a rebuttal of some of the claims of epiphenomenalists such as Daniel Dennett, as well as a counterbalancing critique of Thomas Nagel's attack on evolution as insufficient to explain the origin of consciousness.

The final section includes an examination of the arguments of Jerry Coyne to the effect that evolution precludes theism. Prominent Christian evolutionists such as Kenneth Miller and Simon Conway Morris are acknowledged. The authors demonstrate that Coyne's logic is overextended; they identify and rebut examples of *ad hominem* attacks on religion as well as argumentation by fiat. During this discussion, Stephen Jay Gould's proposed resolution for the science-religion conflict, that of "non-overlapping magisteria" (NOMA), is introduced but rejected as too simplistic: "Coyne doesn't mention it, but from the science side, values flow across any proposed boundary; that is, science itself is grounded in values" (p. 228).

The authors invoke Friedrich Schleiermacher to describe Coyne, Richard Dawkins, and others as contemporary "cultured despisers of religion." They urge the adoption of a more intuitive sense of awe in the face of the cosmos, a sense which naturally undergirds a scientific curiosity. Ruse and Richard ably demonstrate that Darwin, while far from a devout theist, could not shake the sense that some agency lay behind the universe.

This is not Gould's doctrine of separate magisteria, rather this view of religion is not merely compatible with science, it is necessary for the advancement of science. And, perhaps, for leading a coherent life, one in which the appreciation of poetry, art and religion provide the same kind of experience that leads creative scientists to advance beyond their more pedestrian colleagues. Darwin was one such as these. (p. 233)

Darwin gets the last word here, and that is as it should be given the logic and flow of the volume. Darwin's theology, thin as it is, will not be attractive to either contemporary atheists or robust theists; that discussion best resides in a different venue. *Debating Darwin* is well organized, insightful, and informal. It succeeds as a concise introduction to Darwin the scientist and human being, as well as to his contemporaries and

successors. An enjoyable read and an edifying one, useful to many different audiences.

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**FASHION, FAITH, AND FANTASY IN THE NEW PHYSICS OF THE UNIVERSE** by Roger Penrose. Princeton, NJ: Princeton University Press, 2016. 520 pages. Hardcover; \$29.95. ISBN: 9780691178530.

Eminent mathematical physicist Roger Penrose continues to indulge his prolific writing habit, offering us yet another popular work with an irresistible title. *Fashion, Faith, and Fantasy in the New Physics of the Universe* is his latest attempt to explain the challenges and prospects of twenty-first-century theoretical physics. The book's title appeals to a popular-level readership, and it is sure to end up on the shelves of many aspiring and ambitious readers. However, this is not light reading, and even those with an extensive physics background will find this volume a challenging read. Even so, there are valuable perspectives given by Penrose that only someone of his stature in the physics community can offer, and that should be taken seriously.

The book is divided into four lengthy chapters, each about 100 pages of a nearly self-contained treatise on a subject. The first chapter, Fashion, is about the development of string theory, the most fashionable theory amongst practicing theoretical physicists with its promise of providing a mathematical scheme of unifying all four fundamental forces of nature. Criticisms of string theory have focused on its grand claims of numerous unseen dimensions and a possible glut of unseen universes, while offering virtually no firm testable predictions. However, Penrose is a gracious critic, and points out many intriguing ideas that have come out of string theory, including some surprising advances in mathematics. Indeed, mathematical elegance has served as the guiding principle, in lieu of experimental data.

