fidelity" holds any appeal. I hope that it is widely and thoughtfully engaged, and I recommend it warmly to any reader wishing to think carefully about the relationship between faith and learning.

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History of Science

SCIENCE AND RELIGION: A Historical Introduction, 2nd ed. by Gary B. Ferngren, ed. Baltimore, MD: Johns Hopkins University Press, 2017. 484 pages. Paperback; $32.95. ISBN: 9781421421728.

What can one truthfully say about the second edition of a book? To say that the number of chapters remain the same (30) would be a triviality. Or to say that the price has increased by $13 would be an obvious no-brainer. But, to say that the quality of the second edition has improved rather dramatically is worth exploring. Gary Ferngren, Professor of History at Oregon State University and a professor of the history of medicine at First Moscow State Medical University, has been compiling history of science and religion, medicine and religion readers for a number of years. The first edition of *Science and Religion: A Historical Introduction* (2002) was given a short review in *PSCF* 56, no. 1 (2004): 62–63. A snippet of Fraser Fleming's laudatory review is on the flyleaf of this newer edition.

Of the many introductory books on the topic of science and religion, Ferngren's *Science and Religion* set a standard. The first edition was a shortened version (selected entries) of the much longer *The History of Science and Religion in the Western Tradition: An Encyclopedia* (New York: Garland, 2000). Contributions by leading scholars, such as John H. Brooke, Ronald Numbers, David Lindberg, James Moore, Nicholaas A. Rupke, David Livingstone, among others, gave the book an authoritative voice and thus it served as an extremely attractive choice for instructors teaching undergraduate courses on science and religion. This new edition will certainly play a similar role.

This second edition is more expansive and more in tune with contemporary discussions. The book has a short introduction by Ferngren, stating that the purpose of the volume is "to provide a comprehensive survey of the historical relationship of the Western religious traditions with science from Aristotle to the early twenty-first century" (p. xii). Ferngren also widens the field of discussion to include various other non-Christian traditions, which have gained influence in the West, by adding chapters on Judaism, Asian traditions, and even atheism. This edition also has a revised and updated chapter on premodern Islam. In short, there are a number of chapters retained from the first edition that have been updated in content and given a new bibliography. There are eleven new chapters to whet one's appetite, a number of them in the social sciences. Consequently, some chapters in the first edition were excised or retired. For example, chapters by Colin Russell on the conflict of science and religion and David Wilson on the historiography of science and religion have been dropped. Margaret Osler's chapter on mechanical philosophy and Ronald Numbers's on scientific creationism have also been excised. Interestingly, the chapter by William Dembski on intelligent design has also disappeared.

The book has six parts: Part I (one chapter): Science and Religion: Conflict or Complexity; Part II (four chapters): The Premodern Period; Part III (five chapters): The Scientific Revolution; Part IV (five chapters): Transformations in Geology, Biology, and Cosmology, 1650–1900; Part V (seven chapters): The Response of Religious Traditions; and Part VI (eight chapters): The Theological Implications of Modern Science. Part VI contains many of the new chapters, written by some new and younger contributors: "Causation" by Mariusz Tabaczek and John Henry, "The Modern Synthesis in Evolution" by Joshua M. Moritz, "Anthropology" by Timothy Larsen, "American Psychology" by Matthew S. Hedstrom, and "Neuroscience and the Human Person" by Alan C. Weissenbacher. Earlier parts of the book have chapters authored by newer voices as well, for example, "Isaac Newton" by Stephen D. Snobelen. Part III includes a revised chapter, "Early Modern Protestantism," written by Edward B. Davis.

It would take too much space to review each chapter. A brief word about the first chapter will suffice. The introductory essay in Part I by Shephen P. Weldon provides a good synthesis of the current state of discussion of science/religion issues, common among historians of science. In particular, he argues that discussions or debates surrounding the conflict, harmony, and separateness of science and religion rely too heavily on essentialist definitions of science and religion. Weldon maintains that we need a more nuanced appreciation of the complexity of this relationship. Any historical account that retains a form of essentialism, in which the quality and character of science and religion do not change over time and context, needs to be abandoned.

