Book Reviews

FAITH & SCIENCE

ENCYCLOPEDIA OF SCIENCE AND RELIGION (2 vol.) by Wentzel Van Huyssteen, ed. New York: Macmillan Librayr Reference, 2003. xxxviii + 1049 pages, index, bibliography. Hardcover; $331.25. ISBN**:** 0028657047.

The last two decades have witnessed a remarkable increase of academic and popular interest in science-religion themes. There has emerged a growing sentiment that these fields of discourse have much to say to each other. While various threads of Christian theological agendas remain the central driving force, increasing interest is being generated by Islam, Hinduism, Judaism and others in what has become a multidisciplinary landscape. Cosmology, evolutionary biology, micro-physics, the neurosciences, ecology, biotechnology and ethical concerns provide formidable challenges for those who would include the sciences in their world view.

Newcomers to the field and veterans alike can benefit from the *Encyclopedia of Science and Religion.* It seeks "to be accessible to a wide readership from high school students to independent researchers and academics" (vii). The over 400 entries range in length from several thousand words on major topics to hundred-word definitions of terms. A diverse set of indices, an annotated bibliography, a well-integrated system of cross-references, and a synoptic outline provide easy entry into these volumes. The synoptic outline (viii) offers "an organized map" of the entire field.

For those curious about the field, the Introduction (ix–xii) and "Christianity, History of Science and Religion" (Edward B. Davis, pp. 123–7) provide a helpful start. As a chemist, I appreciated David Knight's piece on chemistry (pp.103–6). Other essays that caught my interest included "Scriptural Interpretation" (Kurt Richardson, pp. 786–90), "Origins of Science" (Peter Harrison, pp. 779–82), "Behavioral Genetics" (V. Elving Anderson and Audry R. Chapman, pp. 58–9), "Science and Religion, History of Field" (John Hedley Brooke, pp. 748–55), "Classical Physics" (Howard Van Till, pp. 664–7), "Anthropology" (Paul K. Wason, pp. 20–4), "History of Science and Religion in China" (Hing Kau Young, pp. 114–8) and "Cosmology, Religious and Philosophical Aspects" (Norriss Hetherington, pp. 177–83).

Paul Allen's analysis of current apologetic trends offers a sample of the riches found in these volumes. Late twentieth-century apologetic literature with a scientific accent and doctrinal focus is represented in the writings of the scientist-theologians Stanley Jaki, Alister McGrath, Arthur Peacocke, John Polkinghhorne, Robert John Russell, and Thomas Torrance. A less precise theological reconstruction of apologetics exists. It transposes Christian doctrine philosophically through a capacious theoretical commitment. This method is present in the writings of scientists such as Pierre Teilhard de Chardin and Alfred North Whitehead, contemporary philosophers Nancey Murphy, Joseph Bracken, and Holmes Rolston III, as well as theologians Wolfhart Pannenberg and John Haught (p. 26).

The two hundred plus contributors provide a diversity of knowledge and viewpoints that makes these volumes an invaluable reference. A second edition of the *Encyclopedia of Science and Religion* should include additional material on the *culture* of science and religion. While academic centers and scholarly associations engaged in the field are mentioned at various points, there is no concentrated effort to identify their goals and support communities or their successes and failures. An analysis of the effects of the growing conversation on science and religion on the faith of individuals and the communities they represent would be helpful.

The *Encyclopedia of Science and Religion* belongs in institutional libraries and the personal collections of the more affluent.

Reviewed by John W. Haas, Jr., Emeritus Professor of Chemistry, Gordon College, Wenham, MA 01984.

SCIENCE AND RELIGION: A Historical Introduction by G. B. Ferngren, ed. Baltimore, MD: The Johns Hopkins University Press, 2002. 401 pages. Paperback; $19.95. ISBN: 0801870380.

This book is a selection of essays reproduced from the comprehensive *History of Science and Religion in the Western Tradition: An Encyclopedia* edited by Gary Ferngren. Professor of history at Oregon State and author of numerous articles on science and religion, Ferngren has selected thirty articles focusing on the major sites of interaction within the West to craft an outstanding introductory text. The result is a detailed and scholarly book that is accessible for a scientifically inclined audience.

The interaction of science and religion is as complex as the intricacies of any intense human endeavor. Unfortunately the general perception is that science and religion have always existed in tension despite significant evidence to the contrary. Dispelling the conflict thesis of science and religion is a theme that runs deeply through most of the essays, particularly the first two that survey the interactions in centuries past and the tools historians use to dissect the most accurate historical picture.

The essays are grouped into seven sections roughly following the development of science from the premodern period to the present. Each essay is arranged in short sections, the first being a very helpful overview and orientation of the key issues under discussion. The result is a series of articles that generally provide an excellent précis of topics. Dembski's short essay on "The Design Argument" (pp. 335–44) is a particularly fine example. Overall the essays are well-balanced presentations that acknowledge a broad spectrum of contributions giving the reader insight into the important issues while avoiding a monolithic presentation of the interaction between science and religion.

"If the study of the intersection of religion and science demonstrates anything, it is the enduring vitality and influence of some of the most basic traditions of the Western world—religious, philosophical, and scientific—which

still retain their ability to shape ideas and inform our culture in the twenty-first century" (p. xiv). Ferngren is to be commended for conveying the vitality and influence of science and religion through this series of excellent contributions from leading authors in the field.

The book has potential as an introductory textbook with many of the self-contained essays being ideal for out of class assignments. ASA readers will find this a valuable book for the classroom and an essential resource for libraries that do not have the larger volume.

Reviewed by Fraser F. Fleming, Associate Professor of Chemistry, Duquesne University, Pittsburgh, PA 15282.

MINDING GOD: Theology and the Cognitive Sciences by Gregory R. Peterson. Minneapolis: Fortress Press, 2003. 252 pages. Paperback; $19.00. ISBN: 0800634985.

The premise of the book is the conviction that "serious consideration of the cognitive sciences stands to affect nearly every facet of Christian theological thinking" (p. 12). *Minding God* is a book-length argument for the validity of this claim.

The author begins with a description of the field of cognitive science with an indication of the shift from using the computer as the model of the mind to the emphasis of the importance of the brain (chap. 2). In chap. 3, he presents the many views on the elusive problem of consciousness. The problem is important because "consciousness has in many ways taken the place of the soul" (p. 70). The best approach for a nonspecialist is "a prudent agnosticism about the ultimate nature of consciousness" (p. 71).

Notwithstanding this warning, the author is confident that it is justified to interpret Genesis 2 as conveying the view that consciousness does not "descend from above but emerge(s) naturally as the result of biological development" (p. 71). Next, the author investigates the problem of freedom (chap. 4). We are bound and free in our personal life because the mind depends on the brain (p. 97), but "cognitive science cannot speak about the true freedom" (p. 98) discussed by theologians in the context of validity of the doctrine of predestination.

In chap. 5, Peterson presents some experiments on brain activity associated with religious experiences ("neureotheology"). The author is correct to conclude that "to show that a brain state correlates with a certain kind of experience is not to show that such an experience is false" (p. 114).

Chapter 6 describes some research on presumed intelligence and self-awareness of animals. The author conveniently states that the burden of proof is on those who deny consciousness of animals (p. 128), yet he agrees that proving consciousness in animals is "exceedingly difficult," and the ascription of these traits to instinct alone is "difficult to disprove" (p. 136). Peterson describes some AI research, although he is not yet ready, along with several other authors, to ascribe intelligence to machines. This type of research leads Peterson away from the belief that we were created in the image of God to the understanding that all of creation reflects the basic character and nature of God (p. 147). The problem is that this seemingly more ecumenical approach simply dilutes the importance of the problem of the image of God.

