

Reviews

Science and Theology: An Introduction. By JOHN POLKINGHORNE. London: SPCK Press, and Minneapolis: Fortress Press, 1998. 144 pages. £10.99; \$19.00 (paper).

John Polkinghorne is well known to many *Zygon* readers as a leading figure relating theology to physics, embodying both fields in his thought as well as his person. He is now a theologian, having been for many years at Queens' College, Cambridge, and was earlier a professor of mathematical physics at the same university. He has contributed steadily and productively to the study of the relation between the two fields in such works as *The Quantum World* (Princeton: Princeton Univ. Press, 1985), *Quarks, Chaos and Christianity* (London: SPCK, 1994), *The Faith of a Physicist* (Princeton Univ. Press, 1994), and *Science and Creation* (SPCK, 1988).

Why this new book? Polkinghorne begins by claiming, "There has not been a textbook available" (p. 1). Welcome though his book is, this opening statement seems strange. Ian Barbour's *Issues in Science and Religion* (San Francisco: Harper and Row, 1966) was in print as a text for nearly thirty years, updated by his Gifford lectures, *Religion in an Age of Science* (San Francisco: HarperCollins, 1990); that was revised and expanded precisely to make it more textbook-like, his *Religion and Science: Historical and Contemporary Issues* (HarperCollins, 1997) replacing his *Issues*. My own *Science and Religion: A Critical Survey* (1987) was published by the textbook section of Random House, was bought by McGraw Hill as a text, and is now in print by Harcourt Brace as a text.

If one narrowly defines *text* to mean "written to be a text and nothing but a text," not intended to be read outside the classroom, then Polkinghorne's remark is true, because these books do have larger audiences in mind as well. Or he might reply that this is science and theology, not science and religion, with some justification. The book originated as a course taught to theological students at General Theological Seminary. Fortunately, one suspects that Polkinghorne wants a larger audience. So *Zygon* readers will find here an extremely accessible introduction to contemporary thought about how theology and science can congenially relate.

The progressive argument begins with general considerations: the nature of science and the nature of theology, brought to focus historically in Galileo and Darwin. The argument then moves to the contemporary scientific account of the universe, cosmology. Next Polkinghorne considers the human person as standing at the crossroads of science and theology. The deepest puzzle is not so much the universe that one is looking at as the mind, the self, that one is looking at the universe with, a person who evolved out of nature and who now stands in embodied nature, able critically to reflect over the whole. (We worry below that there

seems to be a chapter missing; one is moving from physics to psychology, with insufficient attention to biology.)

Polkinghorne next addresses the question of God and of a natural theology, or, if one prefers, a theology of nature, "the implications of a world found to be the carrier of value" (p. 2). If there is such a God, how does God interact with this world described by science? Is this generally in, with, and under the world setup, as a deist might affirm, or more particularly in the events of natural and world history? Polkinghorne then concentrates on Christian belief: Christ and his resurrection, the Trinity, and a destiny beyond death. He then asks where and how other world religions can fit into this picture. His final analysis is of ethical issues that arise from scientific discoveries.

The concluding pages are surprisingly ecological for a physicist. As a result of what humans have learned in their science and have become capable of in their technology, they have an increasing obligation to care for their planet Earth: "There is an ethical duty of care due to the life-sustaining systems of Earth, a necessary respect for the integrity of nature. . . . The Earth's resources are not there to be grasped for our present satisfaction, heedless of the needs of others present or future, because the Earth itself is not ours but God's" (pp. 132–33). Science and theology join in biological conservation (as scientists would put it), in care for creation (as theologians would put it).

Polkinghorne's explanations can be models of clarity, on often difficult topics, and this is especially true when he is dealing with physics. An example is his account of the significance of so-called chaos theory, really an account of hypersensitive systems, where a very small difference in initial conditions makes a very large difference in later outcome. In predicting the direction of travel of an air molecule in a room full of air a small fraction of a second later, "a serious error in prediction will be made in our problem if one has failed to take into account the effect of an electron (the smallest particle of matter) on the other side of the observable universe (about as far away as you can get) interacting with the air in the room through its gravitational effect (the weakest of the forces of nature)." "The behaviour of chaotic systems soon comes to seem to depend upon a fineness of detail at the level of Heisenberg uncertainty and below." Polkinghorne concludes "that chaos theory should encourage belief in a more subtle and supple physical reality than the clockwork world of Newton" (pp. 42–43).

