

# Book Reviews



## ANTHROPOLOGY & ARCHEOLOGY

**IN THE BLINK OF AN EYE** by Andrew Parker. Cambridge, MA: Perseus Publishing, 2003. 299 pages. Paperback; \$27.50. ISBN: 0738206075.

The title only hints at the subject contained in the book, which should appeal to those of us interested in the Cambrian explosion. Parker, a zoologist at Oxford University, was named one of the *London Times* three most important young scientists because of the views outlined here. In *the Blink of an Eye* explains the Cambrian explosion as the result of the evolution of the first image forming eye. Having extensively researched this area for my 2001 PSCF article, I find this the only theory that seems to make sense.

With only a short space to tell the story, one must abridge the long chain of reasoning through which Parker takes his reader. But Parker's basic observation which set him thinking about the Cambrian explosion came from a study of isopods off of Australia. In the shallow waters, large numbers of species flourished. But as one went into deeper, darker waters, the number of species diminished and the size of the isopods grew with depth. In the deepest waters is found *Bathynomus* a giant isopod half a meter long. Originally the researchers expected that there would be more species found in these kilometer deep waters. But there weren't. All isopods deeper than 200 meters looked alike. And more interesting was the discovery that isopods from these depths from India and Mexico were almost identical with the Australian form. This particular isopod lineage began 160 million years ago, giving rise to hundreds of species in the shallow waters, but few in the dark. Parker backs this up with studies of life in caves. Without light, life has fewer ecological niches to fill; no coloration or camouflage mechanisms are required leading to fewer species. In the dark, life takes on a boring, unchanging existence.

Parker then looks for evidence of the earliest eyes. Evidence for eyes was lacking in the Precambrian creatures, but by the time of the Burgess fauna 515 MYR ago it was common for arthropods to have eyes. Amazingly, the earliest evidence of coloration in the form of diffraction grating surfaces on Burgess animals appears as well. The 525 myr old Chinese Chengjiang arthropods and the 540 MYR Moroccan arthropod *Fallotaspis* display the earliest eyes. Parker proposes that the first phylum to develop image-forming eyes were the arthropods, and it occurred somewhere between 544 and 543 MYR ago, the Cambrian-Precambrian boundary.

The evolution of the eye opened up the ecological niche of predation. The first evidence of predation was 550 MYR ago. Prior to this time animals found food by blindly bumping into it as they randomly crawled around. Now, animals could see their prey and the prey's behavior. This drove the evolution of hard shells, coloration, camouflage

and defensive spines which become so common in the Cambrian.

Animal phyla existed in soft-bodied form prior to the explosion and the explosion is actually only the evolution of the outward body plan, not the internal plan. Parker documents the existence of proto-trilobites found in the Ediacaran Hills of Australia. Others have documented the existence of mollusks and other phyla living in the Precambrian.

Change was slow prior to the first eye. Animals changed at the Cambrian-Precambrian boundary or they would die. Vision opened up new niches and allowed fierce predators to roam the seas.

Hopefully, some of the errors in my uncorrected proof copy of this book will be fixed before final publication. There is one absolutely abysmal paragraph in which Parker claims that the chalk cliffs of Dover are made of seed-shrimp (they are made of coccoliths) and that seed-shrimp are good indicators of oil with all oil companies hiring ostracod specialists. This is not quite true. Plankton is much more useful. The book errs in calling the animal which was the first victim of predation *Claudina* instead of *Cloudina*. It was named in honor of Preston Cloud. Other than these deviations, the book is a very, very important contribution to the understanding of the Cambrian explosion. From now on, those who discuss the explosion must deal with Parker's ideas.

Reviewed by Glenn R. Morton, 10131 Cairn Meadows Dr., Spring, TX 77379.



## ETHICS

**ANIMALS: Their Past and Future** by G. H. Pember. Elkton, MD: Pneuma Books, 2003. 77 pages. Hardcover; \$14.95. ISBN: 0972513906.

George Hawkins Pember (1837-1910) is thought to be "one of the foremost theologians of prophetic study in the Victorian age" and this book "the classic theological treatise on animal rights." This book is a reprint of Pember's undated 1800s pamphlet. This compact book manages to include a preface, notes, bibliography, biography, Internet resources, a few sketches, and an index. This leaves forty-seven pages for the text's appeal to the Bible as authority on animal treatment.

Pember says that life improved for people and animals in the nineteenth century. However, apathy toward the plight of animals prevailed. His one goal in this treatise is to see whether the Bible casts light on how animals should be treated.

These are his conclusions: (1) animals, like people, are under God's curse; (2) future animals will not eat each other and will speak; (3) fish and snakes will be absent from the renewed earth; (4) future redemption of creation includes animals as well as people; and (5) humanity should show "tenderest consideration" for animals.

This is not a preachy book, and it excludes discussion of many contemporary animal rights issues. However,

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research on the Internet addresses included provides commentary on the present situation. This book can be read in less than one hour, and it provides valuable insight into what the Bible says about the treatment and future of animals.

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

**REMEMBERING JESUS: Christian Community, Scripture, and the Moral Life** by Allen Verhey. Grand Rapids, MI: Eerdmans, 2002. xii + 526 pages, indexes. Hardcover; \$35.00. ISBN: 0802803237.

Verhey teaches religion at Hope College. The book's five parts (introduction, medical ethics, sex and gender, economics, and political ethic) seek to apply the Bible and early church teachings to contemporary ethical issues. Verhey thinks Christian ethics should be based, not on moral codes, but on the discernment of the Christian community based on the Bible's ethical teaching in stories.

Verhey emphasizes that in terminal illness the patient's suffering should not be extended. He deplores the neglect of the patient's welfare caused by some advanced medical technology. He might have added that the problem involved in terminal illness is often caused by the patient's family leaving decisions to doctors. Also, patients who participate in experimental treatments may benefit future patients.

Verhey takes the egalitarian view about gender role. He praises Atwood's *The Handmaid's Tale* to disparage those who take the opposite view. He notes that Jesus said nothing about homosexuality and that the phenomenon of sexual orientation was not known to biblical writers. Jesus' silence regarding homosexuality may have resulted because he lived in a Judean culture where homosexuality was not a problem.

Verhey is ambivalent about capitalism. He criticizes classical capitalism, but realizes that economic policy cannot be decided by pure ideology. He emphasizes that Christians must remember the poor because Jesus cared about them. One wishes that Verhey emphasized more the responsibilities of the poor to work and of the public to provide means for the poor to be educated and trained. The example of Asian economic success provides a lesson about the importance of education. The solution for the Third World totalitarian societies may not reside only in liberation theology, but also in a Puritan work ethic.

Verhey emphasizes the concept of theocracy in the political arena and rejects pacifism. He interprets theocracy different from Calvin's practice and identifies it with the lordship of Christ in all areas of life. He claims that Jesus shifted emphasis from rules for conduct to the formation of character. One would differ here because Jesus said that he completed the law, so what Jesus really did was a shift from ceremonial to ethical law. Verhey applies the concept of theocracy in health policy and promotes universal access to health care.

Overall Verhey stands between liberal and conservative evangelicals. He blames the Enlightenment, instead of liberal theology, for moral deterioration in American soci-

ety. He accepts the conclusions of biblical higher criticism. He borders on placing community above the Scriptures and gives general guidelines without providing detailed deliberations. For example, he omits dealing with hard questions such as: when should medical treatment be withheld from the terminally ill, to what extent should health care be provided, and to what degree can the welfare system be limited without neglecting the needy? Despite these reservations, Verhey's book can be recommended as exploring a Christian position on contemporary ethical issues.

*Reviewed by T. Timothy Chen, Southwestern Baptist Theological Seminary, Fort Worth, TX 76122.*



## FAITH & SCIENCE

**HABITS OF THE MIND: Intellectual Life as a Christian Calling** by James W. Sire. Downers Grove, IL: IV Press, 2000. 256 pages, index. Paperback; \$14.99. ISBN: 0830322739.

Sire, former editor of Inter-Varsity Press, is also the author of several books. For Sire fans, it is always good news that another book from his pen is now in print. They will not be disappointed in this book, for it lives up to what we have come to expect. I am still amazed at the sheer magnitude of the number of books he has read. The endnotes number thirty pages of references in small print! Sire writes: "The primary goal in this book is to encourage you to think more and better than you did before reading it, to strive toward the perfection of the intellect: to enjoy the proper habits of the mind" (p. 11). Sire states also that "this book is about the integral value of the intellectual life."

Sire quotes Richard Hofstadter who lists the following qualities that characterize intellectual life: fresh observations, free speculation, creative novelty, radical criticism, generalizing power and disinterested intelligence. Sire then adds this observation: "A Christian intellectual is one who is all of the above to the glory of God."

In chapter two, Sire writes that John Henry Newman (1801-1890) has become a model as a Christian intellectual. He explains that the experience of reading two of Newman's works, *Apologia Pro Vita Sua* and *The Idea of a University*, while a graduate student at the University of Missouri were major factors in his selection. I would have selected C. S. Lewis as my model for a Christian intellectual. My reason is that I believe Lewis's world view is more biblical than Newman's, and his writings were at least as excellent as were Newman's. However, I have read more of Lewis's books than Newman's. Sire himself admonishes us (pp. 166-7) to seek out the world view of the author of any book we read. I have not read all of Newman's writings, but from the extensive quotations from Newman that are cited here, I deduce the following about Newman's view of the world.

