The second is that we should be completely transparent. After the Circle convinces most politicians and public servants to start wearing body cameras for their entire waking day, three-minute bathroom breaks excepted, Mae becomes a Circle early adopter, broadcasting all her interactions with the world and her millions of rabid followers. Mae's parents are collateral damage to her desire to make the entire world transparent. In a related project, the Circle uses embedded chips to enable parents to monitor their children all the time, including a constant stream of medical data—all the better to catch problems early.

Mae's commitment to transparency is tested when one of her sexual encounters appears on an uploaded video made without her permission by her partner. And the Circle will never delete anything.

The logical conclusion to all this occurs when the Circle volunteers to help raise the voting percentages by having the government hire them to make voter registration mandatory and, at the same time, tie the voters to the Circle account. Now voting becomes mandatory—all one's electronic feeds stop until one votes. This saves billions of dollars a year in costs for the government, and as a likely consequence will reduce important decisions to popularity polls among the uninformed. This mandate also helps to "close the circle," making the corporation essentially the sole source of all information and power. Those who try to escape are easily found using the worldwide system of surveillance cameras and real-time crowd sourcing as people all over the world are told to help track down a dissenter.

At one point Mae has a short encounter with one of her followers, a former divinity student. He says,

> You and yours at the Circle—you're gonna save all the souls. You're gonna get everyone in one place, you're gonna teach them all the same things. There can be one morality, one set of rules. Imagine! Now all humans will have the eye of God. You know the passage? "All things are naked and open to the eyes of God." Something like that. You know your Bible? Now we're all God. Every one of us will soon be able to see, and cast judgment upon, every other. We'll see what He sees. We'll articulate His judgment. We'll channel His wrath and deliver His forgiveness. On a constant and global level. All religion has been waiting for this, when every human is a direct and immediate messenger of God's will. (p. 398)

This set of values is a perversion of ideas found in scripture. First John 1:7 tells us that if we "walk in the light as he himself is in the light, we have fellowship with one another, and the blood of Jesus his Son cleanses us from all sin." This seems to encourage us to live lives for which we would not be ashamed if others see what we do or think. It does not say that forced transparency is the means by which we achieve inner goodness, as the Circle asserts.

The Circle's view of community seems to be heading toward uniformity in the sense that everyone's individual interests and connections are mediated by the Circle's technology. This seems a poor replacement for the promise in 1 Corinthians 12:12–13:

> For just as the body is one and has many members, and all the members of the body, though many, are one body, so it is with Christ. For in the one Spirit we were all baptized into one body—Jews or Greeks, slaves or free—and we were all made to drink of one Spirit.

If the author's intention was to make the reader question how easily we give up privacy (read the permissions you are giving the Apps you install on your smart phone if you are skeptical) in order to gain some other desirable result, he succeeds admirably. There are some nice literary touches involving side stories that work well. The book as a whole presents a future that is both believable and scary. However, despite the engaging story and the important issues of privacy that are raised, I found the underlying worldview portrayed in the story to be quite sinister.

Reviewed by Eric Gossett, Department of Mathematics and Computer Science, Bethel University, St. Paul, MN 55112.

History of Science

IN THE LIGHT OF SCIENCE: Our Ancient Quest for Knowledge and the Measure of Modern Physics by Demetris Nicolaides. Amherst, NY: Prometheus, 2014. 266 pages. Paperback; $19.00. ISBN: 9781615922253.

At first look *In the Light of Science* is a book with a somewhat intriguing title. Its scope ranges from a discussion of early *Homo sapiens* hunter-gathers to the standard model for particle physics, and then on to string theory—all in the context of seeking linkages to an array of ancient Greek philosophers. Nicolaides maps out three landmarks for humanity: (1) the culturally explosive event of urbanization (about 10,000 years ago), (2) the Greek intellectual revolution and the birth of science (some 2,600 years ago), and (3) the scientifically extraordinary modern era of quantum physics, relativity, and the standard model for particle physics.

The book comprises two parts, including a prologue and epilogue: Part I (78 pages) seeks to provide a brief history of the development of humankind,

passing through urbanization and the mythological era in which the author pays some attention to the relationship between religion and science, and the birth of science. Part II (130 pages) seeks to link pre-Socratic thought to concepts in modern physics. The linkage between the two parts is provided by a dialogue between Greek philosophers in the form of a brief "dream sequence."