The book would have been improved with a chapter on evolutionary biology. Polkinghorne does address biological reductionism (Dawkins and his "selfish genes," p. 53), or randomness in evolutionary history (pp. 77–78), but always rather briefly and in such summary overview that skeptical biologists will be left wondering whether he has heard their misgivings. "The insights of biology are too metaphysically ambiguous to afford the kind of hints of the divine found in fundamental physics, but they are nevertheless capable of being incorporated into a theistic setting. . . . The universe is not God's puppet theatre in which a predetermined script is being inexorably enacted, but it is the arena of improvisation in which creation is allowed 'to make itself,' to discover and realize its potentiality through the shuffling explorations of possibility. The costliness and blind alleys of evolution are the necessary price to be paid for this open, exploratory creation" (pp. 78–79).

This introduction covers a lot of ground. The price for this is that the typically one- or two-page treatments of positions canvassed seem almost more the abstracts of promised arguments than argument in any detail. The various mind-body positions are summarized each in a few paragraphs; this provides what Polkinghorne intends, a general introduction. Despite a few critical remarks, this does not provide any opportunity for in-depth analysis.

One novel suggestion here is that progress might be made with the question of plural world faiths if each faith were brought into dialogue with science. The faiths have commonalities, but the main problem is their dissonance; they do clash with one another. The leading options are exclusivism (other faiths in error), pluralism (leading faiths all viable), and inclusivism (other faiths are “anonymously” Christian). None of these options has proved satisfactory.

Why not, asks Polkinghorne, bring each faith to test for its capacity to accommodate and to critique science? See what Hindu and Buddhist have to say about cosmic evolutionary history and then ask whether *maya* (illusion) and *dukkha* (suffering) are as plausible as evolutionary theism and creation. See what Taoism or Confucianism has to say about the anthropic principle and the fine-tuned universe and compare this with monotheistic original creation. See what Judaism or Islam has to say about the human mind with its mathematical abilities and the astonishing effectiveness of mathematics in analyzing the physical world. See what they do with quantum thought and Heisenberg’s uncertainty principle. Then continue the interfaith conversation. This is a tantalizing suggestion, too briefly put here (one and a half pages).

One thing is proved here: Polkinghorne’s response in a recent debate with another physicist, Steven Weinberg, who claimed that science and religion are inevitably at odds with each other. Polkinghorne replied, “You don’t have to commit intellectual suicide to be a believer” (quoted in *Chronicle of Higher Education*, 30 April 1999, A17).

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Genesis, Genes, and God: Values and Their Origins in Natural and Human History. By HOLMES ROLSTON, III. Cambridge: Cambridge Univ. Press, 1999. xvi + 400 pages. \$45.00 (\$19.95 paper).

Holmes Rolston is well known as a philosopher of biology and as an ecologically aware defender of the wilderness. (We once had a friendly argument in which he lamented the transformative effects of gardening.) Rolston has long considered the issues that arise from the fact of the Earth’s evolutionary history, and the invitation to give the Gifford Lectures in Edinburgh in 1997 afforded him the chance to give us this mature summation of his thinking. Both the 4-billion-year history of biological evolution and the much shorter period of human cultural evolution are matters for his concern. He writes in a way that at times has something of poetic musing about it. Many of the conclusions presented will seem plausible and congenial to those who take a theistic and nonreductionist view of reality, and

the theological focus of the discussion is no sharper than that. Much of the interest lies in the detail and care with which the arguments are set out. At times the detail may threaten to overwhelm, for Rolston's somewhat expansive style can lead him to produce cascades of examples in support of the case he is making.

A key concept in the whole book is that of value, present already in the biological world as plants and animals instantiate the good of their particular kind. (It is important for Rolston that we acknowledge that value is a word with a much wider application than to the moral sphere alone.) The ways in which the characteristics of plants and animals are vital to their lives are "observations of value in nature with just as much certainty as they are biological facts" (p. 42). These values have been generated through the costly process of evolution. "Natural history is a story of how significant values endure through a context of suffering, stress, perpetual perishing and regeneration" (p. 25). This became possible when the emergence of biological organisms added the necessary category of information to the physical categories of matter and energy. A ground base to the argument of the book is the role of information. "All biology is cybernetic" (p. 28).

Genes are the carriers and transmitters of information, but they are better characterized as shared rather than selfish. Recessive alleles store up potentiality that can prove to be of future advantage when circumstances change. These genes have "significant solution-generating capacities. Though not deliberative in the conscious sense, the process is cognitive" (p. 30). Thus the adjective *blind* should be replaced by the adjective *smart*.