For Weldon this history is by and large "a modern western story" (p. 5). I found it disconcerting to read that Weldon considers it "problematic to call Buddhism or Confucianism a religion" (p. 5). Is religion only a western phenomenon? Could this position come from our penchant to equate religion with certain practices, rituals, institutions, social networks, or even with theological propositions and statements? That religion as practiced takes on nuances due to social and intellectual factors is historically viable. But religion, in my opinion, bores much deeper. Religion is our total response to a call outside ourselves. Being open to God's revela-

tion is, in the first place, a defining mark of our human response to God's loving address. It is a universal mark, "essential," one could say. As Charles A. Coulson once expressed it: "Religion is the total response of man to all his environment." Consequently, religion is not irrelevant to, or in conflict with, or complementary to, or simply an influence on, science, but rather the very ground of scientific practice.

For those who wish to get a good overview of the present status of science and religion as viewed by contemporary historians of science, this is a good book. It could also serve as an intellectually challenging introduction for undergraduates in a science/religion course. Whether it will satisfy historians of religion is another question. Nevertheless, we should take Weldon's encouragement to heart, namely that we "remain open to finding ways to talk about what we broadly and imprecisely call 'the history of science and religion'" (p. 16).

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Origins

EVOLUTION: Still a Theory in Crisis by Michael Denton. Seattle, WA: Discovery Institute Press, 2016. 354 pages. Paperback; $24.95. ISBN: 1936599325.

The genius of Darwin's *The Origin of Species* was that it provided a simple and elegant mechanism to account for the great diversity of life observed in the natural world. The textbook picture is that normal miniscule genetic variations in a population, when they confer reproductive advantage, are passed on to offspring and carried through the generations. The accumulation of these miniscule adaptations over extreme spans of time eventually leads to divergence of populations into distinct and reproductively isolated species that occupy their own ecological niches. Thus, the core of a Darwinian view is that features are only passed along through the generations if they confer reproductive advantages, and if the process leading to the genesis of distinct species is slow.

Michael Denton's recent book, *Evolution: Still a Theory in Crisis*, provides an extended argument against an extreme interpretation of Darwinian evolution in which all biological features must result from gradual adaptation driven by natural selection. His argument has two prongs: (1) that certain biological features cannot be explained by adaptation (i.e., there are features in animal biology that are apparently nonadaptive) and are thereby hidden from the process of natural selection; and (2) that many features that define distinct groups and species appear to have arisen either suddenly or without any conceivable step-wise process. Although he agrees with the power of natural selection to drive microevolution (evolution occurring within the boundaries of a species), his argument is that it is insufficient to account for macroevolution (evolution that jumps boundaries, leading to novel clades and species).

In the introduction, Denton frames his argument by contrasting "functionalist" and "structuralist" visions for biology. In functionalism, adaptation to serve a particular function is the primary driver of biological organization, while for a structuralist paradigm, the structures themselves are not the result of an adaptive process, although adaptation can occur on top of foundational biological structures. Denton is firmly in the structuralist camp and argues that the features that differentiate one biological group from another cannot have arisen by a gradual process of natural selection. The first several chapters draw on contemporary biological perspectives as well as on older writing to defend this perspective, and to lay this the groundwork for the rest of the book.

A series of chapters called "Bridging Gaps" provides in-depth examples of biological structures that Denton argues cannot conceivably have arisen via a gradual adaptive process. One of these is the nearly ubiquitous five-fingered structure of tetrapod limbs, a feature shared by humans, whales, and bats but used for quite different behaviors by each (i.e., grasping, swimming, or flying). He argues that while adaptations have occurred in the context of this structure to allow humans, whales, and bats to employ their five-fingered limbs for starkly different behaviors, the plan itself appears to confer no special advantage. That same structure is used for quite different functions, indicating that the foundational structure itself could not have been the result of a gradual process of adaptation but must have instead arisen relatively suddenly by nonadaptive mechanisms. In other chapters, Denton provides similarly in-depth descriptions of other examples such as feathers, flowering plants, the enucleated red blood cell, bat wings, and language.

If not by a gradual process of adaptation, how did these structures arise? Denton seeks to address this question in the final chapters by arguing that rather than being the outcome of adaptation, these features and the biological order that they reflect have arisen due to the immutable laws of biology. Foundational structures, "taxa-defining novelties," have emerged from the self-organizing properties of biological matter rather than from variation and natural selection. Supporting this, he points to biological features such as the structure of cells, biomechanical influences affecting embryogenesis, and protein folding. Many readers will hear echoes of the "fine-tuned universe" and "anthropic principle" that are often employed to suggest that nature has favored the development of carbon-based and conscious life, although Denton uses this biological law perspective to explain features of life on Earth, rather than the existence of life.