Since Newman lived in the Victorian era, he apparently adopted the utopian, optimistic world view of that era. Key literary figures of that era (besides Newman) were Robert Browning and Alfred Lord Tennyson. Browning believed in the perfectibility of humankind. He proclaimed exuberantly, "God's in his heaven,—all's right

with the world." Tennyson believed that one day soon the "battle flags" of the nations would be furled in "the parliament of man, the federation of the world." Alas for such dreams: the next century had two world wars and the holocaust! Newman may be excused to a degree if his world view was more optimistic than ours is today since he hopes that the human intellect can be "perfected." In spite of Newman's optimistic view of humankind, I believe Sire is justified in citing Newman as a great Christian intellectual.

The last four chapters of this book are the best of the lot in my opinion. I found much food for thought in chapter 8, entitled "Thinking by Reading." I was excited to see the comparison of monastic reading and scholastic thinking. That was a new insight for me. Chapter 9 on "Jesus, the Reasoner" is worth the price of the book. His explanation that "Jesus was the smartest man who ever lived" is outstanding. There is a real message for contemporary Christian intellectuals in chapter 10 entitled "The Responsibility of the Christian Intellectual."

Sire is distressed (and so am I) that so few Christian intellectuals in the late twentieth century have put aside their fear that their career advancement will be terminated if they speak out for truth. I know some Christian researchers in the life sciences who do not accept Darwinian evolution as scientific, but will not write such a paper for fear that it will not be accepted in the peer review stage. After all, promotions and tenure depend on publications! Sire mentions C. S. Lewis, Nicholas Wolterstorff, Alvin Plantinga and George Marsden who are not afraid to speak the truth as they see it from a Christian world view. To this list I would add Phillip Johnson, Michael Behe and William Dembski. One of the great delights to the reader of this book are the hundreds of "pithy" quotations that Sire has interspersed within the text. They stand out as bright jewels in the tapestry of this thought-provoking book. I heartily recommend the book to anyone who wants to be classified as "Christian Intellectual."

*Reviewed by O. C. Karkalits, College of Engineering and Technology, McNeese State University, Lake Charles, LA 70609.*

**TOWARD A CHRISTIAN VIEW OF A SCIENTIFIC WORLD: Fifteen Topics for Study** by George L. Murphy. Lima, OH: CSS Publishing Company, Inc., 2001. 151 pages. Paperback; \$13.95. ISBN: 0788018078.

Murphy, an ASA Fellow, has published many articles but few books in the area of science and religion. For this reason, he may not be familiar to ASA members who are not versed in the many journals related to "science-and-religion," unless they happen to follow the ASA E-mail list. When I still kept up with the discussions a few years ago, Murphy was a regular, cogent and patient contributor, and his erudition and easy writing style are apparent in this book.

This book is probably the best introduction to the intersection of science with Christianity for the average layperson. It is the first text I have seen that is aimed at the general Christian public and suitable for readers with a high-school education or less. The other available texts, with the possible exception of Nancy Murphey's *Reconcil-*

*ing Theology and Science*, are aimed at college students or the college-educated.

As a Lutheran pastor who has for some years been associated with an Episcopal parish in Columbus, OH, Murphy understands the questions that congregations may have, and his book is designed to explore them in the context of a small study group. As an instructor for several years at Trinity Theological Seminary, he has theological depth and sophistication. As a theoretical physicist who still publishes an occasional paper in the refereed literature, he has first-hand experience with how science works.

The thing I particularly like about Murphy is that he does not practice the bloodless "natural theology" of so many others in "science-and-religion" or even in "science-and-Christianity." Instead he bases his treatment firmly within the Christian faith and Luther's theology of the Cross. He understands that nature does not prove the existence or teach the precise nature of God. But he thinks nature can help us understand and interpret what we know of God from elsewhere. This book explores how nature can do so.

Murphy's book is firmly based in Scripture. Whenever God's nature or role is considered, the discussion is first grounded in the Bible. Following that grounding, non-scriptural considerations are introduced. Coverage is thorough and well-ordered. It progresses from the questions most commonly asked, through how we know about God and about nature, to consideration of the Church's mission in a scientific age. Along the way, Murphy touches on topics from the conventional ("How to Read the Bible") to the possibly impractical ("Angels, Aliens and AI"), all in a spirit of firmly Christian inquiry and a luminous assurance that knowledge about the world can only confirm our faith in Christ.

My only complaint is that the book has not been thoroughly edited for errors of fact. There is a serious error on page 84, in which the electrostatic force between protons is said to be attractive. The sense of the passage makes clear that this is a typographical or editorial error, but it nevertheless makes me apprehensive about the possibility of garbling in areas with which I am not so intimately familiar. I also had some problems with Murphy's versions of the "collapse of the wave function" and of the Many-Worlds Interpretation of quantum mechanics.

In spite of these reservations, I wholeheartedly recommend this book to ASA members and to church study groups of all denominations.

*Reviewed by Daniel J. Berger, Professor of Chemistry, Bluffton College, Bluffton, OH 45817.*

**SCIENCE AND THE SEARCH FOR GOD** by Gary Kowalski. New York: Lantern Books, 2003. 186 pages, bibliography. Paperback; \$15.00. ISBN: 15905600450.

Kowalski is a Unitarian minister in Burlington, VT. This book is based on a class he developed for his congregation on "Topics in Science and Religion." It includes ten pages of discussion questions at the end of the text. Other books written by Kowalski include *The Souls of Animals, Green*



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*Mountain Spring and Other Leaps of Faith, and The Bible according to Noah: Theology as if Animals Mattered.*

From reading this book, I assume that Kowalski does not accept the Bible or the God of the Bible. He describes his belief as naturalistic theology and states: "The ancient myths of the Hebrews and the Greeks are indeed lovely and suggestive of many profound insights but not literally true ..." He calls for a new creation epic that "provides a unified account of the natural world, without reference to any other supernatural domains."

He asserts that the creator is not separate from the creation and that the universe is wholly material. Kowalski cannot accept the God of the Bible because this God leaves no room for freedom. Rather, he accepts the process concept of God and prefers process thought because then his alternatives are not limited.

This book has eleven chapters with titles like "Tell Me Why" (religion should never presume to contradict the findings of physics, chemistry and geology, and who can say what happens when we die), "Star Dust" (the religion of the next millennium will find its inspiration, not in the domain of the supernatural, but rather in oneness with the natural world), and "Gaia and the Great Mother" (life is a property, not of molecules, genes, or even individual organisms, but of whole planetary systems).

Kowalski's purpose in this book is apparently to argue that the results of science make it impossible for educated and intelligent people to believe in a supernatural God, who is separate from creation. He is supportive of the Gaia hypothesis as a scientific theory. "One day people will know the earth as holy and all creatures sacred. The creative power that enlivens our universe will then be as close and accessible as a mother to her child." Kowalski is prone to making unsupported statements, e.g., "design does not necessarily imply a designer," or "God is that loving whole of which you and I and others in the cosmic conversation are active parts and partners," or "we are star dust, deeply and forever related to a beautiful and ever-changing cosmos." I can find nothing in this book to recommend it to ASA members.

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**THE ILLUSION OF TIME: Seeing Scripture through Science** by William R. Nesbitt, Jr. San Diego, CA: Black Forest Press, 2002. 178 pages, index. Paperback; \$13.95. ISBN: 1582750750.

The book has fourteen chapters, an introduction, bibliography, a glossary of terms, and a number of black-and-white illustrations. The early chapters of the book give a very conversational description of multidimensional physics. This physics is used to explain how God can view all of time and can be in all places at all times. Nesbitt, an ASA member, offers scriptural references of appearances of angels and other beings that he says are consistent with hyper dimensional theory. All of this is given as evidence that a multidimensional theory of physics is consistent with a biblical record and confirmation of a Christian faith.

The later chapters rely more on Nesbitt's extensive experience as a military doctor and other personal life stories to give real life illustrations of his evangelical message.

Time is an illusion says Nesbitt. Creation was laid down from a hyper dimensional perspective. This perspective sees all of time as now, as a painter may see an entire canvas. It is only sin that limits us to seeing only the present due to the loss of our ability to perceive the higher dimensions. The present can be described as one looking through a narrow slit as it passes across the canvas, changing the view and giving an illusion of time.

The strength of this book lies in its easy reading, popular periodical style. Even children will be able to follow the story line. And because the story sparkles with personal tidbits, the story never becomes dull. Nesbitt is a great storyteller who conveys not only the Christian message of salvation but much general wisdom as well.

The strength of the book might also be seen as a weakness. There is nothing in Nesbitt's book that is not more thoroughly described in the books of Hugh Ross and Gerald Schroeder, both of whom are quoted by Nesbitt. This book would be a useful resource for anyone interested in an introductory perspective to multidimensional physics.

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**REBUILDING THE MATRIX: Science and Faith in the 21st Century** by Denis Alexander. Grand Rapids, MI: Zondervan, 2003. 473 pages, notes, index. Hardcover; \$29.99. ISBN: 0310250188.

Sometimes I wish I were British. In contrast to the low wheat-to-chaff ratio for American books on science and faith, the UK seems to produce a disproportionate number of well-reasoned books from a sound Christian perspective, such as those by John Polkinghorne and David Wilkinson. To this list we can add molecular biologist Denis Alexander, whose *Rebuilding the Matrix* is being distributed in the US after publication in England in 2001.

An early chapter examines the ways in which an unfounded idea can become widely accepted. This sets the stage for the majority of the book, which is devoted to refuting two related paradigms about science and faith that many today take for granted.