Rolston is resolutely antireductionist. As a corrective to E. O. Wilson's notorious statement that organisms are DNA's way of making more DNA, he offers the alternative that DNA is an organism's way of making more organisms. The role of the environment in the process of evolution is one that must be fully recognized. "Adaptation, the central word of Darwinian theory, is an *ecological* word, not a *genetic* one" (p. 66). The language of selfishness is inappropriate in biology because self-actualization is a biological necessity. "Self-maintenance and self-propagation are not evils; without them no other values can be achieved or preserved" (p. 85). In other words, it is not wrong to eat in order to live. "Philosophers and biologists should no more object to DNA replicating itself than they do to their books remaining in print in constant reedition" (p. 70). Moreover, genes mostly do not act atomistically but in cooperative clusters. "No one gene 'knows' enough to be selfish" (p. 80).

The coming-to-be of culture has added a powerful and contrasting companion to biological evolution. "There is a generative creativity in culture, a second level of genesis" (p. xii). The contrasts between these two evolving processes are familiar: culture's Lamarckian power to transmit acquired information from one generation to the next; its directly conscious adaptation to the environment and its transformative power to intervene in that environment; the consequent enormously enhanced rate of change induced by cultural forces. "It is difficult to yoke horses and jet planes together in coevolution and have them travel anywhere together" (p. 130). In fact, cultural and biological tendencies often act in contrary directions, as when we see today that in many developed countries the fertility rate is below the maintenance level. Rolston believes that one way of thinking about this is to consider the "possibility that selection theory transcends both biology and culture, and that natural selection and cultural selection are subsets of a more formal theory

of variation and retention” (p. 137), though the idea is not developed further in the book. John Maynard-Smith noted that the theory of biological evolution depends upon three assumptions: nonadaptive mutations; no inheritance of acquired characteristics; and Mendelian (i.e., genetically “atomistic”) inheritance from parents alone, and that none of these assumptions applies to cultural evolution. Considerations such as these cause Rolston to look askance at Richard Dawkins’s concept of memes—“a nonce word for ‘ideas’” (p. 146).

The phenomenon of emergence, exemplified time and again in the course of biological history, makes it clear to Rolston that there are significant limitations to a purely scientific explanatory scheme. “Laws plus initial conditions are no good at explaining how more evolves out of less” (p. 151). A further limitation of science is its inability to answer ethical questions. “Science is never the end of the story, because science cannot tell humans what they most need to know: the meaning of life and how to value it.” Science only gives us “know-how without know-whether” (p. 161). The human quest for knowledge always presses us on to seek further transcendence. We have to escape from a theory in order to evaluate a theory, as when strong genetic determinists allow themselves a get-out clause in relation to the independent validity of their conclusions about evolution, which they do not treat as simply genetically determined points of view.

Rolston regards science, ethics, and religion as being the principal fields of activity and achievement in the course of the short history of human cultural evolution. Accordingly, he devotes three chapters to the philosophical discussion of these topics. (One might have wished for a fourth chapter on aesthetics.) He is critical of evolutionary epistemology, subjecting Michael Ruse’s claim that “the principles of scientific reasoning and methodology . . . have their being and only justification in their Darwinian value” (quoted, p. 203) to a perceptive analysis, pointing out that Ruse elsewhere rhapsodizes about scientific intellectual powers that have soared above their organic origins. After all, Darwin had worried about the reliability of the conclusions reached by what was not much more than a monkey’s mind, but that did not prevent him from publishing *On the Origin of Species*. Our human intellectual ability to understand the world seems to go far beyond anything conceivably necessary for survival, or plausibly interpretable as a happy spin-off from such survival requirements. Rolston is curiously coy about pursuing this point, however, saying no more than “These striking evolutions can only be related as a story” (p. 207).

The chapter on ethics contains an extended discussion of the contentious question of the origins of altruism, although Rolston does not see this as being the pivotal issue in ethics, which he believes centers, rather, on justice and fairness. Nevertheless, “Both biologists and ethicists are particularly challenged to give an account of the origin(s) of altruism, the genesis of generosity” (p. 213). In his long discussion, Rolston is ironically quizzical about sociobiology’s attempt to turn an *is* into an *ought*. It is particularly noteworthy that both Wilson and Dawkins in the end urge us to rebel against our supposedly selfish genes. Commenting on remarks of the former, Rolston says that Wilson “no longer sounds like a biologist biologising ethics . . . [but] like a biologist philosophing without acknowledging his sources” (p. 267). Rolston’s own view appears to be that culture (like grace) neither arises from nature nor abolishes it, but completes it.