Chapter 7 discusses sociobiological research on altruism and warns against genetic determinism in the case of morality but concludes with the statement that "we are who we are because of our biological heritage" (p. 177). The explanation of the original sin in terms of the fall of the first couple the author finds, to be sure, naive; a non-naive view is to see this sin as "a dynamic that emerges out of our evolutionary history" (p. 178), which sounds very modern and science-conscious but explains nothing.

In the penultimate chapter, the author gives a critique of the argument from design and then, somewhat incongruously, he turns to the problem of the nature of God. He is correct to stress that disanalogies between man and God are more important than analogies and cognitive science is "a kind of *via negativa*" in investigating the nature of God (p. 201).

Finally, Peterson argues against treating humans as the apex of creation, pointing to the vastness of the universe (chap. 9). Also, after justifiably criticizing the vision of immortality offered by computer science (through downloading the soul, so to say), he concludes that the matter of eschatology cannot be solved by cognitive science because the latter "cannot tell us of existence in alternative realities." Nicely phrased in the last sentence of the book, the matter is resolved by putting "faith in not merely a God of minds, but a God who minds" (p. 221).

Although Peterson competently presents the many facets of cognitive sciences, he really does not make a convincing argument that they seriously affect theological thinking. The big issues of theology are hardly affected by the developments of cognitive science. Of course, theologians should be familiar with these developments, but any revolutionary change in theology proper should not be expected as the result of this familiarization.

Reviewed by Adam Drozdek, Duquesne University, Pittsburgh, PA 15282.

THE SYMPHONY OF CREATION: Science and Faith in Harmony by Steven E. Stoller. Phoenix, AR: ACW Press, 2002. 235 pages, index, notes. Paperback; $14.95. ISBN: 1892525925.

Stoller is a physician who has practiced medicine in the field of eye surgery for twenty-five years. He is an ASA member who also has earned a degree in theology. Prior to his premedical studies, he was a music composition major and he has continued to use his musical training in a variety of capacities. The primary metaphor of this book, which is suggested in the title, is that the universe is an unfolding symphony of creation, whose Composer and Conductor is God. Stoller introduces this metaphor by stating that nature is like music in that "just as music needs both the science of sound and the spirituality of art, so nature needs both science and faith for its full comprehension only when science joins with spirituality do we appreciate the purpose and true grandeur of the universe."

Stoller's primary motivation for writing relates to his own personal struggle as an undergraduate science stu-

dent in trying to reconcile the science he was learning with the claims of his Christian faith. The purpose of this book is to show that scientific findings are not only compatible with Christian faith, but that they actually bolster its claims by pointing to the necessity and grandeur of God. Scientific evidence for the necessity of God is provided in chapter three under the headings of cause (the cosmological argument), contingency (the anthropic principle), complexity (the argument from design), and the comprehensibility of the universe. While Stoller admits that none of these four factors proves God's existence, "together they support the probability of a power and purpose behind the universe."

In the other seven chapters of the book, Stoller surveys a number of issues that are typically addressed in books that seek to harmonize the findings of contemporary science with Christian faith. The evidence for an ancient universe that has been shaped by the process of evolution is presented in chapter two. This evidence is harmonized with the biblical understanding of creation through a brief summary of the "framework" interpretation of Genesis One. In chapters five and six, the evolution of the human body from nonhuman ancestors is discussed. Stoller attempts to harmonize the scientific account of human evolution with a Christian perspective by suggesting that "around 50,000 years ago, God gave spirits to two or more individual *Homo sapiens.* This caused their souls to be fully born, completing their creation in the image of God" (p. 159).

The question of how God works in the universe is answered in chapter four. Stoller rejects both deism and interventionism, arguing instead for a biblical theism which understands God to be an ever present Conductor who sustains and directs the universe by his Spirit. As Conductor of the symphony of creation, God balances the two principles of "freedom for orchestral members and faithfulness to the divine score" in a delicate and mysterious manner. After engaging the problem of evil and suffering in chapter seven, Stoller concludes the book by exalting God's greatness, revealed through the power, precision, profusion, and provision inherent in creation.

Stoller states in the introduction that his purpose in writing is to provide a general overview of a variety of issues that pertain to the interface between contemporary science and Christian belief. He succeeds admirably by covering a number of perplexing issues in a manner that is accessible to a general Christian audience. Notes are provided for those who would like to explore specific topics in more depth, although a bibliography of recommended readings could also have been included. Discussion questions specific to each chapter are provided at the back of the book. While the book is not overly technical, it is academic enough for use in introductory courses on the relationship between science and Christian faith at the college level. It could also be used in a variety of other educational settings. While young-earth creationists and those who reject any consideration of evolution may not like the book, anyone who is open to the possibility of God creating through the process of evolution will find this introductory survey helpful.

Reviewed by J. David Holland, Associate Professor of Life Science, Nyack College, One South Boulevard, Nyack, NY 10960.

HAS SCIENCE FOUND GOD? by Victor J. Stenger. Amherst, NY: Prometheus Books, 2003. 373 pages, index. Hardcover; $21.00. ISBN: 1591020182.

Stenger is emeritus professor of physics and astronomy at the University of Hawaii and adjunct professor of philosophy at the University of Colorado. He has written other books on topics relating to science, religion, and mysticism including: *Timeless Reality, The Unconscious Quantum, Physics and Psychology*, and *Not by Design*. He has given many high profile talks on the topics of science and religion and has faced such notable debate opponents as William Lane Craig.

Has science found God? No, says Stenger. In twelve chapters and three appendices, Stenger reviews the physical evidence for the support or proof for God or of gods or spirits. Topics include young-earth creationism as professed by Henry Morris, intelligent design of Dembski, more progressive creationism of Hugh Ross and Gerald L. Schroeder, and a category labeled "premise keepers" which includes Ian Barbour and John Polkinghorne. The book has many black-and-white illustrations, notes at the end of each chapter, and an index.

Stenger maintains an agnostic position on the existence of a god. He takes a strong negative position on whether contemporary scientific methods and theories can give evidence for a god or any supernatural or mystical phenomena. He makes short work of dismissing the scientific claims of the young-earth creationists and thinks contemporary intelligent design proponents are mistaken thinkers. Stenger spends some time dealing with the statistical arguments of Dembski's intelligent design.

Though Stenger does not make argument with the cosmology of Ross and Schroeder, he does reject the "fine tuning argument by use of the anthropic principle." He argues that the form of life is dependent on the nature of the universe; therefore, it is not surprising that we have the form of life that we do. Stenger states that it has not been proved that other forms of life cannot exist under a universe governed by different physical parameters.

With respect to the pro-evolutionary, theistic "premise keepers," Stenger takes issue with the philosophical, therefore unscientific, interpretations of scientific evidence for the existence of God. Also, Stenger states that this group has assimilated so much science into their philosophy that there is little left of traditional Christianity.

Stenger also discusses medical studies on the effects of prayer, psychics, out-of-body experiences, near death experiences, and Bible codes. He states that the studies are inconclusive or misleading. He discusses statistical errors, systematic errors, and biases associated with popularly referenced studies.

Stenger takes a very thoughtful and thorough approach to the topic of scientific evidence for God and other supernatural and mystical experiences. He draws upon his own Christian heritage of Roman Catholicism, and he is well acquainted with the doctrines and apologetics involved. His experience in physics allows for a well-informed and thorough treatment of the science. To Stenger's credit, the weakness in the book is also self-identified. He acknowledges that the issue of God's existence is philosophical.