The first false idea is the "warfare" model of the history of science and Christianity, in which science marches toward truth, opposed at every step by stubborn believers trying to keep the world in darkness. Alexander exposes the origins of the warfare myth, and shows that science and Christianity have (with exceptions) historically coexisted in harmony. He also argues that the Christian view of nature as contingent on its Creator greatly aided the development of science. While I was generally aware of these points, they were made so well and so thoroughly that I gained a deeper appreciation for how utterly wrong the warfare model is.

Alexander then moves to the present, where many people assume that science and faith can no longer coexist, largely due to the theory of evolution. The material will be

familiar to many ASA readers, but it is presented well. Science and theology are viewed as complementary ways of knowing, each taking a "critical realist" approach. It is argued that early Genesis should be read as a theological document in its historical context, rather than being twisted into a scientific text. Abuse of the theory of evolution for unscientific ends, like social Darwinism and the promotion of atheism, is denounced. It is pointed out that it is not only atheists who are guilty of erroneously attributing God-excluding metaphysical meaning to evolution, but also Christians whose "God of the gaps" philosophy compels them to oppose the science. Evolution is compared to a ship, with barnacles corresponding to the metaphysical baggage both "sides" have attached to it. Stripped of the barnacles, the ship can steam ahead without threatening our faith.

Additional chapters critique ideas of Michael Ruse on the evolution of morality (an interesting choice of opponent, since Ruse's recent *Can a Darwinian be a Christian?* has many points of agreement with *Rebuilding the Matrix*), examine (and cautiously endorse) anthropic arguments for theism, and criticize David Hume's circular argument against miracles. A final chapter discusses how theism can provide a matrix not only for making sense of the cosmos and human experience, but also for channeling the power of science in worthwhile directions.

I recommend *Rebuilding the Matrix* for anybody, believer or not, interested in the relationship between science and faith both in history and in the present. Even though it is well-written, it is not light reading. But readers willing to invest some thought and effort will be rewarded.

My only major criticism may reflect the book's British origin. While the flaws of the "natural theology" most closely associated with Paley are discussed, there is no mention of Paley's (mostly American) successors who arose during the 1990s. Many of the author's wise observations (like noting that many Christians make the same category mistake as Richard Dawkins in viewing creation and evolution as rival explanations) could be applied to the "Intelligent Design" movement, but the only Christians criticized for such errors are those of the young-earth variety. As good as *Rebuilding the Matrix* is, it is rendered less useful for American readers by its neglect of a movement that, at least on this side of the Atlantic, has become a major force for needless warfare between science and Christianity in the twenty-first century.

*Reviewed by Allan H. Harvey, 1575 Bradley Dr., Boulder, CO 80305.*



## GENERAL SCIENCE

**DIGITAL SOUL: Intelligent Machines and Human Values** by Thomas M. Georges. Boulder: Westview, 2003. 285 pages. Hardcover; \$26.00. ISBN: 0813340578.

Georges is interested in problems of the relationship between machines and humans and in the nature of such a relationship for the future of humanity. The philosophical stage is set by the statement that the distinction between artificial and real intelligence is "merely a linguistic trap"

(p. 5). There is no real difference between humans and machines because humans *are* machines. There is no soul, no inner life, no emotions, no consciousness, no free will; or, at best, these are just names for certain physical attributes or processes and references to them only demonstrate the level of our ignorance about physico-biological mechanisms to which they are reducible.

If humans are conscious, so are machines. Georges sees consciousness not as a thing, but as a process (p. 77), not quite consistently with the view that consciousness is information, that is, "the way things are arranged" (p. 96). With such a definition, everything may be deemed conscious, and the author does not shirk from such a consequence. People, animals, and machines "all need some degree of self-awareness to survive" (p. 84). In computers, self-understanding is manifested by printing an error message (pp. 83-4, 92) and "even a book with a table of contents might qualify as self-aware in the crudest sense" (p. 83). Crudest sense, indeed.

For the author, the meaning of life is to "survive and reproduce" (p. 155) and because natural selection wants us to be "genetically prolific," it "favors societies that create moral and ethical structures that work in the competitive environment in which they must function" (p. 126). However, such a vision of social Darwinism does not sit well with the author, and he wants humans to go against such evolutionary tendencies and take charge of the development of society and its morality. In his view, we should replace existing moral values by "new moral codes based on reason" (p. 133) and the author is specific about one rule presumably based on reason.

The rule states that the blame for misdeeds should not be placed in individual responsibility (p. 133). It is the genetic and social environment that is at fault (p. 134). "If punishment is not appropriate for a machine, is it appropriate for humans, if we are merely 'soft' machines?" (pp. 147-8), he asks rhetorically. And so, humans, like machines, can be repaired. But is lobotomy as a fixing procedure so different from rewiring the brain of a criminal, advocated by the author (p. 206)? "What needs to be changed is the environment, not some mythical internal attitude" (p. 201). One just needs to rationally design "suitable environmental controls" which is possible only if we "abandon our cherished 'values' of freedom and dignity altogether" (p. 202). Why does the author find prisons as the means of such behavioral engineering repugnant if they serve so well the purpose of abandoning our cherished values of freedom? This rational approach has been tried already in the former USSR based on the Marxist doctrine of historical materialism that social and economic conditions exercise an alienating influence on people, and change must concentrate on these conditions.

Georges embraces Wooldridge's statement that "men who know they are machines should be able to bring a higher degree of objectivity to bear on their problems" (p. 208). The more machine-like our behavior is, the more rational it becomes. And yet, he flatly contradicts himself by stating that "the greatest threat to our dignity and our humanity will not come from machines that act like people, but from people who act like machines" (p. 217). The author wants to have it both ways: naturalist reductionism, on the one hand, and compassion and fair treatment of people, on the other. However, human treatment

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simply does not square well with reducing people to the level of machines and to seeing survival and reproduction as the meaning of life. Why be human if this undermines being genetically prolific? Why have any qualms about anything if the excuse, "my genes made me do it," is "technically correct" (p. 206)?

The case for a materialist view of man made by Georges is thus self-contradictory and unconvincing. The book is more a doctrinaire treatise than a carefully thought-out case arguing for a point. His home-spun psychology is a far cry from what can be found in other books written by authors who try to explain the phenomenon of humans in physical and biological terms (e.g., Pylyshyn, Searle, Dennett, Pinker).

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**IN OUR IMAGE: Artificial Intelligence and the Human Spirit** by Noreen L. Herzfeld. Minneapolis: Fortress Press, 2002. 135 pages. Paperback; \$16.00. ISBN: 0800634764.

In this book, the author is interested in uncovering the roots of our fascination with artificial intelligence (AI). The problem is an important one because this fascination tells us more about ourselves than about the potential of computers. Herzfeld begins her investigation by presenting some views on the image of God (chap. 2). She presents the substantive approach (the image of God is an attribute of the human being, such as rationality), functional approach (the image of God is a title ascribed to humans on account of what they do, e.g., exercise dominion), and relational approach (humans are images of God because of their genuine relationship with God and with one another). She then finds counterparts of these three approaches in AI (chap. 3).

Treating an intelligent system as a physical symbol system is a substantive view of intelligence as an ability of symbol processing, a traditional view of AI much criticized by Dreyfus, Searle, and others. The functional approach is visible in the pragmatic view of AI as a set of workable techniques that can be usefully applied in some domains. Herzfeld sees the relational view as being embodied in the Turing test. Because such a test (strengthened by Harnad to the total Turing test) requires a measure of interaction, if only verbal, between an AI system and a human, the interaction may be viewed as an indispensable component of intelligence. Herzfeld finds the third approach most compelling, which she illustrates with the vision of AI beings presented in science fiction movies (chap. 4). She states: "We seek artificial intelligence for its relational potential rather than merely its rational or functional potentials" (p. 66). This gives priority to the moral dimension of humans and all beings that we would like to treat on a par with humans. Rational dimension is a tool with which moral dimension realizes its goals. As Herzfeld puts it: "It may well be that intelligence is not the most important aspect of human nature" (p. 94).

Why are we interested in AI? In chap. 5, the author lists some reasons. The first reason is a dream of immortality, accomplished by being downloaded into a computer as envisioned, e.g., by Rucker in his *Software*. Herzfeld is cor-

rect in stating that this cybernetic dream is incompatible with Christian eschatology. When she says that this is "the dream of a few highly educated North American white men" (p. 75), she is correct in that it is a view of an intellectual minority; but the qualification that they are just white men is belied by her own quotation from Nicole Steiger who pontificates about cyberspace as paradise (p. 72). Herzfeld fares better with the second reason of our interest in AI, which is a need for machines that act independently, presumably in dangerous environments. But it seems that, as of now, the military is most interested in this type of devices. The third reason is the desire to create an entity with which we may relate.

It appears that the first reason is somewhat fanciful, and the second reason is utilitarian and not necessarily misguided. The third reason, however, is not acceptable, at least from a Christian perspective, and Herzfeld discusses this problem in the closing chapter. She concludes with statements that human-computer interaction cannot be a substitute for human-human interaction and certainly not for God-human relationship.

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## HISTORY OF SCIENCE

**THE NEW SCIENCE AND JESUIT SCIENCE: Seventeenth Century Perspectives** by Mordechai Feingold, ed. Boston: Kluwer Academic Publishers, 2003. 270 pages, index. Hardcover; \$113.00. ISBN: 1402008481.

**JESUIT SCIENCE AND THE REPUBLIC OF LETTERS** by Mordechai Feingold, ed. Cambridge, MA: The MIT Press, 2003. Hardcover; \$50.00. ISBN: 0262062348.