Religion raises particularly significant questions, for it is “without antecedent

in wild nature" (p. 292). The just-so story of sociobiology is that all religions are really fertility religions. (Rolston quotes an amusing assessment made from this point of view, in which Islam emerges at the top, and Protestant Christianity at the bottom, of the fertility-encouraging scale.) This crude account cannot be adequate, for it makes a nonsense of missionary activity. "Proselytising those with foreign genes is the worst religious mistake you can make from a genetic point of view, and yet it has been the secret of the success of the world's great religions" (p. 330). Even Judaism, the most manifestly genetic of the world faiths, says that in Abraham all the families of the Earth will bless themselves. Only about ten of the world's religions have proved truly "universal," that is to say, capable of spreading out far from their initiating tribe. This process of selection has arisen not from the effects of selfish genes but from the influence of shared truths. Once again, Rolston seems somewhat coy about attempting to push the argument and analysis a little further. There are still many perplexities about the cognitive dissonances that are displayed among the world religions.

"The idea of God has been one of the most fertile in shaping history" (p. 348). For Rolston, the concept of God seems to relate principally to the two themes that have dominated his Gifford Lectures: the source of emergent information and the ground of value. He does not find that the contemporary enthusiasm for relating emergence to powers of self-organization is sufficiently satisfying. "It is quite as much an act of faith to see dinosaurs in the possibility spaces of quarks as to see dinosaurs in the possibility spaces of God" (p. 354). Equally, value is something that we encounter but do not ourselves create. "The axiological rules we construct do not constitute value, any more than the scientific scales we erect create what we thereby measure" (p. 361). What, for Rolston, is the conclusion of the whole matter? It is that "The divine spirit is the giver of life, pervasively present over the millennia. God is the atmosphere of possibilities, the metaphysical environment in, with and under first the natural and later also the cultural environment, luring the Earthen histories upslope. God orchestrates such self-organizing, steadily elevating the possibilities, making storied achievements, enriching the values generated" (p. 367). It is an austere theological argument, which one can respect while still believing that there is much more to be said about God than these lectures have articulated. Yet to read the lectures is to travel along important paths of enquiry in the company of a mind that is humane and perceptive, careful for truth, and valiant for value.

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Playing God? Genetic Determinism and Human Freedom. By TED PETERS.
New York: Routledge, 1997. 218 pages. \$17.95 (paper).

Ted Peters is Professor of Theology at Pacific Lutheran Seminary and the Center for Theology and the Natural Sciences, as well as one of the foremost theologians involved in discussions about theology and genetics. In this volume, he has managed the difficult task of taking the complex scientific, ethical, and theological issues surrounding the field of genetics and presenting them in a manner that is clear, comprehensible, and concise. The result is a book that is eminently useful in both church and educational settings and serves well as an introduction to many of the controversies surrounding recent developments in genetics.

In the first two chapters, Peters explores the basic concerns and perspectives that inform the rest of the book. At its core, *Playing God* is about genetic determinism, what Peters calls the “gene myth.” Making good use of references in the popular media, Peters explores the way genetics is often cited to either explain human behavior (“my genes made me do it”) or to project a nightmarish future in which humans are engineered in test tubes to produce a master race.

Present in our popular culture, says Peters, are two apparently contradictory versions of the gene myth. The first of these Peters calls “puppet determinism.” In this view, our behavior is controlled by our genes, denying our freedom and absolving us of ethical responsibility for certain kinds of behavior. Peters sees some of the advocates of sociobiology (or evolutionary psychology) as particularly guilty of this type of thinking. Their view portrays human beings as marionettes dancing to the tunes dictated by our DNA. Although not all sociobiologists go to this extreme, Peters accurately points out some of the more egregious statements as well as their internal contradictions.

At the other extreme is “Promethean determinism.” For Peters, Promethean determinism assumes that we are, in fact, in control and are able to use our knowledge of the genetic code to engineer and (paradoxically) determine the character and abilities of our descendants. Promethean determinism often paints an optimistic portrait of the future, one in which genetic engineering can eliminate disease and enhance the human race. But along with Promethean determinism comes the worry about playing God. In Peters’s view, playing God is not a theological idea at all, nor should it be. To accuse someone of playing God serves rather as a warning sign, indicating the community’s sometimes justified concern over the implications of genetic science.

