

that the intertwining of universities, industry and government leads to situations where each one of the threads can take on aspects of the other threads. This can lead to a major transformation of the university ... At the same time universities are taking on the role of industry by capitalizing research ... the government is taking on the role of both private industry and universities by encouraging certain directions in research through funding and the creating of a regulatory environment conducive to certain types of research needed by industry. (p. 259)

While providing an excellent history of this issue, the author deliberately does not draw any conclusions as to whether

these changes will have positive or negative consequences and whether efforts should be made to encourage or discourage such changes. While the aim of this book has not been to answer such questions, such answers will not be forthcoming without some knowledge of the history of technoscience. Hopefully this book will provide a historical context in which a debate about the consequences of technoscience can take place. (p. 261)

I am disappointed that the author did not provide us with conclusions about whether the development of technoscience is good or bad. However, he has provided the ASA community with excellent background material about this topic. Hopefully future ASA conferences and *PSCF* papers will delve into the many faith-related aspects of the rise of technoscience.

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**THE WARFARE BETWEEN SCIENCE AND RELIGION: The Idea That Wouldn't Die** by Jeff Hardin, Ronald L. Numbers, and Ronald A. Binzley, eds. Baltimore, MD: Johns Hopkins University Press, 2018. 358 pages. Paperback; \$39.95. ISBN: 9781421426181.

As the teacher in Ecclesiastes declares: "Of the making of books there is no end and much study wearies the flesh." This word of wisdom applies doubly to the genre of books describing the interaction of science and religion. Religion and science matter and they seem to matter ever more in our current tribal society. Each month seemingly presents us with a new exemplar. *The Warfare between Science and Religion* is only the latest, but it is one of the more important and timely additions.

This book stems from a three-day conference held in 2015 at the University of Wisconsin, devoted to the so-called warfare thesis that pits religion and science in an interminable conflict. Twenty-two distinguished scholars, mainly historians and sociologists,

contributed to this volume: an introduction by David Livingstone and Mark Noll is followed by seventeen chapters, authored by some of the leading scholars in the religion/science discussions. The book is ably edited by Jeff Hardin, Ronald Numbers, and Ronald Binzley. One reviewer, Edward J. Larson, describes *The Warfare* as the "best single-volume collection of separate-author essays about the history of science and religion in the major modern monotheistic Western traditions" (back cover).

Approaches to this subject have been marred both by polemical intentions surrounding the warfare or conflict thesis and by an inability to grasp and cope with the complexity of the issues involved. What is clear is that a variety of interpretive frameworks have been utilized to depict the historical relations between science and religion. Despite various readings, the conflict model is by far the dominant one, both in the public's mind and for many professional scientists as well. For many hard-nosed proponents, science and religion reflect a tribalism that is set in stone. While fundamentalists cast science as a misguided or even malicious source of information, polemicizing scientists argue that religion is not just wrong or meaningless but also dangerous.

*The Warfare* is centered on the warfare thesis as classically formulated by Andrew Dickson White and John William Draper in the nineteenth century (chap. 1, "The Warfare Thesis," by Lawrence Principe). What follows is a close analysis of the viability of the warfare thesis as an adequate account of the relation of science and religion in many different historical and social-cultural contexts. First, we look back in time to the most celebrated warfare account, "The Galileo Affair" (chap. 2 by Maurice Finocchiaro). This is followed by an analysis of nineteenth-century developments in the United States, "Rumors of War" (chap. 3, Monte Harrell Hampton), by English "Victorians" (chap. 4, Bernard Lightman), and in "Continental Europe" (chap. 5, Frederick Gregory). Then, successive chapters describe the perspectives of different religious communities on the warfare thesis: "Roman Catholics" (David Mislin); "Eastern Orthodox Christians" (Efthymios Nicolaidis); "Liberal Protestants" (Jon Roberts); "Protestant Evangelicals" (Bradley Gundlach); "Jews" (Noah Efron); and "Muslims" (M. Alper Yalçinkaya). The last six chapters (chaps. 12-17) describe more-contemporary events and persons: "New Atheists" (Numbers and Hardin); "Neo-Harmonists" (Peter Harrison); "Historians" (John Brooke); "Scientists" (Elaine Howard Ecklund and Christopher Scheitle); "Social Scientists" (Thomas Aechtner); and "The View on the Street" (John Evans).