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Since Stenger's goal is to address the science associated with support for the existence of God, he spends little time on the issues of philosophy.

This book gives an excellent overview of the physical science based arguments for the existence of God. It summarizes the major scientific arguments for the existence of God and the weaknesses of these arguments. Though the book would not be read for spiritual edification, it is a book that should be read by theistic scientists and theists interested in the sciences to help develop their own apologetics.

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HISTORY OF SCIENCE

DOUBTS ABOUT DARWIN: A History of Intelligent Design by Thomas Woodward. Grand Rapids, MI: Brazos/Baker Books, 2003. 303 pages, index. Hardcover; $19.95. ISBN: 0801064430.

The debate over the Intelligent Design movement (ID)—well documented in *Perspectives on Science and Christian Faith*—has generated a significant amount of literature since its inception around the early 1990s. However, I was surprised to hear of a *history* of this movement, since it was only about a decade old and because there were already several general introductions to ID. Nevertheless, *Doubts About Darwin* gives a unique approach focusing on the rhetorical factors involved. It should not disappoint anyone interested in learning more about the personalities and rhetorical strategies of the ID movement and its critics. (Although Woodward spends more time on ID's naturalistic critiques than on its Christian detractors, who support theistic evolution). While Woodward is favorable toward ID, he is neither partisan nor propagandistic.

Doubts About Darwin is a revision of the author's doctoral dissertation in the field of rhetoric, specifically the nascent discipline known as the rhetoric of science (which incorporates the philosophy and history of science and appropriates much from Thomas Kuhn). Unlike some dissertations-cum-books, *Doubts* makes the transition gracefully. It is not a warmed over thesis, but a well-written, amply documented, and genuinely insightful study of a significant movement challenging the dominance of Darwinism. By approaching ID from a rhetorical angle, Woodward captures both the straight arguments for and against ID as well as the considerations of timing, approach, use of terms, dreams, and models of presentation. This makes for an intellectual drama where an underdog takes on a giant. One learns about rhetorical theory in the process, but that conceptual machinery is neither cumbersome nor overwhelming to the non-specialist.

Phillip Johnson emerges as the rhetorical genius of ID (he wrote the forward to the book) who developed a specific strategy against Darwinism rather than coming with the essential evidence against it. After reading Richard Dawkin's pro-evolution *The Blind Watchmaker* and Michael Denton's *Evolution: A Theory in Crisis* in the late 1980s, Johnson became convinced for scientific reasons that Darwinism was evidentially challenged. Darwinism was supported more by the *a priori* commitment to philosophical materialism than by any hard evidence. This exposure of philosophical materialism as the real engine of Darwinism, along with the basic evidential criticisms leveled by Denton, gave Johnson the intellectual traction he needed to start a revolution.

Johnson was not the first to stake a scientific claim against Darwinism. Besides Denton's critique, the Bradley, Thaxton, Olsen volume, *The Mystery of Life's Origin* (a critique of abiogenesis), was published in 1984. These stirred the waters, but a rising tide of dissent was yet to form. Moreover, Johnson was not a scientist but a law professor, and found himself in an awkward position to lead a revolt. Nevertheless, Johnson, along with others, crafted a strategy and cast a vision. The strategy required a distancing from "creation science," because of its association with biblical literalism and its pariah status among most scientists. The ID movement would be "metaphysically minimalist" (my term) in its approach, focusing on the scientific evidence and where it led. It would not address specifics of Christian theology, but argue that certain evidences of nature pointed toward a designer and that chance and necessity were not sufficient to explain the living world. It would cast a broad net and employ the arguments of non-evangelicals (Michael Behe) and even non-Christians (David Berlinsky). The plan was "the wedge strategy"—to drive a wedge between the findings of empirical science and philosophical materialism. In so doing, it had to challenge certain assumptions about the nature and philosophy of science, specifically its metaphysical or methodological naturalism. Johnson would be the leading edge in pointing out evidential and logical weaknesses in Darwinian theory; philosophers, such as Stephen Meyer, would draft more sophisticated arguments; and scientists, such as William Dembski and Behe, would develop ID into a full-orbed research program. Woodward also observes that Johnson's temperament has been crucial for the ID movement. He is both genial in demeanor and rigorous in argumentation, making friends with the Darwinists he debates whenever possible. In addition, he has been tireless in taking the message to the universities and elsewhere.

This timely and informative book would make a fitting textbook in classes addressing the history and philosophy of science as well as Christian apologetics. It would also make an apt case study for courses in rhetoric.

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GALILEO'S MISTAKE: A New Look at the Epic Confrontation between Galileo and the Church by Wade Rowland. New York: Arcade Publishing, 2003. Hardcover; $25.95; ISBN: 1559706848. Paperback; $14.95; ISBN: 1559707224.

Just when we thought that the Galileo affair could be put on the shelf, Rowland has utilized a stylistic flair that makes the book difficult to put down. Two aspects of the book are worthy of comment. First, the survey of what could be dry historical chronology is interspersed with a contemporary *trialogue* among the author, a former stu-

dent "Berkowitz," and a diminutive nun "Sister Celeste" over the hermeneutics of science and religion. Second, the account of the issues leading up to Galileo's appearance before the Inquisition are coupled with the saga of the controversy over where he would ultimately be buried.

The trialogue takes place in modern Italy. Rowland makes the surroundings in which Galileo lived come alive for the reader. It is remarkable that so many of the avenues and buildings of the sixteenth century still exist.

Further, the trialogue reflects a method perfected by Galileo himself—the interaction among supposed real persons who represent differing theoretical positions. In the *Dialogue on the Two Chief World Systems,* Galileo has figures representing the Copernican and Ptolemaic systems interacting with one another as in a drama. Unfortunately, when Galileo represents Ptolemy's approach in a figure named *Simplicus,* readers quickly see his bias. Rowland fares a bit better. His and Sister Celeste's caution against Berkowitz's scientism is well reasoned and convincing.

Protestants and northern Europeans claimed that the church suppressed progress and oppressed a loyal, faithful scientist to the point where he recanted. However, Rowland offers a more complex, penetrating analysis of the issues themselves. He suggests that the negative judgment of the church was less dependent on Galileo's *Dialogue* book than on his famous *Letter to the Grand Duchess Christina.* Here Galileo proposed that the Scriptures should be interpreted allegorically, not literally—an opinion considered by the church to be an inappropriate intrusion by a layperson into theological reasoning. He also suggested that the physical evidence (human observation both with and without scientific manipulanda) should take precedence in determining what is truly "real." Rowland portrays Galileo as a Pythagorean who believed that reality could be explained mathematically. To reduce the meaning of reality to measurements of mass and force sabotaged the church's understanding of meaning and purpose—an idea just as heretical as the thought that the earth moved around the sun.

The church was not as "anti-scientific" as it has been made out to be by historians. It held two opinions. First, scientists could conjecture as much as they liked so long as they utilized their conclusions as in-house language that assisted the scientists in their calculations. Second, the church held that *demonstrations* were not proof. The church felt that Galileo never proved that the earth moved, he only "demonstrated" that it made better mathematical sense to conclude that it did. The church was unwilling to acquiesce to Galileo's contention that nature and Scripture were equal revelations of God—a viewpoint that later was to be common parlance among such thinkers as Sir Isaac Newton.