Penrose guides the reader through the theoretical challenges that motivated string theory in the first place: a desire to find a unique unifying scheme that brings quantum field theory (QFT) into consistency with universal gravity, which already has a very successful classical treatment in Einstein's general relativity. The common wisdom is that gravity must be properly quantized to be compatible with QFT. Faced with perplexing divergences that arise in normal

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QFT when particles are treated as objects occupying singular points in space, string theory finds a clever way to avoid those, if all particles really are tiny 1-D strings vibrating in higher dimensional space. Further coupled with supersymmetry, which proposes a correspondence between half-integer spin particles called “fermions” and integer spin particles called “bosons,” string theory proposes to solve several theoretical problems. However, supersymmetric particles have not yet been observed. In addition, the mathematical consistency is not clear—a troubling issue that Penrose believes has been ignored in the excitement over string theory. He argues that the excessive functional freedom from the higher dimensions has not been properly addressed. Singularity theorems from Penrose and Hawking in general relativity appear to imply instability of the highly curved extra dimensions posited by string theory.

Disturbingly, rather than finding a unique unifying scheme, theorists found that there were several different viable types of string theories. Connections found between them led to M-theory, suggesting vibrating “branes” of more than 1-D. Intriguingly, ideas such as AdS/CFT correspondence led to applications in diverse areas of physics, ranging from condensed matter to black holes to cosmology. Yet the most perplexing turn in string theory came when it was found that different starting vacuum states lead to completely different universes, as many as  $10^{500}$ , and thus a “landscape” of universes. Are these “real” or merely mathematical? The conclusion reached by some physicists is that, out of the multitude of existing universes, we just happen to occupy an improbable one that is life friendly—a rather sad version of the anthropic principle. Penrose poignantly points out the irony in this sorry state of string theory. Must string theory really throw away the goal of finding a unique description of nature and conclude that there is no such unique description? This is a strange departure from its initial motivation, and Penrose finds this unacceptable.

In chapter 2, “Faith, an Overview of Quantum Theory,” Penrose begins to point out where he believes the problem lies. The overwhelming success of quantum theory in modeling the behavior of matter is unquestioned. This is precisely the point that Penrose believes should be reviewed. Quantum theory leads to some rather troubling views of reality, including the apparent nonlocality of how entangled states behave. Entangled states imply that a particle is simultaneously in more than one state and connected in an overall state to another particle, such that a measurement made on one immediately forces the other into a certain state, no matter how far apart they are separated. The EPR effect, named after Einstein,

Podolsky, and Rosen, has now been observed in the entanglement of particles separated by up to 143 km. This cannot be reconciled with any kind of classical explanation, and thus represents a further triumph in the utility of quantum theory. However, the concept of entanglement leads to some very troubling implications including not only the eerie aspect of nonlocality, but also what is considered “real” or merely a convenient calculational tool.

The Copenhagen interpretation of quantum mechanics does not assign any kind of ontological reality to the wave function of a particle, treating it only as a calculational tool for giving us probabilities, which are in spectacular agreement with “real” measurements. Accordingly, there is no real sudden “jump” from a calculated quantum state to a measured state. It is merely viewed as a shift in our knowledge of the state. However, Penrose questions this view, pointing out that a reality can and should be argued for the quantum state itself. Penrose argues that the connection between quantum states and measured states lies in a better understanding of the reduction measurement itself. The resolution Penrose offers is that gravity limits the extent of quantum superposition. A gravitational self-energy arises when considering two different locations for a massive particle. Penrose explains how this forces instability in any quantum superposition, collapsing it into one state. Thus, rather than forcing general relativity to conform to an unquestioned quantum theory, it is quantum theory that should be treated in a more limited sense. Experimental tests on the limits of entanglement may soon extend to larger mass displacements, allowing an important test on the limits of our quantum “faith.”

Chapter 3, Fantasy, describes modern cosmology. The standard Big Bang model has achieved remarkable success in accurately describing an expanding universe filled with ordinary matter, dark matter, and dark energy. Success in predicting the cosmic microwave background radiation (CMBR), discovered in 1965, and its tiny fluctuations in temperature, discovered first in 1992 and more recently refined in its precision, is nothing short of fantastical. Penrose describes the theoretical developments of the Friedmann-Lemaître-Robertson-Walker (FLRW) model of cosmology, founded on Einstein’s general relativity. The successes of inflationary theory in explaining special features of our universe are discussed. However, the FLRW cosmological model represents a unique condition of homogeneity and isotropy that present theoretical physics ideas do not explain.