The author's thesis seems to be that Greek thinkers provided, at least in essence, many of the fundamental concepts that form the foundation of certain aspects of modern physics, invented science, and scientific thinking. These events all occurred through the utilization of language and the seminal principles of Greek civilization, and under the impact of urbanization. There is the well-known phrase, "If I have seen a little further it is by standing on the shoulders of giants." Nicolaides seems to be saying that modern physics stands on Greek shoulders.

Nicolaides seeks to provide a book which is readable, but in places he oversimplifies the language and makes assertions that are not adequately justified by his citation of supporting source materials. For example, the simplification of vocabulary can be seen in his use of the term "light," rather than electromagnetic radiation, in the context of the discussion of 3 K background radiation, the residual of the big bang. In his discussion of the migration of early peoples, there are, in most cases, estimated dates provided, but no date is given for the entry of people into the Americas. In his discussion of early pre-humans, specifically "Lucy," Nicolaides states that it can be seen that "two legs were starting to evolve into hands" and that there was an iterative relationship between toolmaking, thinking, technology and intellectual development (p. 215). It has recently been reported that the oldest stone tools on record date to 3.3 million years ago (*Nature* [2015]). This pushes back the known date of such implements by 700k years, and such items were produced by "proto humans" long before the advent of modern humans and pre-dating Lucy.

The author's treatment of early humans and precursor species is thin, and there are a good number of books which could have been cited to provide more depth for the evolution of *Homo sapiens* and the history of humankind. Examples include Richard Leakey's *The Origin of Humankind* (Basic Books, 1994) and the early chapters in Richard Dawkins's *The Ancestor's Tale* (Houghton Mifflin, 2004). A recent summary of many of the topics touched on in the story of the transition "from chaos to order" (Part 1) is covered in a recent *Scientific American* special issue, "The Evolution of Your Body" (2015). The vast majority of the cited references in this issue are to literature published well before the Nicolaides book was published.

Clearly the author has great familiarity with the key Greek philosophical concepts which he compares and contrasts with ideas encountered in modern physics. Examples of these are seen in the discussion of Pythagoras and numbers, Parmenides and oneness, and Democritus and atoms. Nicolaides discusses how the thoughts expressed by the Greeks seem to relate to concepts in physics. However, in several cases, the analogies and parallels between Greek thought and modern physics are, at least for someone with my background, a stretch. The Enlightenment received very brief treatment with only passing reference to key figures such as Newton, Copernicus, and Galileo. There is also no real discussion of the motivation of Enlightenment theists who sought to understand God's creation. The Enlightenment clearly revisited some Greek ideas, but Nicolaides jumps from Greece to the modern era and does not connect the dots in his train of thought or in the development of concepts. A much more complete treatment of the development of concepts in physical science, which fills some of the gap found in the current book, is provided in the classic text *The Origins and Growth of Physical Science*, vols. 1 & 2, edited by Hurd and Kipling (Pelican, 1958/1964). The analysis by Nicolaides is very "western" and, more specifically, Greek-centric. If one takes a wider view, there are clearly astronomical insights to be found in a number of other civilizations (see E. C. Krupp, *Echoes of the Ancient Skies*, Harper & Row, 1983).

There is a tantalizingly brief discussion of the theory of everything and several references to the Higgs boson, as well as to concepts of dark and ordinary matter (which is acknowledged to make up only about 5% of the "stuff" in the universe). Toward the end, there is speculation with regard to the topic of time travel, which has recently received better popular treatment in the TV series *Cosmos* in its reworking of the content of Carl Sagan's book of the same title. The series also ranges much farther and wider, considering the total number of stars and planets, and also speculates about the possibility of habitable planets in other parts of the universe.

I was left wondering if the roots of modern physics, quarks, leptons, string theory, and the like, which have all been developed in the past one hundred years, can truly be traced back to thoughts by Greek philosophers. For me it was an interesting read, with my eclectic background: degrees in physics and an enduring interest in the history of science and its interplay with faith, the origins of humankind, and

the advances in astrophysics and atomic and nuclear physics. That said, this book may encourage the student or more general reader with an enquiring mind to look more deeply into fundamental physics—to move our understanding beyond the standard model toward a theory of everything, or perhaps causing a shift in thought as great as that which occurred with the formulation of general relativity.