Two recent and notable series for scholarship in the history and philosophy of science and technology are ideal forums to take up the long neglected issue at the core of these volumes of essays. Accusations commencing with Galileo and his peers through caustic remarks by Descartes, the distinguished English historian Macauley and beyond, coupled with aspersions from many other prominent scientists, thinkers, and historians, link the early Jesuits (founded in 1540) with the active suppression of innovative ideas in the emerging Scientific Revolution. As is often the case, the truth turns out to be much more complex and interesting, even if it means the inevitable death of prejudice and ill-founded "facts" and the adoption of a more carefully nuanced understanding of the complex relationships that can exist among science, scholarship, inquiry, and religion.

Six essays in the Kluwer volume and another ten in the MIT book seek to reassess in some detail selected aspects of the received view. Contributors hail from a wide range of American and European universities including Stanford, VA Tech, Nijmegen, Catholic University of America, Padua, Valencia, and Indiana as well as the Medici Archives. The authors accept as credible the broad outlines concerning the early Jesuits including their initial focus on itinerant ministry and their shift within two decades to teaching as the principal vehicle for reaching



souls. The Jesuit instructional system emphasized the humanist learning of the ancient Greeks and Romans and even their harshest critics admitted that they admirably succeeded in educating their students to a very high standard in the 850 or so schools that they administered before their dissolution in 1773. (They were reconstituted in 1814.) Jesuits were staunch defenders of Aristotle and his disciples and the theology associated with Saint Thomas Aquinas making them the ideal chief protagonists leading the Catholic Counter Reformation and enforcing the Council of Trent.

Consistent with a wider movement over the past twenty years on the part of historians to create a more detailed, textured, and nuanced view of the early Scientific Revolution, these essays provide case studies of selected issues and institutions related to the Jesuits that probe the overall veracity, limitations, and qualifications of the standard view of Jesuit obstruction and opposition to early modern science. The MIT Press book opens with a summary essay by its editor that makes the case for Jesuits as the *savants* of their time. Ugo Baldini, drawing upon the catalog and the works particularly of Clavius, conducts a careful study of the role of Jesuit science within the mathematics professors of the distinguished *Collegio Romano* that was founded by Saint Ignatius Loyola in 1551. He argues for the Jesuits' profound direct and indirect influence on Galileo and many other Catholic men of science, most of them educated in Jesuit schools. At the same time, he is careful not to sweep under the rug contradictory evidence and admits that definitive evidence to address some of these issues simply did not survive.

That the *Collegio Romano* was without peer as a science teaching institution during this time frame is not in doubt. Baldini suggests that its very prestige and position within the Catholic world may have created the unavoidable tension with the *new sciences*. William Wallace pursues another line of evidence by carefully detailing the interactions that Galileo had with professors at the *Collegio Romano* around 1588-1591 when he first took up the teaching post at Pisa and follows that thread over a 25-year period as Galileo moved from place to place and continued his work. He argues, successfully in this reviewer's opinion, that Galileo benefitted much from these interactions and that his scientific views and arguments were greatly strengthened via these exchanges by focusing his efforts in logic which helped him construct a valid scientific demonstration and by "keeping him honest." Edward Grant then extends this argument by showing how medieval cosmology was already under reconstruction by the Jesuits themselves in the sixteenth and seventeenth centuries.

In a similar manner, Roger Ariew explores the relationship between Descartes and the Jesuits, Alfredo Dinis dissects the work of Giovanni Battista Riccioli, Paula Findlen considers Athanasius Kircher and the Roman College Museum. Jesuit support for patronage of printed books in the seventeenth century is probed by Martha Baldwin, and Victor Navarro appraises the role of the Jesuits in early modern Spain, specifically in relation to tradition and scientific change. G. H. W. Vanpaemel takes Navarro's exploration into the Spanish Netherlands and Brendan Dooley concludes the volume with a study of the Jesuit encyclopedia journal *Storia letteraria d'Italia* that appeared in 1750.

The shorter Kluwer volume complements the MIT volume with a series of six essays that explore other dimensions of the interactions among Jesuits and their engagement with the wider academic world. Michel Gorman considers the mathematical problems of Christoph Grienberger while Feingold departs from his editorial role to explore the grounds for conflict among Grienberger, Grassi, and Galileo. Francesco De Ceglia looks at how Giuseppe Baiancani reads Galileo in an unedited censored text while Carla Palmerino carefully studies the Jesuit responses of Fabri and Le Catre to Galileo's *Science of Motion*. Henrique Leitno offers a case study of Jesuit mathematics in Portugal and Carlos Camenietzki closes the volume with a look at the work of Jesuit astronomer and missionary Valentin Stansel (1621-1705) in Brazil.

The reader will leave these two volumes with a much better grasp of the particularities associated with Jesuit science in the early modern period. The polemics of the Reformation and Counter Reformation have often made the past far murkier. These essays help clarify one's vision into this tumultuous period within Western civilization. These careful historical studies provide analogues to better understand the dynamics in today's science and religion debate, engagement, reconciliation, separation, or warfare (depending on one's viewpoint or interest). While the prices may prohibit personal copies, these two books will enhance a library collection in science and religion.

*Reviewed by Dennis W. Cheek, Vice President for Venture Philanthropy Innovation, John Templeton Foundation, Suite 100, Five Radnor Corporate Center, Radnor, PA 19087.*



## NATURAL SCIENCE

**DIMENSIONS OF TIME** by Wolfgang Aichtner, Stefan Kunz, and Thomas Walter (trans. Arthur H. Williams, Jr.). Grand Rapids, MI: Eerdmans Publishing Co., 2002 (originally published in German, 1998). 196 pages, bibliography, index of names, index of subjects. Paperback; \$30.00. ISBN: 0802849989.

Aichtner is campus minister and part-time lecturer on the dialogue between science and religion at the University of Giessen, Germany. Kunz is a pastor in Bensheim, Germany and Walter is professor of information technology at the University of Kaiserslautern, Germany. This book arose as a result of a study group called "Dialogue of Physicists and Theologians" to which the authors belong. After a year-long study on the theme, "Time in Physics," the authors continued to study the topic independently for five years. Their discussion is the basis for this book.

The authors have developed a new concept of the tri-polar system of time. The first section of the book is a development of a theoretical approach to the tri-polar structure of time. The authors then apply their structure to the time of humans, the time of the world, and the time of God.

The tri-polar structure of time is introduced with a diagram of an equilateral triangle representing humans and their threefold structure of relationships. A human relates

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to the world (a base angle), his or her self (the other base angle) and religion (the peak angle). This model is applied to time with the base angles representing Exogenous Time (world) and Endogenous Time (self) while the peak represents Transcendent Time (religion).

Endogenous Time are the forms of time experienced by all humans. Exogenous Time includes the forms of time in which humans relate to the environment. Transcendent Time include religious experiences of time. In this structure, time is both subjective and objective.

The section, Time of Humans, comprises well over half of the book. The discussion of humankind's perception of time begins with the mythic-cyclical experiences of time as shown in ancient Egypt and Mesopotamia. The rational-linear concept of time was introduced by the Greeks and is the current concept of time in the West. The mystic experience of time is also reviewed and is seen "as a sublime expression of the highest creative possibility of our humanity" (p. 102).

The next section covers the Time of the World and the scientific view of time. The authors note that the classical laws of physics do not change with the reversal of time. However, the introduction of the second law of thermodynamics does show that there are irreversible processes, thus giving time direction. The use of scientific formulae, such as the Euler-Lagrange, Schrödinger, and Heisenberg equations, makes this section non-understandable to the general public. An explanation of the concepts without calculus would have been preferred.

The last section investigates the Time of God. The authors do not presuppose to know something of God's inner nature and limit themselves to the effects of transcendent time on humans. Jesus' time on earth was an invasion of transcendent time into the time of the world.

The majority of this book would not be of interest to Christians without a scientific background. At the conclusion of the book, however, the authors speak of "fulfilled time." Christians have the experience of Christ and transcendent time within. Thus, the Christian can "rest" and not be driven by exogenous time. The Christian can have faith without fear, knowing that what God has promised of the future is true.

The authors have done a good job of laying a basis for classifying and interpreting past and current human experiences of time. The brief section at the end of the book falls short, however, in their goal, "to show ways of solving the temporal crisis of our "accelerated society"" (p. 173).

*Reviewed by Joan Nienhuis, owner, His Place Christian Bookstore, Oak Harbor, WA 98277.*

## A Requested Explanation

It is commonly held that we owe our concept of linear time and history to the biblical world view, so it comes as a surprise to hear it said that this idea of time originated with the Greeks. It must be remembered, however, that this book deals with three different "times," that of humans, the world, and God, and also distinguishes between mythic-cyclical time, rational-linear time, and

mystic-holistic time. It is in connection with the time of humans that it concludes that the "nomadic" (i.e., early) Hebrews did not attain a concept of rational-linear time structure, which originated instead among the Greeks. In their later discussion of the time of God, the authors make it clear that the later prophets of Israel and Christianity overcame cyclic views of time and history.

While the Greeks were aware of a linear concept of temporality, it seems to me that the authors overstate its significance for that culture. It can still be said that our linear concept of history—and especially of the value of history—originated primarily with the biblical world view. *Dimensions of Time* does indicate that this concept did not simply spring up full-grown, but developed in a more complex fashion.