The Second Law of Thermodynamics implies that the entropy of the universe is much greater today than

in its infancy, when it exhibited an exquisite order. The apparent contradiction of the thermodynamically smooth CMBR temperature, a highly entropic state achieved long before the moment of decoupling at 380,000 years after the big bang, is reconciled with the Second Law by comparing it to the exceedingly vaster entropy of today's universe, filled with black holes. The problem is not the Second Law, but rather the explanation of why the universe exhibited such extreme order in its infancy, with no degrees of gravitational freedom perturbed. Appeals to the anthropic principle, that this universe was simply selected out of a large landscape of universes, strike Penrose as rather unconvincing. Penrose responds:

It is, to my mind, disturbing how frequently theoretical physicists eventually come to rely on such arguments in order to compensate for a lack of predictive power that their various theories turn out to have. (p. 322)

Penrose is critical of theorists, not for offering fantastical ideas to explain the special features of our universe, but because, at present, they are not fantastical enough. New ideas are needed.

Penrose concludes his book with a chapter on his own favored theoretical approach, "twistor" theory, an approach he first proposed in 1967. Twistor theory attempts to unite quantum theory with a relativistic space-time physics in an abstract twistor space that renders space-time itself a secondary notion. The power of complex analysis is utilized in the twistor space computations. The theory is definitely the domain of mathematical physics. However, in contrast to string theory, it does not propose any space-time dimensions beyond our observed four dimensions.

The mysterious quantum features that Penrose claims can be explained with twistor theory include non-locality and quantum state reduction. Nonlocality arises naturally in the formalism of twistor theory. It explains all quantum state reductions as gravitational effects, forcing superpositions of states to decay into measurably "real" states. Penrose calls the latter "objective reduction" (OR). The premise of Penrose is that quantum theory must be limited in its domain. However, problems in using twistor theory include aspects of cohomology and the "googly" problem, areas in which Penrose believes progress is being made. As for problems in cosmology, Penrose proposes a conformally cyclic version with pre-big-bang world-lines connecting to post-big-bang world-lines, so that a Weyl curvature hypothesis can be employed. The latter is an attempt to explain the special FLRW condition of standard big bang cosmology, even without a period of inflation.

Penrose's book takes the reader on an extensive journey that summarizes much of Penrose's life work. Unless the reader has extensive prior knowledge of mathematical physics, it will be difficult to grasp many of the technical points made. Penrose provides a 70-page mathematical appendix to help nontechnical readers, but it appears to be of very limited utility unless one already has familiarity. It might have been better for Penrose to attempt a much more lay-reader-friendly book, focusing primarily on the key aspects in which modern physics has struggled, but thus far has fallen short of satisfactory answers. Indeed, hidden between technical sections are excellent discussions that provide a compelling case that we have not yet arrived at satisfying answers to many of the deepest questions raised in modern physics. As for making a good case for the viability of twistor theory, this reader remains unconvinced. I am much more persuaded that he loves conformal mathematics.

Finally, what kind of connection can a Christian find between the frontiers of theoretical physics and faith? Penrose is restricted to faith in the unquestioned truth of quantum theory, not compared favorably to a religious faith, which Penrose relegates to mostly unchanged messages dating back thousands of years. Is our Christian faith a stagnant one, unchanged by time or advances in science? Granted, the central message of Christianity, the substitutionary atonement offered to believers by the life, death, and resurrection of Christ, will not be altered by advances in science. However, modern science continues to raise important questions not readily answered in scientific terms. As argued by Penrose, appeals to an anthropic principle as an explanatory tool simply reveal the lack of a fully satisfactory explanation. What modern physics has revealed includes the elegance, the order, the symmetries, and the precision we observe in this universe, all of which are highly compatible with the Christian faith in a Creator of unfathomable wisdom.