Of course, the subtlety of these arguments is lost in the brutal concreteness of Galileo's confession before the Inquisition. Here he overtly confesses his error in asserting that the earth moved around the sun. Rowland addresses adroitly the question of whether Galileo changed his mind. He denies that Galileo whispered "but it still moves" under his breath. Instead he asserts that Galileo finally understood the difference between demonstration and proof. There was no threat of physical punishment looming over him. He had a friend in both Cardinal Bellarmine, who directed the affair, and in Pope Urban VIII, who reluctantly ordered it. The house arrest he enjoyed was relatively painless and people from all over Europe were given free access to visit him. He recanted on the basis of seeing the error of his hermeneutics.

All in all, this book was a wonderful read! It led me back to previous accounts in *Galileo's Daughter*, *Issues in Science and Religion*, and *God and Nature*.

Rowland is to be complemented in the way he convinces the reader that the issues are perennial, not just historical. I recommend it to all who are convinced that some issues are perennial, not simply historical.

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THE CALVINIST COPERNICANS: The Reception of the New Astronomy in the Dutch Republic, 1575–1750 by Rienk Vermij. Amsterdam, The Netherlands: Royal Netherlands Academy of Arts & Sciences, 2003. X + 433 pages, bibliography, index. Hardcover; $49.00. ISBN: 9069843404.

David Livingston has impressed his readers with the importance of geography in assessing the response to a new scientific concept. The newly formed Dutch Republic, small enough to (presumably) be encompassed by one investigator yet a region with vigorous intellectual discussion, strong scientific tradition, and freedom of speech, offered such a venue.

Vermij argues the central role of the universities yet finds that the independent intellectuals—refugees, preachers, court mathematicians, builders of waterworks, millers, and physicians—invariably were the first to debate new scientific ideas. Ultimately academic institutions would pick what they liked from among the ideas in the marketplace for insertion into the curriculum.

The secular Dutch State did not exercise theological influence on the universities. However, many scholars were influenced by the desire to bring nature in line with Scripture, and the Dutch churches had much to say about the place of the earth in the cosmos.

Part I. "A World of Order" considers the initial Dutch response to Copernican ideas. The newly founded University of Leiden (1575) emphasized humanistic learning (philology, rhetoric, history, and mathematics) over theology and philosophy (logic, physics, etc.). Humanism searched the ancient texts for the lost classical wisdom with the purpose of having them re-established, thus muting the need for further investigation of nature. Astronomy was valued as offering evidence of God's hand in creation.

Leiden humanists valued Copernicus for citing Pythagoreans and Philolas and largely using Ptolemy's data in building his heliocentric views. They praised his argument for the revolution of Venus and Mercury around the sun. However, the heliocentricity of the other planets and the motion of the earth were seen as insufficiently proven. Initially, his mathematical astronomy was of little interest. Later the mood changed with a loss of respect for classical education and the rise of mathematics as an independent discipline able to assert itself against tradition and philosophy.

Part II. "The Challenge to Philosophy" deals with the important role of Galileo's telescopic discoveries. By 1610 his work was well known. However, the generally poor quality of the Dutch instruments delayed wide local use of the instruments until 1630. The trial of the famous astronomer and open condemnation of the Roman churches brought more attention to the new cosmology. He was offered asylum but turned down the offer because of his advanced age and poor health.

Dutch scholars rooted in the old mathematical astronomy of the universities were slow to adopt a full-blown Copernicanism. As a result, the most daring attempts to break out of the box were made by independent thinkers who expanded on Galileo's ideas in relating them to newly reported observations. Others sought to fit the new discoveries into the old picture of heavenly spheres and celestial influence.

Part III is titled "The Universe of Law." The1640s saw the role of mathematics diminished as the philosophy of Rene' Descartes moved cosmography to the realm of the natural philosophers. Copernicanism become a world system based not on a mathematical theory of the heavens but on the application of general physical principles to the phenomena of the solar system. Descartes' ideas were prominently featured in the curriculum replacing not only the old scholasticism and Aristotelianism, but also the humanistic-philological approach, which had dominated scholarship. By the late 1640s theological resistance to the Cartesian world view led him to move to Sweden. Protestant theologians returned to Aristotelian philosophy shaped into a neo-scholastic mold for the purpose of warding off attacks of unbelievers. Some held that the "Holy Scriptures" had no place in discussions of the system of the world. Others vigorously argued against a Copernican-Cartesian system. Most sought a cautious middle. Even though Descartes failed to carry the universities, his more zealous followers and students spread his ideas to the alumni and the general public.

Part IV. "Biblical Authority and Christian Freedom" discusses Protestant resistance to heliocentrism that was based on biblical texts and a concern for the recognition of God's place in nature. The various expressions of Protestantism developed creeds and confessions legitimized by an *inspired* Scripture. By 1656 Copernicanism became the center of a debate over biblical interpretation that virtually split the Dutch Reformed Church.

Part V is titled "God Back in Nature: Copernicanism in the 18th Century." Newton's *Principia* (1687) opened a new view of the world. The Dutch only recognized the importance of his work after publication of the second edition in 1711. Willem Gravesand and Petrus van Musschenbrock led a generation that generally adopted Newton's theories as a basis of departure for the study of physics and the vindication of Copernicus. The new physics was "put forward as an alternative to Cartesianism with the express intent of bringing science in accordance with religious feelings" (p. 349).

Vermij aptly describes the confused ways that the acceptance of heliocentrism played out in the early Dutch State. Rigid specialization, professionalization, and an explosion of knowledge today separate the scientist from those who seek to include science into twenty-first century world views. Our struggle finds much in common with the Dutch experience.

This fascinating work may be obtained free in PDF format at http://www.knaw.nl/cfdata/publicaties/detail.cfm?boeken__ordernr=991129

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Origins & Cosmology

PERFECT PLANET, CLEVER SPECIES: How Unique Are We? by William C. Burger. Amherst, NY: Prometheus Books, 2003. 345 pages. Hardcover; $29.00. ISBN: 1591020166.

Burger is curator emeritus in the Department of Botany at the Field Museum of Natural History in Chicago. He shows that it was only a series of amazing accidents that led to the evolution of life, humans, and science. However, this does not lead him to a belief in the supernatural, because that would be outside the realm of science. Most of the book is a restatement of existing material, but it is presented in an interesting and informative way that is accessible to the educated layperson.

The first part of the book talks about the critical parameters that must be satisfied by our sun, solar system, and planet in order for life to evolve. These parameters include such factors as the location of the earth's orbit in the solar system, the location of the solar system in the galaxy, the relative abundance of various chemical elements, and the gravity of earth. This material is similar to Ward and Brownlee's *Rare Earth*.

The next part of the book speculates about the origin of life and intelligence. Interestingly, the author considers life's origin to be almost inevitable, given the "just right" conditions for its beginning on earth. The author also discusses the evolution of human intelligence. He presents a long and somewhat convincing argument that intergroup warfare among various tribes of prehistoric humans is responsible for the rise of intelligence.

Burger next discusses the rise of science, attributing it to the Judeo-Christian world view and several other "accidents," including the fortuitous mastery of agriculture and metalworking. Human intelligence leveled off about 100,000 years ago, but humans have mastered science only in the last few hundred years, so the rise of science in an intelligent species is far from inevitable. Just as astronomical conditions have to be "just right" in order for life to evolve and survive, cultural conditions have to "just right" in order for intelligent beings to master science.

The author admits that "intelligent design" may be responsible for the existence of life and intelligence, but dismisses this speculation with the claim that such investigations are outside the realm of science. The book makes for an interesting read as it covers a wide variety of disciplines, from astronomy to biology to anthropology. It is well documented with over four hundred notes and references, but the conclusions are often speculative.