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**WHEN CULTURE AND BIOLOGY COLLIDE: Why We Are Stressed, Depressed, and Self-Obsessed** by E. O. Smith. New Brunswick, NJ: Rutgers University Press, 2002. 266 pages. Hardcover. ISBN: 0813531039.

Smith is an associate professor of anthropology at Emory University. He argues that the discord between our evolved behaviors and current environment "sets up conditions in which there can be real conflict between our evolved psychological predispositions and the dictates of culture." His book is divided into sections on road rage, beauty, diet, depression and welfare. Each chapter is filled with thoroughly researched, documented and fascinating facts.

For example, we learn that in 1917 the physically perfect woman was 5'4" and weighed 137 lbs, while today she is 5'9" and 115 lbs. As we have evolved to store fat to survive, there is a collision between biology and our culture. Smith explains why our evolved preferences for salt and fat and sugar lead to Big Mac attacks.

Under the chapter on depression we learn that the ability to be depressed served an evolutionary purpose. It was to alert us that something is wrong in our environment and needs correcting. Smith does not deny the need to treat depression or condone the use of all anti-depressants. However, anti-depressants today are over-prescribed as a result of drug advertising, cuts by insurance companies to the funding of talk therapy, and the fact that 95% of anti-depressants are prescribed by family doctors, especially to children.

The last chapter, "Welfare, Cooperation and Emotion," tries to explain altruism through evolution. He explains the theories of nepotism and politics. At the end of each chapter are common sense proposals to better society. It appears to me that for Smith, the worth of the individual is axiomatic. Any effort to explain why human life is precious, and self-sacrifice is required of us, will have to go beyond evolutionary biology. I think I will send Smith a copy of C. S. Lewis's *Miracles*.

*Reviewed by Leland P. Gamson, 607 W. Spencer Ave., Marion, IN 46952.*



**INTO THE SHADOWS: A Journey of Faith and Love into Alzheimer's** by Robert F. DeHaan. Grand Haven, MI: FaithWalk Publishing, 2003. 256 pages, appendix. Paperback; \$14.99. ISBN: 0972419632.

DeHaan, colleague, friend, and fellow ASA member, writes in this profound volume of a journey of a long goodbye, the account of his wife Roberta's descent into the mystery and emptiness of Alzheimer's disease. But it is not so much an account of that journey as it is a powerful love story, of how two lovers gradually and painfully parted.

DeHaan, who before his retirement was the chair of the Psychology Department at Hope College, writes from his heart as he tells the story of the years 1998–2002. It is an account of God's leading along a torturous path, a divine presence that was, and is, sufficient. There is no "Hollywood ending," of course; at this writing (April 2003) Roberta Timmer DeHaan, confined to a nursing home, has almost (but not quite yet) faded from this world. Yet throughout the book, I was continually aware of God's grace and everlasting love, always aware that what I was reading was only "chapter one" of a story which will be continued, in triumph, in glory. The book carries the message of hope to Bob's fellow Christians, who know that not a sparrow falls without God's notice.

On May 2, 2001, Bob and Roberta shared together their last bedtime snack; Roberta would enter the Alzheimer's care unit the next morning. Bob relates (pp. 236-7) how he turned this event into a communion service using pita bread dipped in grape juice. He writes:

We continued our snack with long silences until the bread was consumed. Then we finished off the juice, she holding the chalice to her lips followed by me doing the same. Roberta looked at me. "That was communion," she commented in a calm voice. "Yes, Roberta," I said, "that was Communion."

As a Stephen Minister, I have read many books which speak to the "long dying" of the Alzheimer patient. This book, written by one with a clear and abiding Christian faith, and also a deep and abiding love for his companion of over fifty years, stands head and shoulders above the rest. Nearly 25% of adults in our country are friends, relatives, or, in some cases, caregivers to someone affected by this disease. If you are one of these, this book is a must read. If you are not, it is worth reading to understand a "real" love story. I cannot recommend it too highly.

*Reviewed by John W. Burgeson, Physicist, US Government (retired), IBM Corporation (retired), Denver, CO 80210.*



## ORIGINS & COSMOLOGY

**FROM COMPLEXITY TO LIFE: On the Emergence of Life and Meaning** by Niels Henrik Gregersen, ed. New York: Oxford University Press, 2003. 243 pages. Hardcover; \$35.00. ISBN: 0195150708.

In its Jan/Feb. 2000 edition, the *ASA Newsletter* reported that a research symposium, sponsored by the John Templeton Foundation, was held in Santa Fe, NM, in October

1999 on the subject "Complexity, Information, and Design: A Critical Approach." Led by Paul Davies, the physicist and prolific popularizer known for books such as *God and the New Physics*, a group of ten leading scientists met to consider the issues raised by information theory and complexity. This book is a collection of essays that came out of that symposium. Gregersen has edited ten previous books and written three more in many fields of systematic theology, often in science and theology. His training is in philosophy of religion and his dissertation examined the interface between theology and culture in programs of theology as science. He is now teaching theology at the Faculty of Theology, Aarhus University, Denmark.

Davies observes in his introduction that "Regardless of our own religious sympathies or antipathies, we approach much of life through emergent qualities such as trust, love, and the sense of beauty ... How does a sense of meaning emerge from a universe of inanimate matter subject to blind and purposeless forces?" The authors contributing to this volume address the question of emergence from a wide spectrum of viewpoints, many of which go well beyond mainstream thought.

In Part I, "Defining Complexity," Gregory Chaitin discusses randomness and mathematical proof in an article reprinted from *Scientific American* (May 1975). Charles Bennett examines various notions of complexity in his reprint. Both authors, whom I am honored to have as colleagues at the IBM Thomas J Watson Research Center, strive for precision in their definitions of randomness and complexity, thereby providing better tools for understanding emergence.

Part II, entitled "The Concept of Information in Physics and Biology," comprises five essays by Stuart Kauffman, Paul Davies, William Dembski, Ian Stewart, and Werner Loewenstein. Kauffman and Dembski provide somewhat more radical views of autonomous agents and intelligent design, respectively, while Stewart informs us of "The Second Law of Gravitics and the Fourth Law of Thermodynamics." Davies and Loewenstein focus on the "arrows of time." Loewenstein's essay alone is worth the price of the book. Addressing "Two Arrows from a Mighty Bow," he explores the implications of time and thermodynamics, concluding that "it gives one a wondrous strange feeling to be able to read the script that nature renders and to peer into her designs ... it is a way, and for a scientist the most satisfying one, to see God in His splendor."

Part III addresses "Philosophical and Religious Perspectives." Harold Morowitz, Arthur Peacocke, and Niels Gregersen contribute the final three essays. Gregersen's concluding contribution, "From Anthropocentric Design to Self-Organized Complexity" is most valuable. He says:

... theology seems to face a stark dilemma. After all, religious life is more interested in the active presence of a providential God in the midst of the world than in a designer God at the edge of the universe. Yet the design argument is viable in the context of the anthropic principle (where its religious significance is rather faint), whereas the design argument seems to be without value in the context of self-organized complexity (where its application would be religiously significant) ... I intend to show, however, that the two theological options – the first concerned

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with divine causality and the other concerned with meaning—are indeed supplementary.

The arguments espoused in this volume are themselves complex but glimpses of understanding do indeed begin to emerge from the discussion. The participants in the discussion are prominent figures in current debate on emergence and represent a wide spectrum of views. The ASA community would benefit from reading this book, despite some obtuse sections.

*Reviewed by Randy Isaac, IBM Research VP of Science and Technology, South Salem, NY 10590.*

**DEEPER THAN DARWIN: The Prospect for Religion in the Age of Evolution** by John F. Haught. Boulder, CO: Westview Press, 2003. 229 pages, notes. Hardcover; \$26.00. ISBN: 0813365902.

Haught describes this book as a sequel to his recent *God After Darwin* (2000). In the introduction, he states its purpose:

The point of this book is to dig deeper than Darwin. I will assume here the fundamental correctness of evolutionary biology, but I want to question the nonscientific belief that evolutionary biology—or for that matter the cumulative body of natural sciences—amounts to an adequate explanation of living phenomena (p. xi).

The book is largely an answer to materialist readings of reality and criticisms of religion. Not content with merely challenging the views of prominent popularizers of a materialist belief system, Haught goes beyond to address the question of “how, after Darwin, religions may plausibly claim to be bearers of *truth* and not just of meaning and adaptation” (p. xvi).

Many of the arguments that Haught proffers will not be new to readers of his books and articles, but there are some important points. In the second chapter, Haught attacks the literalism that characterizes both young earth creationists’ readings of the Bible and materialists’ readings of the Book of Nature. He points out that the literalism of the latter lies on two levels. Critics of religion like E. O. Wilson and Daniel Dennett reject the Bible because it and other ancient texts do not provide the scientific information they demand of it. But they as well as Richard Dawkins, Peter Atkins, and Steven Weinberg also literalize nature, claiming to find in it the fundamental “text” that explains everything.

In subsequent chapters, Haught sets out to demonstrate the shallowness of such thinking and the ideological agenda that incorporates it. Contrary to materialists’ claims that there is nothing going on in the world besides mindless, impersonal, pointless activities of lifeless matter and genetic domination of evolution, Haught argues that the universe does show purpose and promise, but one has to go to the “inexhaustible depth” out of which revelation “erupts” and inspires religious and theological readings of nature in order to find it. From this perspective Haught proceeds in subsequent chapters to deconstruct the incomplete narratives of reality that Dennett, Dawkins, and others dogmatically proclaim as totalizing. He points out that science itself offers various levels of explanation (physical,

chemical, etc.) that are commensurable and complementary, and therefore it is metaphysical and unscientific to latch on to one of them as ultimate.