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### Recently Published Works

Along with all their other contributions, many members of ASA and CSCA publish important works. As space permits, *PSCF* plans to list recently published books and peer-reviewed articles related to the intersection of science and Christian faith that are written by our members and brought to our attention. For us to consider such works, please write to [patrick.franklin@prov.ca](mailto:patrick.franklin@prov.ca).

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## SCIENCE AND RELIGION

**THINKING FAIR: Rules for Reason in Science and Religion** by Lucas John Mix. North Charleston, SC: CreateSpace Publishing, 2016. 302 pages. Paperback; \$19.99. ISBN: 9781515153283.

In this thoughtful probing of the way we think and reason, Lucas Mix challenges us to be aware of how and why we hold the beliefs that we have. He shows how the path to knowledge in science differs from that in religion and that both are necessary in our worldview that guides our behavior.

Lucas Mix is well qualified to speak about both science and religion. He holds a PhD in organismic and evolutionary biology from Harvard University and carried out a postdoctoral project at Harvard in theoretical biology considering the history of the definitions of life. He also holds an MDiv from the Church Divinity School of the Pacific and is an ordained priest. He is a member of the Society of Ordained Scientists and is part of the Anglican community.

After an introductory chapter, the remaining twenty chapters are organized in four sections: Reason; Science; Religion; and Change. Mix is interested in what we think, what we do, and with whom we do it. We need to understand why people think what they do and how this affects their actions. He has no intention of persuading us what to think or even how to think. Rather, in his own words, he intends to "present this as an exercise in thinking broadly, sympathetically, and systematically about how you view the world. I want you to experience different ways of thinking and reflect on what it would mean to do them well" (p. 7).

The three chapters in the section on Reason lay out the basic tools and terminology for considering how we think. The way in which we perceive reality and correlate it with our experience comprises the logic and reason that we use. We utilize a set of axioms and logic in our reasoning. Deduction, induction, observation, and authority are the primary ways of reasoning for finding new knowledge. For Mix, "Rationality comes from thinking clearly, transparently, systematically, and carefully" (p. 42). His goal is to encourage us to recognize our own style of reasoning and to learn to understand and appreciate the way other people think.

Chapters 5–10 delve into science and the way in which we acquire knowledge through what we call the scientific method. Four key principles of the scientific method are discussed: Mutual observables;

symmetry; hypotheses; and iteration. Applying these principles in practice takes various forms and relies on a variety of factors that help us gain confidence in an explanation. Scientific aesthetics is one of those criteria, including simplicity, utility, fruitfulness, and coherence and consistency. Finally, he discusses the basic concepts of reductionism, emergence, ontological physicalism, and methodological physicalism.

Through all these principles of thinking, science offers us a way to develop a model of reality. As we compare this model with reality, we encounter phenomena that either reinforce that model or else compel us to reassess our model. Learning centers on the way in which we respond to that comparison and how we compare our understanding with that of others. Above all, Mix points out that the scientific method fails to provide us with all the knowledge we need to make decisions and take action. That leads us to the section on religion, to which he devotes six chapters.

Whereas science provides what Mix calls a transparent, effective epistemology that informs us about our world, it does not provide guidance for ideas, choices, and values. For Mix, "religion has to do with propositions about order and value, how we generate them, and how we react and respond to them. Ontology and epistemology fall out of religion, almost by necessity" (p. 120). Mix emphasizes his view of knowledge and belief. Knowledge is a statement for which we have some evidence that it is true. Belief is conviction with consequences, knowledge that changes our behavior. With this perspective, science is not the sole domain for knowledge nor is religion the sole purveyor of belief. Our worldview needs a broader view than what either science or religion alone can provide.

After devoting a few chapters on common issues such as miracles, determinism vs. free will, revelation, and the existence of the soul, Mix turns to what he sees as the three basic aspects of religion: philosophy, practice, and politics. Philosophy deals with "right thought," referring to orthodoxy and the creeds commonly associated with religion. Practice deals with "right behavior," the norms of activity and rituals that characterize religions. Politics refers to "right relationships," our participation in the community and our social interactions. Religion is therefore a necessary complement to science in helping us with our values, choices, and actions.