Reviewed by Dan Simon, Associate Professor of Electrical Engineering, Cleveland State University, Cleveland, OH 44115.

CREATION: From Nothing Until Now by W. B. Drees. New York: Routledge, 2002. 115 pages, index. Paperback; $15.95. ISBN: 0415256534.

At first glance, I was afraid that *Creation: From Nothing Until Now* was going to be another of the efforts that I think of as attempts to mythologize evolution. The poem "A Creation Story" that begins the book, and the pastiche-like adaptation of biblical phrases, prepared me for the worst. Upon thorough reading, though, there is much more here: a lucidly presented academically disciplined exposition, such as we might expect from one who holds the chair in philosophy of religion and ethics in the Department of Theology and Ethics at Leiden University, and serves as president of the European Society for the Study of Science and Theology. Each short chapter explores important issues about some aspect of the origin and evolution of things, setting forth what needs to be engaged whether one is developing a new sort of natural theology, as Drees seems to be doing ("a quest for faith in the context of the natural history of our universe"), or whether one is starting to explore the epic of evolution from a particular set of faith convictions.

Drees' approach to theology as fluid and open-ended may be discomforting to some conservative Christians. Yet it is good to be reminded that we engage in theology not just to develop a compendium of answers, but as a stimulus to asking questions. For example, the chapter on "Mystery" is very helpful in drawing distinctions between questions arising from gaps in the scientific knowledge, and questions that occur at the limits of doing science. And the chapter on "Purpose" explores the sense in which the evolutionary process is both purposeless and purposive; or as Francisco Ayala might put it, how chance and necessity can give rise to a natural teleology.

The questions posed here are consistent throughout with Drees' expressed opinion that "we need to think more modestly about Jesus." The basic Christian story for Drees is the parable of the good Samaritan. His use of the story is focal in his exposition of our calling to creative and responsible service. Yet I am not sure he ever engages the fact that Jesus did not answer the question "Who is my neighbor?" but rather advocated and upheld neighborly behavior in all circumstances. Nevertheless, the core story for most Christians is not a story Jesus told, but the story of his incarnation, passion, death and resurrection.

Without the incarnation, it is easier to downplay the significance of humankind. In fact, Drees uses the word "significant" in several places to speak of the relative unimportance of humanity when one's world view is informed by evolution. But is the significance of humanity diminished by evolution for the Christian? Not, I think, in the sense that we understand human praise of the Creator to be a sign of the longing for reunion and shalom of all creation, and in the sense that we consider God's embodiment in Christ to be the first fruit of that reunion. For Christians, the mystery of God lives in the tension between the humility and the cosmic significance of Jesus Christ.

It may be in that last chapter, "From Now On" that Drees is most in touch with what for me is a fundamental aspect of Christianity—an openness to the future. In discussing the value of "stewardship" in how we humans influence the world around us, Drees reminds us that both in Scripture and liturgy, past and future, memory and hope are intertwined. "Stewardship" may put undue emphasis on preserving, conserving, and looking backward, while ignoring the new thing that God is doing in our midst and the promise of the reign of God.

For those who are looking for an evolution-based apologetic for evangelical or conservative Christianity, this is not the book. For those who are seeking to integrate understandings of evolution and the God revealed in Jesus Christ, there is help here in asking the questions and pursuing a critical examination of facile answers.

Reviewed by Josephine Borgeson, Faith Network Project Coordinator, National Center for Science Education, Oakland, CA 94609.

FAITH, FORM AND TIME: What the Bible Teaches and Science Confirms About Creation and the Age of the Universe by Kurt P. Wise. Nashville, TN: Broadman and Holman, 2002. 288 pages. Paperback; $14.99. ISBN: 0805424628.

Wise is qualified to speak on this topic, having a Ph.D. in paleontology from Harvard. His thesis was supervised by Stephen J. Gould. The author espouses young-earth creation in six, twenty-four-hour days. He uses a scientific approach to interpret all of the data needed to explain the findings of paleontology that will conform to a young-earth interpretation of the Bible. The book is divided into five parts as follows: 1. God's Word on the Subject; 2. The Dating Game; 3. Creation Week; 4. From the Garden to the Grave; and 5. From Noah to the New Earth.

The author states emphatically that there is nothing new in this book. He claims that he deserves credit only for synthesizing the works of others. He uses an original format for this presentation. The first step to justifying a "young earth" creation is to assume the creation days in Genesis One all are six earth-rotation days. The second step to determine the creation date is to work through the biblical chronology of the genealogies of Genesis 5, 7, and 8. The process is repeated to get from Noah to Abraham since we know approximately when Abraham was born. All of this leads the author to conclude that the earth and the physical universe are only 6,000 years old. William H. Green in 1890 published an article in *Bibliotheca Sacra* that convinced biblical scholars that the genealogies in Genesis are not father-son relations in all cases. Wise is either unaware of this work or chose not to discuss it. Wise does not devote much space to consideration of the position of Bible-believing Christians in science who adhere to the old-age universe. He is sure his position is a minority one, but thinks the young-earth creation view will gain adherents in the future.

Wise avoids polemics in his presentation. He asserts that Noah's flood was universal over planet earth. Many ASA members assert that Noah's flood was local. They agree with Albertus Pieters, an Old Testament scholar, who comments that Gen. 7:19 which refers to the flood waters covering all the high mountains under the entire heavens means that the observers in Noah's area could see no mountains that were not covered. The verse has no reference to the Rocky Mountains or the Himalayas.

Wise is a talented writer, and given his assumptions, makes a strong case. The weakness of the book is that he does not devote enough space to the views of scientists who believe in an old universe. I would recommend this book to anyone who wants an excellent treatment on young-earth creationism.

Reviewed by O. C. Karkalits, McNeese State University, Lake Charles, LA 70605.

DARWIN'S PROOF: The Triumph of Religion over Science by Cornelius G. Hunter. Grand Rapids, MI: Brazos Press, 2003. 168 pages. Hardcover; $17.99. ISBN: 1587430568.

Two decades ago Ronald Burwell wrote in *JASA:*

> … if recent philosophy of science has taught us anything it has shown us that science does not exist in a vacuum. It is culture bound, it is theory bound, it is paradigm bound, and it is intrinsically united to a world view.[1]

Hunter's first forays into the Christianity/evolution field, *Darwin's God: Evolution and the Problem of Evil* (2001),[2] and the current volume surely follow Burwell's dictum. Hunter's major point is that "negative theology of the day" (the notion that God could not have created a cruel and imperfect world) led Darwin to a deistic world view colored by nineteenth century natural theology rather than the traditional Christian view of creation.

Darwin's Proof follows the same line: "Evolution is considered to be a fact because Darwinists believe they have disproven the alternative: divine creation … [and] … the paltry evidence is converted into unbeatable arguments when a particular religious filter is applied" (p. 80). Hunter's case is rooted in the failure of evolution to explain biological complexity and in the inadequacy of the evidence offered. Evolution fails on the grounds of self contradiction. Its claim as a naturalistic explanation is contradicted by the religion that provides its roots. Finally, for the Christian, it fails on the theological level. His solution for biological research—the intelligent design framework (ID)—claims to "make scientific predictions and provides a framework upon which to formulate subhypotheses and pursue further scientific investigation."