However, I am left asking, "Who really is the audience for this book?" The general or high school-level reader really needs a prerequisite or a primer on modern physics, the standard model with its quarks, leptons, and the like. Such treatments can now be found on the web: for example, Dan Bloomberg, *An Elementary Primer on Elementary Particles and Their Interactions*, Leptonica (2014), http://www.leptonica.com/particle-primer.html. There is an opportunity for the book to be used as an introduction to aspects of the philosophy of physics or in a "spirit of physics" seminar/discussion class at freshman or higher level. Although this is a text with some unique thoughts, I fear that the more general readership will be somewhat limited.

Reviewed by Leonard J. Bond, Professor of Aerospace Engineering; Director, Center for Nondestructive Evaluation, Iowa State University, IA 50011.

CREATIONISM IN EUROPE by Stefaan Blancke, Hans Henrik Hjermitslev, and Peter C. Kjærgaard, eds. Baltimore, MD: Johns Hopkins University Press, 2014. 276 pages, including notes and index. Hardcover; $39.95. ISBN: 9781421415628.

Creationism is often thought of as an American affectation. From influential nineteenth-century theologians such as Princeton Seminary professor Charles Hodge, to grand public spectacles such as the 1925 Scopes "Monkey" trial, to present-day organizations and institutions such as Answers in Genesis's Creation Museum, there has been an almost continuous tradition in America of religious opposition to Darwin. The history of American creationism has been most ably told by Ronald L. Numbers, who in the Foreword to this present volume writes, "Until fairly recently the notion of a history of creationism in Europe would have struck many readers as preposterous" (p. vii). *Creationism in Europe*, edited by Stefaan Blancke, Hans Henrik Hjermitslev, and Peter Kjærgaard, shows the history to be both longer and more diverse than has been previously understood.

Most of the book's chapters are devoted either to individual countries or to a few related ones. Each chapter then tells a national story about a state and its specific engagement with questions of evolution and religion. Taken individually, each of these chapters offers a detailed account of the people and organizations that promoted antievolutionary thinking, the religious geography in which creationism spread, and the ways that creationist thought influenced the public life of a nation. Many of these chapters would, on their own, serve as excellent introductions to the science-religion landscape of a particular place. More importantly, in reading across several of these chapters, some common themes begin to emerge. In many cases, the narrative follows a common pattern: Homegrown varieties of creationism flourished in the late nineteenth and early twentieth centuries, often defined along strict religious denominational lines; but, in most places, these were minority views or had largely faded away by WWII.

In the postwar era, American organizations such as the Institute for Creation Research, Answers in Genesis, and the Discovery Institute helped fuel a creationist resurgence that continues with varying degrees of success today. In addition to this general pattern, the history of creationism in many of these countries also evolved in synchrony with larger national political changes—such as the ending of communism in the Soviet Union, East Germany, and Poland in the 1990s; or the democratization of Spain, Portugal, and Greece in the 1970s. In these cases, the flourishing of creationism was also shaped by the liberalization of religious practice and expression.

Many of these central chapters, by focusing on specific national contexts, do not really address the question of creationism as a European phenomenon. At a time when the idea of Europe as a political, cultural, and economic entity is being openly debated in many of the countries featured in this book, the question is ever present: how much is the creationism described in these countries part of a common European story? As the title of the Introduction asks, is this a story about creationism in Europe, or about a European creationism? Blancke, Hjermitslev, and Kjærgaard opt for the former. Taking note of what they term the "North American Roots of Creationism," and observing the general lack of a common creationist experience shared across these nations, the editors conclude, "one cannot talk about European creationism. Creationism in Europe is so many different things to different populations for different reasons" (p. 9).

The rejection of a coherent European narrative makes the selection of the countries represented in the volume all the more important. Of course, it is unreasonable to expect treatment of every European country, but the selection is at times uneven. Neither Italy nor Ireland is represented, and Northern Ireland is scarcely mentioned in the chapter on the UK.