In contrast to these views of genetic determinism, Peters wishes to affirm freedom, which comes in four varieties: political freedom, freedom of the will, moral freedom, and future freedom. Whereas the first three categories are familiar, future freedom is especially tied to Peters’s theological concerns. Future freedom emphasizes our being in the image of God as (to use Philip Hefner’s now well-known phrase) “created co-creators.” For Christians the future is open and dynamic, and consequently we must respond flexibly and morally.

For many readers, however, the main value of the book will be in chapters 3–6, where Peters addresses four contentious issues: genetics and crime, the science and implications of a possible gay gene, concerns with gene patenting, and the ethics of genetic engineering. Peters presents a strong and balanced treatment of the first two issues, quite an accomplishment given the tension surrounding them. While

the weaknesses of the *Bell Curve* hypothesis have been well covered elsewhere, Peters calmly explains the flaws inherent in the debate as well as separating the scientific and ethical issues involved.

Peters does an especially good job of exploring the claims of a genetic basis for homosexuality. Once again, the scientific issues and the ethical issues are clearly demarcated. The verification of a gay gene would no more settle the issue, Peters observes, than finding a gene for gay bashing. For Peters, *is* does not imply *ought*. And, Peters points out, if the existence of a gay gene is conclusively proven (the initial discovery has yet to be replicated), the knife can cut both ways. Supporters of gay rights will, using puppet determinism, state that homosexual behavior is morally innocent. Opponents, using Promethean determinism, will use the finding to claim that homosexuality is a defect that needs to be cured.

Peters succeeds in giving a very clear account of the issues and misconceptions surrounding gene patenting, although his own perspectives and opinions come through much more forcefully here. He clearly regards the clergy who signed the 1995 letter opposing gene patenting as being duped by Jeremy Rifkin and his antitechnological agenda. Peters is concerned that the process be handled properly so that naturally occurring DNA is not subject to patent, but he asserts that some kind of patent protection is necessary in order for genetic science to have medical benefits.

Less satisfying is the chapter on genetic engineering, the shortest chapter in the book. Peters manages to accurately portray the issues involved but in my opinion gives the critics of genetic engineering short shrift. Peters claims that instead of allowing us to play God, genetic engineering allows us to “play human.” As created co-creators in the image of God, we are constantly challenged to create a moral future in an ever-changing world. While there are certainly dangers to genetic engineering, Peters argues that these are far off and that nearer-term medical benefits (such as removing the gene for diabetes from future generations) are morally unambiguous.

I would generally side with Peters on these issues, but I do not think the issue is so clear-cut. Although the ability to genetically engineer intelligence (if possible) is probably a long way off, current researchers are racing to find a gene for obesity. Obesity is a health issue, but one with social ramifications. We may not want our children to be overweight, but is this because of health reasons or because of cultural norms and expectations? Are social norms of beauty sufficient reason to alter our descendants? If not, can we truly separate the social and health issues? This is but one example of the ground that needs to be covered.

The final chapter gives a summation of Peters’s theological perspective as it ties into the issues discussed. Relying heavily on the work of Pannenberg and Tillich, Peters emphasizes the reality of human freedom. Portraying freedom as “freedom for,” he writes that human freedom is not, strictly speaking, opposed to determinism. This is because determinism, including genetic determinism, does not occur at the higher holistic level of human freedom. Here, as throughout the book, Peters emphasizes the theme of “playing human.” We, as created co-creators, are ourselves in process. We are becoming human. Consequently, we can and should embrace the technological achievements made possible by genetic science, although we should do so in full awareness of the moral implications.

Many readers will no doubt be disturbed by this theological embracing of technological progress. Nevertheless, most will find the book of value for its even-handed account of the most important implications of genetic science and technology, as well as for its astute handling of both the scientific and ethical issues. Peters proves to be a sure guide through what is often a moral mine field.

Although Stephen Jay Gould will be surprised to find that he is an anthropologist and not a paleontologist after all (p. 69), very few errors mar the text. The book is well rounded by a solid index, and plentiful footnotes provide resources for further research.

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Green Space, Green Time: The Way of Science. By CONNIE BARLOW. New York: Springer-Verlag, 1997. 329 pages. \$25.00.