Chapters 2 and 3 detail the inability of mainstream evolution to explain the origin and role of DNA in the complex-interrelated mechanisms of nature. Hunter argues that Darwin, recognizing the thinness of his evidence, shifted the burden of proof from showing that evolution *could* create complexity to requiring a skeptic to prove that evolution *could not* produce a particular structure. Chapters 4 and 5 offer Hunter's take on the deficiencies of such evolutionary evidences provided by fossil remains, comparative anatomy, vestigal organs, molecular comparisons found in molecular clocks, protein sequences and genomic similarities. He accepts "small-scale" evolution but balks at any extrapolation to "large-scale" changes. Speculations about the origin of life are found wanting. He states: "The fact that evolutionists would make such a claim says more about their judgement than the state of scientific research" (p. 63).

Chapter 6 offers historical evidence that Darwin and his successors (Le Comte, Gould, Zimmer) use various forms of a non-Christian religious premise to conclude that a naturalistic model for the diversity of life is mandated. Chapter 7 considers the pre-Darwin paths of deism and natural theology and the roles of Joseph Butler, William Paley, David Hume and the Bridgewater Treatises in influencing the Victorian consciousness. For Hunter: "The theological argument against evolution is that its theological assertions fail St. Anselm's test" (p. 96).

Chapter 8 offers a biblical view of God, humanity, and the created order concluding with the good news of salvation. Chapter 9 takes into account humanity's misunderstanding of God's purposes in an appeal to the reader to be a "good student of God's Word." This includes recognizing that God did not make a world "optimal in a material sense"and the effects of the Fall. He asks: "Was it serendipity that creation just happened to be full of analogies to spiritual truths that are given in scripture?" (p. 114).

Chapters 10 and 11 deal with intelligent design theory (ID). The usual criticisms of ID are seen as stemming from the paradigm of perfection that Darwin and his successors advocated—leading to the distancing of God from creation and leaving science free to go about its business. Secularism in public life is a corollary result. The design perspective is seen as offering new research areas and predictions in biology presumably not appealing within the evolutionary paradigm. He suggests that design topology offers such an opportunity. Here the observed large differences in amino acid sequences capable of making the same protein are seen as necessary areas of investigation while evolutionists ignore the question assuming that the results are a function of random change. Hunter sees this ID strategy as extending the search for function to the cellular level. ID explains the marsupial-placental convergence in mammals "naturally" rather than resorting to evolutionary "just-so-stories."

This book will infuriate or delight readers depending where they stand on evolution. Unfortunately the author's "in your face" style, use of the "killer" quote, overly repetitive arguments, lack of theological nuance, thinness of evidence for Darwin's metaphysical views (which often changed) and unwillingness to seriously engage the thought of Christians who think otherwise, may turn off readers from considering the issues raised.

Notes

[1]Ronald J. Burwell, *JASA* 31 (December 1979): 199.
[2]Review *JASA* 54 (September 2002): 200.

Reviewed by John W. Haas, Jr., Emeritus Professor of Chemistry, Gordon College, Wenham, MA 01984.

PHILOSOPHY & THEOLOGY

GOD'S BOOK OF WORKS: The Nature and Theology of Nature by R. J. Berry. London, England: T&T Clark, 2003. 286 pages, index. Paperback; $29.95. ISBN: 0567089150.

In 1885, Lord Adam Gifford endowed a lecture series for "Promoting, Advancing, Teaching, and Diffusing the Study

of Natural Theology in the widest sense of the term." In 1997–1998, Berry presented a series of Gifford Lectures which served as the basis for this work. His ambitious aims are to examine religious faith(s) in the light of science, test whether science offers an accurate description of the human condition, investigate the relevance of religion today and develop an ethic for behavior "in a crowded and ill-treated world." The author sees himself as an evolutionary biologist and, while a geneticist by profession, has been involved with ecological aspects of biology since the early '70s.

Berry does an excellent job in the first three chapters of setting the current debate in its historical context by tracing the history of natural theology and the impact that Darwin's theory had on it. He believes that by the mid-1800s "the compatibility of evolution and Christian doctrine was gradually acknowledged 'among more educated Christians.'" Berry believes Lord Gifford would see the current attempt of fundamentalists to promote "scientific creationism" as an attempt to return to the pre-1543 era where "myth and pseudo-authority" ruled instead of "observation, test and considered learning."

In his discussion of the "Theology of DNA," Berry discusses the nature of "human-ness" and the responsibility that being in the image of God conveys on us. At this point Berry does very little to explain how and when this "image of God" became imposed on our ancestors and at what point the biblical Adam came to be. Later, in chapter eleven, Berry returns to this topic stating "a tentative hypothesis" that Adam was created in the body of a farmer around 10,000 years ago. He distinguishes, therefore, between *Homo sapiens* and *Homo divinus* in an attempt to rectify the apparent discrepancies between the Darwinian view of human origins and the biblical idea of a literal Adam.

In chapter five, Berry analyzes "Green Religion" examining a wide variety of religions and philosophies. His analysis of the strengths and weaknesses of these views is both accurate and fair, but he ultimately concludes that they are insufficient in their views of nature. He follows this with an analysis of "Green Science" examining the field of environmental science rather harshly, believing that the science of ecology does not offer much support for many of the assumptions of those in the environmental movement. However, he does believe that "the place where green religion meets green science is the test-bed of natural theology" and makes a strong case for the need to concentrate on the processes that create the patterns rather than the patterns themselves.

In "Running Out of World," Berry examines both the historical and current state of the planet, again taking more of a historical approach, and does pretty much the same in chapter eight where he examines the politics involved in dealing with nature. Chapter nine discusses the idea of stewardship as a biblical way for Christians to approach their dealings with God's creation. It is here, perhaps, that the author's familiarity with British aspects of the topic is most evident although it is present throughout the work.

There is much to recommend in this book with its excellent historical examination of the various aspects of the subject and its numerous quotes from other authorities. It is a wide-ranging work covering many issues important to arriving at a truly biblical view of nature and, with scriptural, subject, and name indices, it will make an excellent reference book. However, the author's strong belief in the process of evolution as the means by which God created the world frequently seems at odds with his conclusions regarding how and why nature, including *Homo divinus*, can teach us anything about God, which is the basic premise of the text. Nowhere is this more evident then in the chapter on "Awe and Wilderness" where he does an excellent job of showing how writers, from the Psalmist to modern environmentalists, speak of nature with true awe. However, he never truly answers his own question of where this sense of awe comes from. Ultimately, his attempt to mesh his view of modern science with his own view of Scripture and natural theology, in my mind, fails.

Reviewed by Scott S. Kinnes, Professor of Biology, Azusa Pacific University, Azusa, CA 91723.

POWER FAILURE: Christianity in the Culture of Technology by Albert Borgmann. Grand Rapids, MI: Brazos Press, 2003. 144 pages, index. Paperback; $14.99. ISBN: 1587430584.

Borgmann, a philosopher at the University of Montana, has written a unique book. His argument is that our culture is so influenced by technology that we are losing our former habits of communal celebration. However, he is not a Luddite. "We should neither try to demolish technology nor run away from it. We can restrain it and must redeem it" (p. 8). Nor is Borgmann the kind of philosopher that only other philosophers can understand.

In the first three chapters (part 1), Borgmann describes the current culture. He tells us more than we might have wanted to know about Cool Whip™ in the first chapter, "The Invisibility of Contemporary Culture." You read that right. Cool Whip™, that artificial substitute for whipped cream, is an example of how modern technological society has substituted the bland and artificial for the real. Borgmann challenges us to see the equivalent of Cool Whip™ in other products and aspects of our society. He describes our society as having a "device paradigm."

The third chapter, "Communities of Celebration," exceeds the combined length of the first two and the Introduction. Celebration, a central theme of the book, has become less of a communal event due to a technologically oriented culture. Commercialization, via television, has made celebration more remote. Although Borgmann does not mention the Super Bowl, there is probably no better example. He argues that without real celebrations where real participants do things when they are physically together, humanity is cheapened.