The final section of four chapters is titled Change. Here we arrive at the challenge that Mix has for us. We all have a model of the cosmos and that model might not match the reality that we encounter. When we understand why we think the way we do and why others think otherwise, we are better able to respond to that dissonance.

Scientific knowledge leads to models that enable power when they accurately reflect the way nature works. Religious knowledge and beliefs lead to values that help us decide how to use that power. The critical feedback loop of belief shaping behavior and behavior shaping belief depends on our awareness of our ways of thinking. "Above all," Mix concludes, "I want you to have greater control over your own ability to grow conviction. I want the change to be in your hands" (p. 271).

It is refreshing to read a book that does not seek to persuade or to argue for a particular idea. The ratio of question marks to periods is remarkably high, almost reflective of a study guide. The questions are designed to be internalized and to become an autonomic way of thinking for us.

I found the book easy to read and comprehend. It made me realize how little attention I had paid to considering the way I think and the reasons for my reasoning. The thrust of the book might be called "Philosophy Made Practical" with a focus on science and religion, though it is much more broadly applicable. Mix does not introduce new philosophical ideas and has selected only those aspects that he feels are most relevant to us. He is clear about his Anglican faith and why he finds it to be a valued part of his way of reasoning. Yet he respects other religions with their perspectives. He challenged me to recognize that philosophy is not a specialty reserved for experts, but a necessary part of our lives. I need to learn to incorporate this self-awareness of my thinking into my way of life.

If all authors and speakers on science and religion would not only read this book but adopt the reflective style he suggests, the conflicts would be greatly diminished. I highly recommend it to all who are interested in philosophy, epistemology, and their role in science and religion.

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### TECHNOLOGY

**NETWORKED THEOLOGY: Negotiating Faith in Digital Culture** by Heidi A. Campbell and Stephen Garner. Grand Rapids, MI: Baker Academic, 2016. 192 pages, including endnotes and index. Paperback; \$22.99. ISBN: 9780801049149.

Christian communities have always shaped and been shaped by changes in media technology. Second-century Christians were early adopters of the codex, bound books as opposed to scrolls. This in turn

prompted the development of the canon (from a human viewpoint) and consequently shaped the ecclesiastical authority structure and distinction between orthodoxy and heresy. Centuries later the printing press made possible the rapid promulgation of ideas that emerged during the Reformation but also, it has been argued, led to more standardization of liturgy and hymns and prayers.

The contemporary church is enjoined to give a thoughtful response to modern media and the technology that supports it. Today's digitized, transcoded, and mashable media content changes the way we think about text and other information. Social media and other online social interaction change the way we think about friendships and communities. Virtual worlds and augmented reality change the way we think about presence. All of these have implications for how the church sees itself and practices its mission.

Christians are far from having a united response. One chapel speaker at Wheaton College (where I teach) began by asking students to open the Bible apps on their cell phones. The chaplain at Covenant College, on the other hand, has banned electronic devices from chapel; students should bring God's word in a good old codex. What does one value more, reaching tech-saturated millennials at their level, or eliminating the distractions from communal worship in a physical, real-time setting?

In *Networked Theology*, Heidi Campbell and Stephen Garner seek to "map out a framework for identifying an authentic theology" that accounts for new media and digital culture and equips the church to reflect and respond appropriately. Campbell is a communications professor and Garner is a theologian. Together, though drawing especially from Campbell's prior work, they bring a well-informed perspective on the intersection of media studies and theology. The book provides context (historical, technical, and theological) to questions new media raise for religious communities and provides discussion points that some communities may find helpful.