For Connie Barlow—naturalist, science writer, and self-styled “enthusiast” of science—the time is ripe for an “extension” of science into realms of meaning and value. Her new book offers a framework, and no little inspiration, for this enterprise. She examines “the way of science” as a “spiritual path” capable of cultivating “ecoreligious experience” and nurturing a “greening of one’s deepest worldviews” (pp. 15, 19, 20). In the process, Barlow provides a kind of benchmark in the environmental movement, suggesting how a green consciousness might now fully realize its religious character.

To move toward a synthesis of environmental science, religion, and ethics, Barlow combines an exposition of the sciences with conversations with scientists. As a knowledgeable amateur (in the traditional sense of that word), Barlow provides an accessible and often passionate discussion of several life sciences. She covers evolutionary and molecular biology and sociobiology, along with geochemistry, geophysiology, ecology, and cosmology. Along the way, her conversations with chosen experts enliven professional opinions with personal stories as she consistently demands an answer to the “religious question” (for example, p. 152). As a seeker herself, Barlow wants to know what to make of science spiritually (p. 198). As a practicing member of the Unitarian Universalist church, she offers practical suggestions for celebrating nature as known by science. Ultimately, her approach creates a style of journalism that is breezy, even whimsical at times, and scientifically sound. She herself emerges as a kind of mediator between specialist and layperson, interpreting the science in pursuit of a “spirituality that is Earth-centered” (p. 233). Her personal search for a “science-based religion” becomes a subtle, background motif for the book (p. 31). In all this, Barlow at least approaches her grand objective to motivate as well as instruct, to find meaning in science in a way that can “affect our psychological states, our commitment to credos of ultimate value, our sense of our own role on Earth and in the cosmos” (pp. 227–28).

Barlow begins by offering a scientific account of ecoreligious sensibility. Drawing upon the work of E. O. Wilson (who, with Julian Huxley, becomes a sagelike figure in this account), she anchors a universal “sense of the sacred” in an innate

“religious capacity”—an evolved, observable urge for meaning and value. Human beings can satisfy this “mythopoeic drive” in a number of ways. Barlow aims to direct it toward a scientifically informed green worldview in which “ecological concern” is infused with a “vision of the sacred” (p. 12).

The task of the book then becomes one of developing the core beliefs of an ecoreligious creed. Barlow first establishes the “epic of evolution” as the grand narrative for the new faith. The “evolutionary epic” (a term coined by Wilson and a topic of a number of recent conferences on science and religion) translates the accumulated knowledge of the sciences into a creation story. This science-based myth subsequently provides a framework for four fundamental affirmations: belief in the continuous, unfolding “pageant of life”; the fact and value of the “diversity of life”; appreciation of “the richness and integrity of bioregions”; and a perception of the Earth as “Gaia”—a self-regulating, self-organizing living system (pp. 236–37). In a concluding chapter, Barlow adds a fifth tenet that defines the place of *Homo sapiens* in the story. Responding to a question from her niece about the value of human beings, and to charges of misanthropy in an ecocentric view of life, Barlow describes human beings as “the meaning-makers” of the cosmos. It is a sense of the self that seems to confirm the role of scientist-as-seeker (p. 261).

Each chapter is devoted to developing one tenet of the creed. In each case, Barlow introduces us to scientists and other scholars whom she considers “visionaries” and “prime movers” in an “eco-religious movement” (p. 12). Her presentation of the *evolutionary epic* is accompanied by snippets from her “conversation with catalysts.” Physicist Brian Swimme and cell biologist Ursula Goodenough, among others, reveal their professional and personal interests in getting the story out (pp. 57–79). Barlow’s examination of *biodiversity* includes an interview with Diane Ackerman, who, as “nature writer” and “Earth ecstatic,” exemplifies a religious identity that celebrates a relatedness to all living things (pp. 106, 108). In this context, Barlow proposes another of Wilson’s ideas, *biophilia*, as a key spiritual trait in a science-informed faith. As an evolved love of life for life, biophilia counters the view of nature as a mere struggle for existence. In *bioregionalism*, Barlow links ecology, “the science of relationships,” with “the green equivalent of multiculturalism . . . a knowledgeable and loving attachment to one’s home region” (p. 122). Here Barlow examines the pivotal role of “keystone species” in particular ecosystems. She also acknowledges certain “polarities” in public policy debates over whether to protect near-pristine bioregions or restore ravaged areas, to intervene in “natural” processes or leave well enough alone (p. 145). Finally, her examination of the Gaia hypothesis provides a global scale for an Earth-centered spirituality. Her conversations here link an emerging science of geophysiology with the perception of life as a planetary phenomenon and understanding of the Earth as a self-organizing *biosphere*. Key proponents of a gaian perspective appear, including James Lovelock and Lynn Margulis.