The second part is about the place of Christianity. Chapter four, "Contingency and Grace," is one of the reasons why a review of this book is relevant. Borgmann understands atheists Richard Dawkins, Daniel Dennett, and Stephen Weinberg well enough, and shows that they recognize contingency in the universe. He sees a connection between contingency and grace. People experience different kinds of grace which eventually determines the

"chances" in their lives. Living in a technology society, which claims to have answers to so many human needs, puts people at risk of not seeing, or even looking for, God's grace.

Borgmann also writes about how the device paradigm, contemporary technological culture, is marginalizing genuinely valuable and important parts of culture. For example, reading books is much less common. Finally, he calls us to genuine, face-to-face celebration, as Christians and as inhabitants of culture. Such celebration takes real work and real communication, but it produces a more Christian and humane society. This is a philosophy book that does not try to win an argument. It is philosophy in the sense of examining what it means to be human and what actions this meaning should promote.

Reviewed by Martin LaBar, Professor of Science, Southern Wesleyan University, Central, SC 29630.

Religion and Christian Faith

THE RESURRECTION OF THE SON OF GOD by N. T. Wright. Minneapolis: Fortress Press, 2003. 817 pages. Paperback; $39.00. ISBN: 080062681.

This is the third volume in a series by Wright entitled "Christian Origins and the Question of God." Wright, a much published author, is Bishop of Durham in England and SPCK Research Fellow. He has taught New Testament studies at Oxford, Cambridge, and McGill Universities.

Wright acknowledges that the book is long but observes that it could have been twice the length if he "had explored all the interesting-looking secondary roads that lead off this particular highway." His main point is that the resurrection of the body was denied by pagans but affirmed by many Jews and reaffirmed and redefined by early Christians. (Dan. 12:2–3 is the clearest Old Testament passage on a physical resurrection. Isaiah offers the earliest Old Testament reference to bodily life the other side of death.)

In the ancient classical world, physical resurrection was deemed impossible in reality and denied in myth. Pagans believed lots of things could happen to dead people but physical resurrection was not one of them. Wright believes that in the Hellenistic world, Homer functioned as its Old Testament and Plato as its New Testament. Neither affirmed belief in a physical resurrection. Why? Because the human body, with its infirmities and pains, was looked upon as a torture chamber, a prison, an unsuitable house for the soul. Death was to be welcomed because it liberated the soul from the body.

The ancient view of bodily resurrection explains why the Athenian philosophers stopped Paul when he preached the physical resurrection of Jesus. Wright summarized the view the Greeks held about a dead body: "… nobody in their right mind would want it or something like it back again." While the people of the ancient world believed in life after death, none believed in a physical resurrection.

Wright challenges what he perceives as the dominant paradigm for understanding Jesus' resurrection, namely, that the earliest Christians believed Jesus' resurrection was a spiritual but not physical one; that the gospel resurrection accounts are late inventions; and that Jewish resurrection belief was fuzzy. When early Christians spoke of Jesus being raised from the dead, they proclaimed something that was unique to Jesus. Christian belief in Jesus' deity did not require belief in his resurrection: "Divinization did not require resurrection; it regularly happened without it. It involved the soul, not the body."

Reading this book was somewhat of a challenge because of its unique (British) punctuation, long sentences, and the use of pronouns and antecedents. The deciphering of the footnotes' format requires special attention. However, the footnotes are well worth examining and contain some of Wright's wittiest quips. Wright pulls no punches when commenting on the words of other scholars with whom he disagrees. Wright leaves no doubt that he is firmly in the camp of those who revere the resurrection of Christ accounts as accurate.

Readers may profit from reading this book in a number of ways: they will learn from original sources what ancient documents, biblical and nonbiblical, say about bodily resurrection; they will explore how resurrection is used in a metaphorical and literal sense in both Bible Testaments; they will see the centrality of the resurrection in Paul's writings; and they will have their Christian faith and biblical understanding expanded. It informed my mind and stimulated my faith, and I highly recommend it.

Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.

ONE TRUE GOD: Historical Consequences of Monotheism by Rodney Stark. Princeton and Oxford: Princeton University Press, 2001. 319 pages. Hardcover; $24.95. ISBN: 069108923X.

The emergence of monotheistic worship in some unknown place more than three thousand years ago is, according to Stark, perhaps the aspect of human history that has had the single largest impact. Monotheism brings people together and, in its varying forms, drives them apart. Since all monotheisms are inherently intolerant, monotheism is of great interest sociologically.

Judaism is an ethnically based version, but Christianity with its universal appeal became the dominant religion of the Roman Empire. Islam moved beyond its origins to appeal to all races as well. In both these latter cases, the broad appeal was largely to the elite of society, rather than to the masses, according to Stark. Monotheism leads to mission: knowing the truth leads to wanting to spread it. Stark describes the history of monotheistic expansion and contrasts it with the patterns for other religions.

According to Stark, religious differences have been behind some of the most brutal conflicts in history. If there is only one possible view on any issue—that derived from the orthodox understanding of the revelation of the one true God—then intolerance can easily be justified. The book contains a description of conflicts between the various monotheistic faiths. Yet despite conflict, monotheistic faiths survive over long periods of time. And, in spite of

the historical pattern of conflict, peaceful coexistence is possible, but in the presence of religious pluralism so that there is no single dominant view that can exert force to protect its privileged position.

Stark claims that a scientific approach cannot prove or disprove the existence or nonexistence of gods, so the only scientific view is agnosticism. His sociological and historical analyses, though, are nonetheless stimulating and informative for those who do believe in the one true God.

Reviewed by David T. Barnard, University of Regina, Regina, Canada.

Social Science

THE IMAGINED WORLD MADE REAL: Towards a Natural Science of Culture by Henry Plotkin. New Brunswick, NJ: Rutgers University Press, 2002. 301 pages, index. Paperback; $22.00. ISBN: 081353268X.

The stated target audience is professionals and educated laypersons. The author, by and large, communicates science in layperson's terms, even when the subject matter is complex. Chapters are largely autonomous. Sections within chapters rarely exceed ten pages and the reader is frequently reminded of the relevance of the current detailed discussion to the bigger picture. The subject matter is complex and at times reading becomes tedious as too much space is devoted to tangential material. Some sentences (one with 66 words) require reading more than once. This book has seven wide-ranging chapters. Each chapter concludes with a short list of suggested readings.

Ultimately, evolutionary theory is seen as the bridge between the social sciences and biology. We are repeatedly informed: "There simply is no other possibility." Evolution which normally stores information as "gene frequencies in gene pools, evolved a kind of proxy information-gatherer in the brains of some animals. This is why intelligence is an adaptation."

Human culture might be an "extraordinary manifestation of human intelligence," but it is reduced to "imagination made real." Culture rests totally on psychological foundations with no nonmaterial causes. That there may be a discontinuity—an *imago dei*—separating humans and animals is never entertained. The details of culture are irrelevant. Even universal testimony to the reality of the supernatural world and human spirituality are dismissed without discussion. "To repeat, culture is awesomely complex. But it must be—it simply must be—within the scope of understanding of the natural sciences."

Within my own field of linguistics, I was disappointed to see Plotkin muddying the waters by using the term "protolanguage" to refer to the superficial similarity between ape and infant-human language. Given (and Plotkin accepts the linguistic evidence) that there is no relationship between animal communication and human language, it is scientifically irresponsible to use a technical-sounding term that equates the end point of one system with the starting point of the other.