Haught also faults intelligent design proponents for a similar literalism. He says:

Both IDT and Darwinian materialism shrink what could be an extensively storied hierarchy of explanations of life down to one level. This single level is construed differently in each case, but both sides refuse to entertain the idea of a plurality of complementary explanations (p. 108).

He also takes on materialist critics who claim that religion is a survival mechanism traceable to genes. Such naturalistic explanations transfer the quality of “striving” that characterizes the religious enterprise to our genes themselves, and “divest all religious teachings of any plausible claims to truth.” But in denying a deeper level of explanation that exists alongside the naturalistic, “they end up locating the agency that gives rise to religion in a fictitious realm of subjectivity (that of the selfish gene) ...” (p. 133).

Haught offers an understanding of God’s relationship to an evolving creation that draws upon favorite thinkers Alfred North Whitehead and Pierre Teilhard de Chardin, but more foundationally upon the biblical revelation of a God who speaks to the creation from the future. The One who “makes all things new” is a promise-making God whose providential care for this unfinished universe can be characterized as “a reservoir of possibilities gently proffered to the world throughout its creative advance ... Evolution does not destroy but confirms the religious intuition that there is everlasting care at the bottom of things” (p. 158).

Evangelical readers might be struck by the dearth of references to Scripture, but Haught is aiming at a broad audience. He writes in a fulsome style that is sometimes overly repetitive, not wholly accounted for by the fact that the book is based on a number of previously published articles. And his religious notions have the tentative quality of a theology in the making. But the book is worth reading not only for its solid criticisms of materialist belief systems but also for its theological reflections.

*Reviewed by Robert J. Schneider, Adjunct Associate Professor, Appalachian State University, Boone, NC 28608.*

**THE GHOSTS OF EVOLUTION: Nonsensical Fruit, Missing Partners, and Other Ecological Anachronisms** by Connie Barlow. New York: Basic Books, 2001. 304 pages. Hardcover; \$26.00. ISBN: 465005519.

Barlow is an author and editor whose previous books include *Green Space, Green Time; The Way of Science; Evolution Extended* (editor); and *From Gaia to Selfish Genes* (editor). The basic premise of this book was first introduced in an article published in a 1982 edition of *Science*, co-authored by tropical ecologist Dan Janzen and Pleistocene ecologist Paul Martin. The article, entitled “Neotropical Anachronisms: The Fruits the Gomphotheres Ate,” introduced the idea that many of the larger fruits of the tropics tend to pile up and rot beneath the trees that produce them because the dispersal partners they evolved with no lon-

ger exist. Barlow provides further evidence for the validity of this idea while also discussing a number of examples of "anachronistic" fruits from the temperate regions of North America.

What is an evolutionary anachronism? One definition, quoted in the book and provided by Janzen, states that if a tree evolved a trait in response to some pressure and that trait is around later on despite the pressure having been lifted, then that trait is an anachronism. Another definition, suggested by zoologist John Byers, describes anachronisms as traits that are overbuilt, and it is the overbuilt qualities of biological structures, physiologies, or behaviors that encourage us to look for missing partners. The partners that were once so vitally important in shaping these traits, suffered the fate of extinction many centuries ago. The fruits of tropical trees such as avocado and papaya and temperate trees such as osage orange and honey locust are too large for the gapes of currently available mouths. For some botanical anachronisms, the seed is too big to be swallowed; for others the pulp is laced with toxins that no stomach will tolerate today. All such anachronisms are haunted by ghosts. These ghosts (former seed dispersers) were most likely the extinct gomphotheres, glyptodonts, and toxodonts that roamed the earth during the Pleistocene era.

Two ways to test the anachronism idea are described in chapter two. One test involves comparing the array of fruits eaten and seeds dispersed by large mammals of Africa and Asia (elephants, rhinos, etc.) with the fruits of other parts of the world which lack these large mammals. A second test discussed is the test of simulation involving the study of the effects of "reintroducing Pleistocene mammals such as horses to the neotropics and observing their response to the fruits and the response of the plant populations to the mammals." Dan Janzen carried out such tests of simulation with horses on the fruits of crescentia and guanacaste trees. The results indicated that horses, serving as proxies for extinct Peistocene megafauna, are relatively efficient seed dispersers for trees which have no other contemporary dispersal partners. The seed dispersal efficiency of horses and cattle that eat the pods of the honey locust, a tree of temperate North America, is also presented as further evidence for the anachronism concept.

Chapter three is devoted to a presentation of the "megafaunal dispersal syndrome." A number of characteristics of the types of fruits that could only have been dispersed by extinct megafauna are described in detail. This description is followed by criticisms of the anachronism concept in chapter four. One important challenge to the concept centers upon the question of how species of plants that have long lost their dispersal agents could continue to survive for thousands of years. This challenge is answered by a discussion of "compensatory life history traits" such as the ability of a species to live for a long time, the capacity for root sprouting or suckering, and the presence of human mutualists. The author's three-part system of grading potential anachronisms (moderate, substantial, extreme) is also explained in chapter four. Specific examples of each category from the temperate regions of North America are then provided in chapters five and six. Plants discussed include pawpaw, persimmon, osage orange, Kentucky coffee tree, honey locust, desert gourd, and the imported ginkgo tree. Other potential anachronisms such

as the armaments of cacti, hawthorns, Devil's walking stick, and honey locust are also described in detail in chapter seven.

This book is one that definitely should be read by botanists, ecologists, evolutionary biologists, and anyone else who is fascinated by plant morphology and diversity. Notes are provided at the end of each chapter for the serious researcher and an extensive list of references is also included at the end of the book. Numerous black-and-white photos and illustrations are scattered throughout the book, which is also available in paperback. The fact that this book is authored by a science writer rather than a scientist makes it all the more interesting and entertaining to read. Barlow not only explains the science behind the anachronism concept in language that everyone should understand, she also reveals the human side of science with vivid descriptions of her own attempts and the attempts of others to test various seed dispersal hypotheses. The book ends with a warning regarding our current extinction crisis and what it might mean for future generations. She also argues for a stewardship ethic that encompasses even those plants from which we as humans can expect no reward. These plants, she writes, should be kept alive "solely because we choose to honor the past and carry forward the richness of life on Earth." All Christians should seriously consider incorporating this type of attitude toward the natural world into their own world view.

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

**ECHO OF THE BIG BANG** by Michael D. Lemonick. Princeton, NJ: Princeton University Press, 2003. 215 pages, index, glossary. Hardcover; \$25.00. ISBN: 0691102783.

"This will be a day that everyone will remember where they were when they heard the news." So pronounced John Bachall, director of the Institute of Advanced Study in Princeton. Bachall was not referring to the Colombia shuttle disaster or to the fall of Saddam Hussein's statue in Baghdad, but to the newly released results of the Wilkinson Microwave Anisotropy Probe, or WMAP, on February 11, 2003. (WMAP, initially called MAP, was renamed in honor of David Wilkinson for his decades of pioneering work in experimental cosmology. Sadly, Wilkinson died after a long battle with lymphoma before the end of the mission.)

What does WMAP do? Why are its results monumentally significant? Lemonick, senior science writer for *Time* magazine, answers these questions. With full access to WMAP team members and personally present at various stages of WMAP's development, Lemonick weaves together twelve chapters of history and experiences that culminated in the satellite heralding the age of "precision cosmology."

Lemonick begins with a brief overview of the work of the "usual suspects" associated with the big bang: Einstein, De Sitter, Lemaitre, Friedmann, Slipher, Hubble, and Humason. Early on, however, most astronomers were not ready to accept the big bang, especially since a philosophically more satisfying competitor—the Steady State Theory of Hoyle, Bondi, and Gold—had not been ruled



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out. (Incidentally, Fred Hoyle coined the term “big bang” as a derisive appellation during a 1950 radio interview.)

In the mid-forties, George Gamow, Ralph Alpher, and Robert Herman formulated a testable hypothesis for the big bang. They realized that if the universe began in an ultra-hot, dense, brilliant state, remnant blackbody radiation would be pervading the universe at present. This radiation has come to be known as the cosmic microwave background (CMB). It was first detected in 1965 by Bell Labs scientists Arno Penzias and Robert Wilson, who later received the Nobel Prize for their discovery.

In spite of the significance of detecting the CMB, many unknowns about the universe remained: What is its geometry? How much ordinary (baryonic) matter is present? How much cold dark matter is there? What is the true value of Hubble’s constant? Is inflation correct? Lemonick explains why anisotropies—minor temperature differences in the CMB that vary with direction—are crucial to answering these questions.

Anisotropies were first seen by the COBE satellite. This important discovery led project scientist George Smoot to claim in 1992 that he had “seen the face of God,” a famous comment that pleased crowds but irked fellow COBE investigators and cosmologists in general. (Lemonick takes a chapter to discuss Smoot’s somewhat self-centered interaction with other scientists, which is an interesting story in itself.) COBE, however, detected large-scale anisotropies; it could not detect small-scale, acoustic wave anisotropies that contain information about the fundamental characteristics of the cosmos.

Another satellite had to be built to observe what COBE could not, and this is where WMAP comes in. WMAP is a joint effort between the cosmology group at Princeton and NASA Goddard. Lemonick describes the mechanics of bringing together project teams, obtaining funding from NASA, handling external contractors, writing required software, finishing pre-launch testing, and devising solutions to unanticipated problems. Lemonick lifts the curtain on the pains and the triumphs of the team that delivered a successful project that beat out the competition attempting the same kind of measurements.