In a real sense, Barlow’s book answers recent calls for a theology of nature. Reminiscent of Auguste Comte’s fully developed Religion of Humanity, Barlow sketches a bona fide Religion of Nature. She provides a reading of the text of Nature in which “the diversity of life is scripture,” and to “behold another species with reverence is no less a religious act than to read the Bible in a pious frame of mind” (p. 242). She offers specific ways of directing that natural piety in prayers and rituals that are informed by science. She introduces the sages, if not the priests

and priestesses, of this new faith and new hope while clearly indicating the ethical demands on believers. Finally, throughout the text she evinces a kind of evangelical urgency to instruct the young, to educate the next generation in “joyful, science-based cosmologies that nurture green values systems” (p. 240). This book, then, is a kind of Talmud for a new religion. It provides commentary on the sacred text, offering guidance and consolation to those in search of a relevant faith. As such, the book is both a comfort and a challenge to traditional religion. While it interprets science in ways affirming the spiritual life, it also proposes a substitute faith. In fact, an unresolved tension in the book pits an apparent sympathy with religion against a critique of religions that seem overly committed to the transcendent in theology and overly anthropocentric in ethics.

Who, then, should read this book? In the first place, *Green Space, Green Time* has intrinsic value as a popularization of the life sciences. Moreover, it introduces some of the literature and personalities involved in a developing science-religion community. In addition, students of religion should find the book an interesting, frank account of an emerging new religion. Fundamentally, though, the book seems designed for the college educated who somehow share Barlow’s search for a spiritual life that is ecologically sensitive, scientifically informed, and religiously mature, capable of substituting for a traditional faith. I myself am considering passing the book along to a geologist friend who, in discussing her research in the Everglades, saw the need for representatives of religion and science to collaborate in public policy debates. Her own concern to reconcile her limited role as scientist with a deep commitment to the environment—itsself grounded in a long-standing and now scientifically informed sense of the interconnectedness of all life—finds rather full expression in Barlow’s way of science.

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Reconstructing Nature: The Engagement of Science and Religion. By JOHN BROOKE and GEOFFREY CANTOR. Edinburgh: T. & T. Clark, 1998. xii + 367 pages. \$49.95.

In this book, John Brooke and Geoffrey Cantor give us an engaging reconstruction of the history of science for which they are eminently qualified. John Brooke holds the Idreos Chair of Science and Religion at Oxford University, and Geoffrey Cantor is Professor of the History of Science at the University of Leeds.

This book is an expansion of the 1995–1996 series of Gifford Lectures at the University of Glasgow. This distinguished lecture series, established by Lord Gifford in 1885, was, as instructed in his will, to address “Natural Theology, in the widest sense of that term.” The wider sense of this term included “The Knowledge of God, the Infinite, the All, the First and Only Cause . . . and the Knowledge of His Nature and Attributes, the Knowledge of the Relations which men and the whole universe bear to Him, the Knowledge of the Nature and Foundation of Ethics or Morals, and of all Obligations and Duties hence arising.” Most important, Lord Gifford explicitly stated that lecturers for the series should “treat their

subject as a strictly natural science, the greatest of all possible sciences, indeed, in one sense, the only science, that of Infinite Being, without reference to or reliance upon any supposed special, exceptional or so-called miraculous revelation. I wish it, i.e. Natural Theology, considered just as astronomy or chemistry is.”