The authors spend the first few chapters surveying the background. They highlight the church's response to media and technology throughout its history but especially summarize the contributions of Jacques Ellul and Ian Barbour in the recent century. Some Christians have responded to various new waves of tech with optimism about how they improve lives and empower ministry. Others are more skeptical, mindful of the cultural cost and the people who are marginalized. Still other faith communities have developed a more nuanced view of the social context of technologies. The authors also give an introduction

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to the vocabulary and concepts of new media theory, describing some of the key attributes that distinguish “new” media from old and the differences between Web 1.0, Web 2.0, and its successors (think of the progression from static web pages to wikis and social networks and then to cloud applications). New media theory provides an articulation of how a networked society affects life: the authors identify terms such as “remix culture” (media products are never final cuts) and “publicized privacy” (both voluntarily through Pinterest and involuntarily through surveillance technology). Not being a media person or even that much of a tech person (I’m a computer scientist, but with more affinity to the M of STEM than the T), I found this summary helpful.

The authors’ core contribution is in their identification of the dimensions of church life that are affected by media and technology, and in encouraging churches to contemplate appropriate questions. In ages past, membership in a community like a church was rooted in shared rituals, whereas life online fosters communities built on shared interest. At one time religious identities tended to be fixed, but now network technology enables a more malleable identity whose religious practices can be as varied (and unrelated) as one’s YouTube posts. Media technology has implications for the nature of leadership: as with authority structures in other settings, new technology can be either threat or tool.

Despite the technological novelties, the authors point out that the key questions endure: “What must I do to inherit eternal life?” has not changed, but the socio-cultural context that shapes how those questions are asked and answered has” (p. 81). In light of their lives lived online, the authors guide believers in asking a series of questions: Who is my neighbor? Where is my neighbor? How should I treat my neighbor?

Campbell and Garner recommend a four-part strategy for a religious community to reflect on networked living. They should be aware of their own history and the precedent of their earlier relationship with mass media. Many Amish communities, for example, do not ban cellphones outright but consider them communal property, just as they have treated landlines. Second, communities should let their core beliefs inform their media values. The authors speculate that churches with a highly liturgical heritage will not find virtual-world sacraments acceptable. The third angle is what they call “media negotiation,” in which communities apply core beliefs to evaluating whether specific media applications complement or contradict those beliefs, balancing a technology’s usefulness against problematic features it may have. Finally the authors advocate community discourse, noting that

how one talks about technology is itself an expression of religious identity.

The authors do well to encourage the church both to make good use of new media and to be vigilant against unintended consequences. They write,

You may help set up a social media group for your church’s youth program ... A good question to ask when doing that is not only who will this include but also what potential does this have for marginalizing some of those you are trying to support? While a social media group may be a good way to connect with the young people in this group, some may be left out because they are too young to legally have an account on the social media platform chosen or their parents or caregivers will not allow it. (pp. 130-31)

On a wider scale, the authors warn the church against neglecting the “information poor.” (Concerns about the “digital divide,” though real, should be kept in perspective. In 2013 the UN estimated that while one billion people lack mobile phones, two and a half billion lack toilets.)

On the other hand, not all believers will find all of Campbell and Garner’s methods useful. They describe the church’s reflection on media as part of “public theology,” which they define (quoting Duncan Forrester) as theology that “seeks the welfare of the city before protecting the interests of the Church, or its proper liberty to preach the Gospel and celebrate the sacraments.” In their own words, “the world sets the agenda for a public theology.” Some Christians will question whether it is ever the church’s business to pursue social justice in this world independently of its mission to preach the good news of salvation.

I found the authors a bit fond of trendy terms – there’s much about frameworks and things that are situated or need to be negotiated. But the overall style is competent and readable, and the authors fit a surprisingly large number of ideas into 147 pages. Although the examples were drawn mainly from the English-speaking world, the book is refreshingly not centered on North America (Garner is a Kiwi and Campbell is UK-educated).

The authors may have overstated their claim that their “networked theology” offers a distinct approach to these questions. When confronted with a novelty, it is often best to identify continuity with the familiar. This book is at its best when it encourages believers to see life online as just another context in which we are called to act justly, love mercy, and walk humbly with our God.

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