WMAP was launched on June 30, 2001, but it took about a year’s worth of observations before the team felt comfortable releasing their results. WMAP pinned down with astounding accuracy the major parameters of the universe that astronomers have attempted to measure over seven decades. We now know the universe is flat; it contains 4% baryonic matter and 23% cold dark matter; 73% of the universe is mysterious dark energy that is accelerating the expansion; Hubble’s constant is 71 kilometers/second/megaparsec; and the first stars formed a mere 200 million years after the big bang. WMAP, in Lemonick’s words, is reading the “genome” of cosmology.

Lemonick clearly relates the importance of WMAP and the science behind its mission. His descriptions and personal anecdotes of project scientists (especially David Spergel, Charles Bennett, and Wilkinson) make the reader feel like a neighbor talking over the fence with team members about their work. The book makes for enjoyable, profitable reading for anyone interested in cosmology.

*Reviewed by Perry G. Phillips, Magnolia, MA 01930.*



## SOCIAL SCIENCE

**ROLL BACK THE STONE: Death and Burial in the World of Jesus** by Byron R. McCane. Harrisburg, PA: Trinity Press International, 2003. 163 pages. Paperback; \$20.00. ISBN: 1563384027.

The purpose of this book is to provide information and understanding on how the people of early Roman Palestine dealt with human death. McCane thinks examination of death rituals are effective ways to explore social and cultural boundaries. The author has the qualifications for this task inasmuch as he is an Associate Professor of Religion at Converse College and Academic Director of the Sepphoris Acropolis Excavations in Northern Israel.

McCane gathered his information from both literary and archaeological sources. In addition, he used some sociological and anthropological theory, evidence from Q (a collection of sayings of Jesus), Christian reflections on Jesus’ burial, data suggesting Jewish and Christian burial practices were beginning to diverge during the Byzantine Period, and Christian appropriation of paradise images from Greek and Jewish sources.

Jews and Christians in early Roman Palestine shared both a common ethnicity and approach to death. Their concerns about burial in early Roman Palestine were pretty much the same as contemporary folks: how much would it cost, what social impact would it make, how ostentatious would it be, and how sincere were the mourners. (Archelaus’s grief at the death of his father Herod the Great was an obvious sham because he mourned in the day and indulged in drunken orgies at night).

Of particular interest to readers of this journal is an analysis of the 2002 report of an ossuary bearing the inscription “James, son of Joseph, brother of Jesus.” McCane thinks it unlikely that this is “the first epigraphic mention—from about 63 CE—of Jesus of Nazareth,” as contended by Andre Lemaire, an eminent French epigrapher. In reference to Jesus’ burial, McCane thinks the New Testament and archaeology support his contention that it was in shame and dishonor.

The book contains an abundance of interesting information about burial ritual in early Roman Palestine. For example, burial was usually done the same day in subterranean caves away from human habitation. Primary burial consisted of interment, eulogies and sympathy expressions. Lamps, perfume bottles, cooking pots, and coins were sometimes buried with the deceased. Family members, for a week following burial, remained in mourning at home and abstained from working, bathing, wearing shoes, and social participation including sexual activity. Secondary burial occurred a year following primary burial. (The year it took to bury someone sheds light on Jesus’ statement “Let the dead bury the dead.”) It involved collecting the bones of the deceased and placing them with the bones of other relatives. Sarcophagi and ossuaries were sometimes used.

The very long paragraphs in this book (sometimes approaching two pages, 47–9) do not facilitate easy reading. Jesus’ conversation with Nicodemus occurred in John 3 (not John 2, p. 99). McCane does not think the Bible

is totally reliable, but he culls information from it and other early writings. The author is helpfully redundant. When he embarks on a new theme, he recounts what he has already stated. His summaries are also helpful.

In conclusion, McCane shares quite a bit of interesting funeral ritual information about what people did, how they felt, and what social significance final rites conveyed in early Roman Palestine. He writes in an engaging fashion, and his background as a teacher and archeologist serve him well in pulling together a lot of relevant data from a variety of sources. Eric Meyers, noted archaeologist from Duke University and McCane's mentor, describes this as a "superbly written work ... sure to turn heads in a new and exciting direction." I agree.

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

**AMERICA'S GOD** by Mark A. Noll. New York: Oxford University Press, 2002. 622 pages, appendix, notes, glossary, bibliography, index. Hardcover; \$35.00. ISBN: 0195151119.

Noll's reputation as a historian of the first rank was assured before he wrote *America's God*. This, his latest in a series of notable works on aspects of American evangelicalism, bodes to enhance that reputation even further. Noll is McManis Professor of Christian Thought at Wheaton (Illinois) College. Among the many books he has written or edited are *God and Mammon: Protestants, Money, and the Market, 1790-1860* (2001), *The Scandal of the Evangelical Mind* (1994), and *Religion and American Politics* (1989). Evangelical and non-evangelical historians alike acknowledge Noll as one of America's leading historians. *America's God* is marked by the excellence of scholarship, insight, and lucidity that are Noll's trademarks.

*America's God* is a history of American theological thought from the time of Jonathan Edwards until the end of the Civil War. The book sets forth the simple thesis that, between (roughly) 1790 and 1865, Americans wove colonial theology, republicanism, and Scottish common sense philosophy into a distinctly American synthesis that profoundly shaped and was shaped by American social, economic, and political thought. Not until the slavery question divided the nation did this synthesis fall apart.

Noll begins by describing theology in colonial America, beginning with the Great Awakening. His emphasis falls on New England Puritanism, but he also discusses colonial Presbyterianism, Anglicanism, and separatist thinking. Noll goes on to describe the subsequent "collapse of the Puritan canopy," followed by the revival of a significantly modified Calvinism that could be harmonized with republican ideas drawn from the Real Whigs of Great Britain and with Scottish common sense philosophy. Noll traces the evolution and consolidation of the new synthesis, an intellectual framework accepted by even those who, like the Methodists and Campbellites, explicitly rejected earlier traditional Calvinism. He then tells how the new American synthesis contributed to the unprecedented surge of evangelism in America following the Second Great Awakening.

Noll recounts both how theology was modified by the American experience and how the new theology provided an intellectual framework (and justification) for the social, political, and economic behavior of nearly all Americans, cultural elites as well as common citizens. He does not neglect to tell of the various minorities-African American Christians, Old School Presbyterians, Lutherans and other Protestants with Continental rather than British roots, and Roman Catholics who consciously rejected aspects of the new synthesis and, in some cases, followed other intellectual traditions. Noll makes the case that the era of the synthesis was one in which religion was more important in American public life than before or since, an era in which America was almost Christianized (in white, evangelical Protestant terms). He concludes by demonstrating how the American synthesis was unable to continue holding together a nation increasingly polarized by the slavery issue and by describing how the synthesis itself unraveled.

Noll establishes his case with a wealth of documentation (1494 endnotes, a 29-page bibliography), but does not overwhelm the reader with erudition. Although he rings the changes on his theme over and over again, he does not bore. He defines key terms in a glossary, a boon to a non-historian like me. Though Noll himself is a Presbyterian and devotes much of the book to examining changes in Calvinist thought, he consciously writes in a non-sectarian manner. In his own words, "It is of course impossible to neutralize theological standpoint, but I hope ... that in this book the historian wins out over the theologian."

The reader who has little interest in theology *per se* may wish Noll had focused more on religious events of the era: the revivals of the first and second Great Awakenings, the churching of the frontier, the work of voluntary societies like the American Bible Society, the rise of sects like the Unitarians and Mormons, anti-slavery agitation, and the beginnings of American foreign missions. But this book is for those who believe ideas have consequences. For them it is a must read, a gold mine of facts magisterially interpreted. More than that, *America's God* may help open your eyes (as it has mine), not only to learn the theological history of our nation, but to realize how particularly American is our Christian view of people and things.

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**IS RELIGION KILLING US?** by Jack Nelson-Pallmeyer. New York: Trinity Press International, 2003. 169 pages, index. Hardcover; \$24.00. ISBN: 1563384086.

Is religion killing us? Yes, says Nelson-Pallmeyer. He claims the Quran and the Bible would lead the reader to justify the use of violence in the name of religion. In his first two chapters he describes the violent perspectives of Islamic groups such as those associated with Osama bin Laden. Later chapters deal with examples of violent texts in the Quran and the Bible. There is also a discussion of the mainstream Islamic, Jewish, and Christian doctrinal perspectives that go beyond any specific passages. The final chapters offer Nelson-Pallmeyer's answer to the problem of cyclic violence and injustice that result from the violent views of the three religions.

## Book Reviews

To stop the cycle of violent religious doctrines that logically arise from sacred texts, the author suggests that they not be considered sacred. A literary type of treatment would respect the insights of the religious authors while acknowledging their fallibility and rejecting their violent themes.

Nelson-Pallmeyer thinks Gandhi, Kahn, and Jesus disagreed with the sacredness and blind obedience to violent passages. They relied on their own life experiences and observations which contradict the apparent teachings in the violent passages. Jesus' parable of the workmen in the vineyard who murder the owner's son, is given as an example of how violence leads to violence, and is therefore not the answer. The author continues this theme by constructing a dialogue in which Jesus makes the author's case for desacradizing the religious texts. This is done using the sayings and parables of Jesus as a response to those who interpret the texts literally and dogmatically as the sacred words of God.

Nelson-Pallmeyer also discusses the liberation theology and US foreign policy in Central America, South America, and the Middle East. He claims that an acceptance of religious violence by Americans has resulted in oppression and abuse of many peoples in the name of US security.