Plotkin is a modern conquistador leading his followers to the ultimate El Dorado. He envisages a futuristic unified science in which culture will be reduced via an incredibly complex labyrinth of relationships between the social sciences, psychology, neuroscience and biology to explanatory causal mechanisms expressed in terms of chemistry and physics. His commitment is to a science that maintains that "life, including mental and cultural life, is no more than chemistry and physics."

The reader's arduous journey through this uncharted jungle is lightened by glimpses of familiar flora and fauna. Our guide is well informed and early days are filled with a plethora of interesting details of exotic species. However, as doubts grow about the existence of the fabled city, and of the adequacy of Plotkin's evolutionary compass to lead us in the right direction, one begins to panic at the prospect of endless tedious days of wandering, lost in the jungle.

The greatest weakness of the book is Plotkin's failure to mention other approaches at the macro level (though at other levels he readily accepts current debate) and for this reason the book fails to allow students to form their own opinions on the most crucial issue of all. No argument is stronger than its unstated presupposition. His assumption is that design by a Creator is not worth considering by "true" scientists. Hence, despite the author's erudition, the book may not be blazing a trail through Amazonia after all, but wandering around a boggy swamp.

Plotkin, professor of psychobiology at University College in London, has previously authored *Darwin Machines and the Nature of Knowledge* and *Evolution in Mind*.

Reviewed by Bryan Ezard, 8 Johnston Street, Goolwa, 5214, Australia.

THE NATURE AND LIMITS OF HUMAN UNDERSTANDING: The 2001 Gifford Lectures at the University of Glasgow by Anthony J. Sanford, ed. New York: T & T Clark, 2003. 259 pages. Hardcover; $85.00. ISBN: 0567089460. Paperback; $29.95. ISBN: 0567089479.

The editor claims this book is the first to "examine the nature of human understanding from the perspective of psychology (linguistics), biology (neural sciences), philosophy (metaphysics) and theology." The book's five contributors all have training and experience as professors.

The book is divided into five parts, each with two chapters. Part I by Phil Johnson-Laird focuses on human limitations in understanding natural language. The basic thesis is that "human understanding depends on the construction of mental models from perception, from imagination, and from the comprehension of language. The limits on human understanding arise from limits in these processes and from limits in 'working memory'— those components of the brain that enable individuals to hold in mind information whilst they think about it." Laird discusses two barriers to human understanding: (1) our limited ability to detect inconsistencies; and (2) our limited comprehension of the concept of cause.

In Part II, George Lakoff develops the theory of the embodied metaphorical mind based on new discoveries in neuroscience. His approach is reductionist in which he argues that "any concept at all must be neurally embod-

ied" because humans think with their physical brains. If the body shapes thought, then the idea of a soul is untenable, mathematics cannot be objectively true, God is not transcendent, etc. However, when it comes to human consciousness, Lakoff admits that there can be "no complete neural computational theory of consciousness."

In Part III, Michael Ruse examines the implication of evolutionary theory for the nature and limits of understanding. He explicitly addresses the question of how Darwinism may offer a basis for our understanding of ethics and ethical behavior. However, he concedes that the Darwinian position may have gaps. For example, the Darwinian cannot throw much light on some of the ultimate metaphysical questions, "specially those about ontology." (In fact, in a separate article published in *Science* 299 [2 March 2003], Ruse admits that Evolution could very well be a "secular religion.")

It is in Parts IV and V that we finally come to a positive discourse that supports the holistic, nonreductionistic view of human understanding, as one encounters in the Christian world view. Lynne Baker, in Part IV discusses how *scientism* underlies reductionism and neither our first-person knowledge (knowledge that a knower would express in a first-person sentence) nor our third-person understanding (knowledge that does not require that a knower have first-person perspective) can be reductionist.

Finally, Brian Hebblethwaite in Part V presents the importance of metaphysics and theology in human understanding and discusses their respective limits. He defines theology as metaphysics plus revelation, and argues cogently that metaphysical and theological knowledge enriches our conceptions by dealing with phenomena where science appears mute (such as art, beauty, morality, the good, etc.). After surveying a number of metaphysical and theological systems, Hebblethwaite concludes that Christianity makes "better sense of everything" in human understanding when placed side-by-side with all other world views, including the knotty problem of theodicy.

Overall, the lecture series presents a reasonable balance between the empirical-reductionist views of human understanding (e.g., Lakoff) and the philosophical-theological perspectives by Baker and Hebblethwaite, with Ruse taking an intermediate, *fence-riding* position.

The ASA reader interested in the rapidly evolving field of cognitive science, especially as it pertains to the neural-computational models, will find these lectures challenging, informative, and very thought provoking.

Reviewed by Kenell J. Touryan, Chief Technology Analyst at the National Renewable Energy Laboratory, Golden, CO 80401. ✦

Letters

The Flood

I am responding to Carol Hill's invitation (*PSCF* letters, September 2003) to comment on her suggestion that people conceived of "the world" more narrowly in Genesis 6–9 (the Flood) than in Genesis 10 (the Table of Nations). My comment is that, whatever the merits of this suggestion, it does not support her thesis that the flood described in Genesis is the one that took place in Mesopotamia in *ca*. 2900 BC. The people who lived in Mesopotamia at this time (the Sumerians) knew that the world extended beyond this region. Trade routes by the third millennium stretched all over the Middle East (see, for example, J. D. Hawkins, ed., *Trade in the Ancient Near East* [London: British School of Archaeology in Iraq, 1977]).

A possible solution is to take *ha'arets* in Genesis 6–9 to mean "the land." However, when the word has this sense elsewhere in Genesis, the name of the land is usually given ("the land of X"). Genesis does not refer to Mesopotamia ("the land of *Shin'ar*") until after the Flood (10:10, 11:2).

I discuss the difficult problem of identifying Noah's flood in my book, *Big Bang, Small Voice: Reconciling Genesis and Modern Science* (Latheronwheel, Caithness, Scotland: Whittles, 1999). I can supply copies of this on request.

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On the Structure of Genesis

The December 2003 issue of *PSCF* had several excellent articles that I deeply appreciated. Especially noteworthy were Carol Hill's article "Making Sense of the Numbers in Genesis" (pp. 239–51) and Dick Fischer's "Young-Earth Creationism: A Literal Mistake" (pp. 222–31). I want to make a few comments that are pertinent to both articles.

Among my books that I highly prize in my library is P. J. Wiseman's *Ancient Records and the Structure of Genesis*.[1] Unfortunately, this book is out of print but it contains some timely information that I want to share. Wiseman (1888–1948), though not a trained researcher himself, spent time in the Middle East in the 1920s and early 1930s and took interest in the archeological work of Sir Leonard Wooley and Professor S. H. Langdon. In short, this is what he relates in his book.

From the thousands of clay tablets found in Mesopotamia, their form was: (1) a title, (2) the body of the text, and (3) ending in a colophon that generally contained the name of the owner or scribe and some attempt at dating.

In Genesis, the colophon is indicated by the recurring phrase, "These are the generations (*toledah*) of" … the Hebrew phrase meaning "history, or family histories, or genealogies."

Some of the conclusions on Genesis were: (1) it was originally written on stone or clay tablets in the ancient script of the time; (2) it was written by the patriarchs who were intimately concerned with the events related, and whose names are clearly stated; (3) Moses was the compiler, possible translator, and editor of the book, as we now have it; and (4) Moses plainly directs attention to the source of his information.

It becomes obvious (the assigning of chapters to the Bible in the thirteenth century) that Genesis was mis-