

Book Reviews

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.

Reviewed by Rebecca Gritters, Department of Biology, Northwestern College, Orange City, IA 51041.



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.

Reviewed by Ralph Stearley, Professor of Geology, Calvin College, Grand Rapids, MI 49546.



PHYSICS

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