The book's strength lies in its frank discussion of the texts and religious doctrines of the three religions discussed. The weakness may be seen in the lack of a defined theology of atonement that would be consistent with this perspective. The reader can infer that the author rejects the traditional themes of atonement and violent judgments of God, but he offers no alternatives. Nelson-Pallmeyer's approach seems to lead to an undefied Christ for whom atonement themes were added later as Christianity evolved from the violent religion theologies of the day. The author does not address this issue directly. Perhaps he thinks it is too large a subject to include.

This book would be a useful resource for anyone interested in a better understanding of religious violence stemming from religious texts.

Jack Nelson-Pallmeyer, Assistant Professor of Justice and Peace Studies at the University of St. Thomas in St. Paul, Minnesota, has authored *Jesus Against Christianity: Reclaiming the Missing Jesus and School of Assassins: Guns, Greed, and Globalization*.

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**MY BROTHER'S KEEPER: What the Social Sciences Do (and Don't) Tell Us about Masculinity** by Mary Stewart Van Leeuwen. Downers Grove, IL: InterVarsity Press, 2002. 255 pages, indexes. Paperback; \$17.00. ISBN: 0830826904.

This book is a companion to Van Leeuwen's renowned *Gender and Grace* (IVP, 1990). Based on social scientific data and theological values in women's studies, it focused upon the desirability of mutuality and flexibility instead of hierarchy and rigidity in gender roles and relationships. This analysis from the perspective of masculinity aims to

help readers "understand some of the cultural, historical, developmental and biological forces within which men as well as women are called to make responsible and just decisions about gender relations as God's stewards and regents on earth" (p. 10). It fully accomplishes that goal.

The widely-published professor of psychology and philosophy at Eastern University cites so many resources, mostly in bottom-page footnotes, that the four-column Name Index consumes more than four pages. (Alas, the Subject Index of just over two pages is far from complete.) If there were a Scripture Index, it would be impressive, for references to Bible passages repeatedly appear. Misinterpretations of Scripture about gender roles and doctrines of rigid separate spheres for men and women that are unfair to both men and women are behind many discussions. These need correction because they are inconsistent with cross-cultural observations, biblical values, and the variability among either men or women that far exceeds average differences between them. Overascribing selected traits to either men or women from passages like Gen. 1:28 and 3:16 transforms cultural mandates of sociability and dominion that God intended to be "mere scaffolding for life ... into the entire building" (p. 48).

The twelve chapters are organized under four parts: Background Issues (masculinity problems and Bible interpretations), Disciplinary Perspectives (biology, developmental psychology; culture studies), Continuing Challenges (evolutionary psychology and the feminist and masculine distortions of religious and cultural advocacy), and Contemporary Applications (marriage, parenting, sexuality, and an agenda for gender reconciliation).

Among the interesting topics covered are the health benefits of Christianity and of marriage, the harm that occurs from "harmless pornography," original sin as a generic "stubborn determination to function apart from God" and a source of specific sins like patriarchalism, the Promise Keepers as "a moving target in an evangelical landscape," the biased selectivity of "scientific rationality" that's more correctly labeled "scientific rationalization," and the complicity of evangelical Protestants with the cultural values and behavior patterns related to divorce, sexuality, and marriage of their society. We now are reaping the cumulative effects from three decades of "relational junk food" (p. 208).

Perhaps because Van Leeuwen's main emphasis is on the social sciences, she omitted explicit reference to Rom. 12:2, even though non-conformity to this world is her major theme. The case for Christian non-compliance with culture and the recognition that all cultural practices must be judged by both God's creation and the distortions resulting from human fallenness pervade her discussions. Similarly, her solid emphasis on biblical values about the need for flexible shared leadership in marital relationships and parenting could have been reinforced by reference to Eph. 5:21, for the teaching that all Christians should be subject to one another out of reverence for Christ is the central message of Eph. 5:22-6:9.

Everyone puzzled by questions about "proper" relationships between men and women, what the Bible and the biological and social sciences reveal about relationships between them, how to promote shalom in families and society, or where to find relevant studies on gender



relationships in contemporary society will benefit from this thorough exposition.

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## Letters

### A Response to Carol Hill's "Noachian Flood" Account

I must say Carol A. Hill's article "The Noachian Flood: Universal or Local?" (Sept. 2002) was a thriller to read. She almost had me convinced she had found the answers among biblical theology, biblical history, and real earth history. She says that she is taking the "realistic approach," Genesis is truthful, and, of course, the scientific disciplines can also accurately be applied. For Carol to come to her conclusions, she has to set two dates.

First, she sets a date for Noah to be alive at about 3000–2900 BC.<sup>1</sup> I am sure there are many Christian groups that would say she is 500 years later than what it should be. Next, Carol thinks that there was a great Mesopotamia flood that happened at about the same time frame in Kish, Shuruppak, Uruk [biblical Erech], and Lagash. Her flood happened about 1,000 years after the Mesopotamia flood which Sir Charles L. Woolley discovered while he was excavating in Ur.<sup>2</sup>

One of the main problems with Carol's flood in 3000 BC at Kish is that the excavations found four different levels of flood clay, not one. They extended over a period of about four centuries. The earliest was dated to about 3300 BC, the latest to about 2900 BC and the upper most level was about one foot deep compared to ten feet at Ur. The question then is: Which one of the four local flood levels should be chosen as the basis for building a flood legend for the biblical texts? The excavators found that none of the layers seem to be that significant, and the multiple layers dampen the enthusiasm for identifying any one of them with the biblical story. Also the sterile soil layers at Lagash probably did not come from a local river or canal flood but was rather from the foundation of one of the temples of Lagash, according to Andre Parrot, who excavated Telloh in 1930–1931.<sup>3</sup>

In the other two sites both in the same canal, Eric Schmidt found a deposit of alluvium two feet deep in tell Fara and Julius Jordon found a sterile stratum in Uruk, five feet thick. If we look at all the flood mud in these four cities we find that none of them comes close to what Woolley found in Ur. When the pattern is considered as a whole, however, there is very little archaeological proof for such a big flood theory for 3000 BC.<sup>4</sup>

Carol's theory is that Mesopotamia was Eden and that God placed Adam/Eve there about 5500 BC. In around 3000 BC, Noah was in a big flood that killed all but eight people. If this theory is true then somewhere in the book of Genesis there should be two devastating flood stories, the first flood in Eden was in 4000 BC that Utnapishtim the Sumerian wrote about and the second in 3000 BC about

Noah and his Ark. One would think, if there had been two great floods in Eden that almost wiped out civilization twice, then surely God would have recorded it in the book of Genesis.

But for the sake of argument, let's consider Carol's theory that there was a big flood in 3000 BC in Eden and that God first created humankind there in about 5500 BC. How does she account for all the people who had been living in Old Jericho for 4,000 years before the biblical creation date of 5500 BC?<sup>5</sup> Also Carol claims that *Homo sapiens* have been on earth from 50,000 to 150,000 years.<sup>6</sup> I was wondering how she correlates this with Christianity and Original Sin.

I have noticed in Carol's last two published articles that she uses a lot of ambiguous scenarios: it might be, it could be, most likely, seems to suggest, it is probable, one can imagine, this must be, therefore, it must have been, if there was, it is possible, etc. Then in her "conclusions," somehow her ambiguous scenarios leap into a positive logical conclusion. These so-called "leaps of logic" are not what scientific-minded people should delve into.

There is a point or two that I would like to add that Carol did not address in her article on the local flood. The Tigris/Euphrates valley is like a half-bowl, any water you put in at the western end of the half-bowl valley will never fill the valley because it is always runs down hill. And water in a riverine flood travels at a speed of about 3–5 miles per hour, and occasionally faster. The Mesopotamian basin generally flows to the southeast, which is where the Ark would travel. Carol's map, on p. 173, shows that the Tigris River is about 1200 miles long. If we assume that the floodwaters were very heavy, say up to seven miles per hour, it would take only 170 hours or about seven days to float the entire length of the Tigris River in heavy floodwaters. The story in Genesis says that it rained 40 days and 40 nights and that the flood waters abated after five months, about 150 days (Gen. 8:3–4). But wait a minute; Carol says that the Ark landed at a place called "Jabel Judi" which is only about 120 miles from the headwaters of the Tigris River. If what Carol says is true, then the only place the Ark could have been built was up stream from "Jabel Judi," which means that the Ark only floated about 120 miles and in just seventeen hours, or about one day. How does Carol explain where the rest of the 149 days were spent for the good ship Ark to cruise?

What I do not understand is why Carol is trying to make Mesopotamia and Eden the same place? According to Gen. 3:23–24, God cast Adam and Eve out of the Garden of Eden when they sinned and put a flaming sword at the east end of the garden. No one should have been living in Eden when one or both of the Genesis flood stories happened. This one truth alone negates all of Carol's Mesopotamia/Eden ideas.

I am sorry but I cannot find any "realistic approach" to Carol's theories.

### Notes

<sup>1</sup>Carol A. Hill, "A Time and a Place for Noah," *Perspectives on Science and Christian Faith* 53, no.1 (March 2001): 24–40.

<sup>2</sup>Read chap. 3, "Digging up the Flood," in Werner Keller, *The Bible as History* (New York: William Morrow and Co., Inc., 1981).

<sup>3</sup>Dr. William H. Shea, "The Flood: Just a Local Catastrophe?" <http://education.gc.adventist.org/dialogue/essays/Shea.htm>