## Book Reviews

It would take us too far afield to consider each individual chapter. Let me begin with some general comments. Many historians of science have considered the relationships between science and religion. David Livingstone, for example, has identified four relationships: conflict, competition, cooperation, and continuity. John Brooke highlighted three in his insightful book, *Science and Religion: Some Historical Perspectives*: warfare, separation or complementarity, and intimacy. And there are many other descriptions, including Ian Barbour's familiar quartet: conflict, interdependence, dialogue, integration (referenced by Lightman, p. 80). Indeed, there is a broad expanse of relationships on offer: conflict, compatibility, complementarity, harmony (even "discordant harmony"), integrality, and a more holistic model. The first four relationships find expression in one way or another in this book. The latter two are hinted at by Gundlach in his discussion of Bernard Ramm's position regarding the direction of a person's heart in its response to God (p. 179). [For a further delineation describing the gesture of Christian scholarship as complementarity, integrality, and holistic, see Robert Sweetman, *Tracing the Lines: Spiritual Exercise and the Gesture of Christian Scholarship*; Wipf & Stock, 2016, reviewed in *PSCF* 70, no. 2 (2018): 133–34.]

As one examines individual chapters, we encounter increasing complexity in the science/religion relation: The Galileo affair (according to Finocchiaro) "displays various conflicts between science and religion, but also various harmonies between them" (p. 39). English Victorians in Lightman's interpretation often held different conflict theses and frequently opted for a discordant harmony. He also warns us to be sensitive to nuances: John Tyndall pitted theology but not religion against science, a partial philosophical reconciliation not present in Draper's thinking (p. 76). Brooke gives us a superb survey of the past 50 years of historians' accounts of science and religion. Harrison draws on the "neo-harmonists," Rodney Stark, Denis Alexander, and Francis Collins, to display the difficulties in properly describing and understanding a person's take on the science/religion relation. In their chapter, Numbers and Hardin conclude that the new atheists display a remarkable lack of historical analysis in their arguments for the conflict between "organized religion" and science (p. 233). One of the salient contributions of *The Warfare* is to trace what occurred in various communities, including Jewish, Muslim, Eastern Orthodox, Roman Catholic, liberal and evangelical Protestant. In the last chapters in the book, sociologists analyze the response to and perpetuation of the warfare thesis by professional scientists (in different international contexts), by social scientists

(particularly sociologists and anthropologists), and by "people on the street."

A final observation: One needs to be concerned about the conflation of religion, theology, and faith that is present in some of the chapters. Clearly, they are not the same. But that is not always clear in the accounts presented. If one holds that religion is a way of life that people engage in with their full existence and at all times, while faith is one of a number of fundamental modes of being religious, a different way of telling the story follows. The socio-cultural endeavor of science can be religious. But could it ever be irreligious? If not, then the question becomes what religion or religions does scientific activity and practice bear witness to. That manner of relating science and religion is much different than seeing religion solely lived out in theology, ecclesiastical and parachurch organizations, or cultic groups. Perhaps there is an opportunity to go beyond trying to live in two worlds at once?

For readers of *PSCF*, this is a book worthy of reading, digesting, and emulating in its close analysis of science and religion. *The Warfare* will give the reader a trustworthy account of the most recent scholarship about the religion science nexus. As Livingstone and Noll conclude in their introduction, *The Warfare* may help "clear the smoke of a battle that has never really existed so that meaningful work can proceed" (p. 5).

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**THE GENE: From Genetics to Postgenomics** by Hans-Jörg Rheinberger and Staffan Müller-Wille, trans. Adam Bostanci. Chicago, IL: University of Chicago Press, 2017. 147 pages, including contents, acknowledgments, bibliographical references, and index of names. Paperback; \$25.00. ISBN: 9780226510002.

Each year, while preparing to teach a course in genetics, I pause when I reach the definition of "gene" in my lecture notes, wondering if the definition accurately captures the concept of the gene as it is currently understood. In *The Gene: From Genetics to Postgenomics*, science historians Hans-Jörg Rheinberger and Staffan Müller-Wille demonstrate that our understanding and characterization of genes is evolving and, furthermore, that "a simple and universally accepted definition of the gene never existed" (p. 4).

The changing concept of the gene is a common theme in genetics, frequently featured as a thread woven throughout textbooks and serving as a source of vigorous discussion among scientists. As a result, many