This prestigious series has over the years included such thinkers as Alfred North Whitehead and William James as lecturers. Whitehead's *Process and Reality* and James's *Variety of Religious Experience*, both given as Gifford Lectures, had a major impact on modern intellectual thought. Brooke and Cantor similarly raise searching and profound issues concerning the confrontation of traditional theological thought with the content and methods of evolving modern science. However, they employ the relatively recent discipline of the history of science. In 1885 there was no academic discipline known as the history of science, although William Whewell had already laid its modern foundations. Consequently Gifford's will for the lecture series does not mention any role for the history of science. But since the period between the two world wars the history of science has grown to become a major area of intellectual concern for understanding science as a part of culture. George Sarton, an earlier pioneer in the field, expressed its importance best when he said, "Science is nothing but the human mirror of nature." In the history of science we reflect nature using the human mirror that is our evolving nature. The authors state as their aim, "to show how recent developments in the history of science can contribute to the analysis and understanding of science-religion relationships and how they have been constructed" (p. x). Thus, the history of science is the continual reconstructing of nature using the human mirror, which itself changes. Of course such an endeavor on the part of the authors requires a clear perception of science and religion in order to understand such engagement, which unfortunately they address only in the most cursory manner. They do mention in passing that science has been variously defined in terms of its theories, methods, and social organization. Their definition of religion is likewise insubstantial; only briefly do they mention its theological and cultural aspects. The reader receives the distinct impression that this book presupposes a strong belief in Western Christianity as the paradigm of religion in history. Certainly the histories of religion and science are inextricably intertwined in most cultural traditions, but the tendency today in all historical studies is to use a cross-cultural approach. Consider the role of Islamic religion and its negative impact in its failure to establish institutional settings for science and its banning of the printing press in Islamic lands, which hindered the growth of science until well into the modern period. If the authors had chosen to include such a comparative study in their book, it would have strengthened their argument that religion has played a major role in the rise of science in the West.

Reconstructing Nature is divided into four sections. In section 1, "Science and Religion," the authors argue for the value of a historical approach that situates science within the broader context of culture—social, political, and economic. The rise of this approach in the history of science, as the authors rightly point out, has created a greater interest in the religious parameters. Although Brooke and Cantor are not the first to point this out, they do provide many good historical examples of how religious thought influenced the minds of many major scientists in the modern period, from Copernicus to Einstein. For readers interested in the engagement of science with religion, this section offers a rich source of material.

The next section, "Reconstructing History," raises many important and perplexing issues in contemporary culture studies. The authors reject the use of the single "master-narrative" in reconstructing the past for apologetic purposes. In this section they criticize the tendency of some historians and philosophers to emphasize the conflict between science and religion in which rational science displaces religious dogma. Brooke and Cantor rightly point out that the cultural mold for the birth of Western modern science was strongly nourished by medieval Christian theology. In the works of Copernicus, Kepler, and Newton, one clearly finds more union than conflict between science and theology. However, for such figures as Newton, theology was clearly of a more metaphysical nature than the religious thought of the layperson. Thus, some may take issue with the authors when they say that there has been little or no conflict between science and religion starting with the Renaissance. Many historians have argued that the secularization of culture is a major theme in the coming of modernity. Readers of a more catholic persuasion may question whether the authors may have their own tacit master-narrative about the relationship between science and religion.

The third section of the book, "Having Designs on Nature," is concerned with natural theology, rhetoric or the language of natural theology, and aesthetics in theology. In specifically addressing the role of natural theology in the history of science, the authors wish to show that the argument from design has played and continues to play a role in the minds of many scientists. William Paley's watchmaker analogy for God to account for the lawful nature of celestial mechanics or the craftsmanship in the human eye is certainly a major theme in Western philosophy as well as theology. One thinks of Kant and Hegel in this respect, both of whom had a profound impact on the minds of many important scientists. And of course Darwin before his voyage on HMS *Beagle* was genuinely influenced by Paley's *Natural Theology* of 1802. However, in his mature work Darwin argued for variation and natural selection as natural causes to explain the origin of species rather than for an Intelligent Designer who created the complex structure of living things. In the section on the Darwinian challenge to natural theology, Brooke and Cantor find some solace in the idea that Darwin never was able to explain the ultimate origin of the earth or even of the first living forms. Thus they see Darwin's theory not so much as "demanding the death of God, but how it affected images of the deity" (p. 162).

The final section of the book, "Structuring Experience," develops their theme of using microanalysis, or "smaller pictures" of the history of the engagement of science with religion, through the use of biographical narratives of four Victorian lives to demonstrate the complex nature of individual thinkers like Adam Sedgwick when placed in the context of their time. In the final chapter of this section, "Improving on Nature?" the authors deal with a major theme in the contemporary ethics of science. Given the unparalleled advances in science and technology in both chemistry and biology, we seek "to improve on creation" (p. 319). As the authors point out, in exploring the relation between contemporary science and natural theology they are making an original contribution to the engagement of science and religion. Their aim is to explore "the broader question of how the applied sciences and technology might affect conceptions of divine Providence" (p. 315). In this chapter they then consider process theology, which may support the view of a collaboration between human beings and God.

Many readers of *Zygon* will find that *Reconstructing Nature* fills a gap in the literature on relating religion to the history of early modern science, where the authors' arguments are most relevant. However, contemporary readers will have questions about how far traditional natural theology can go to help us solve the basic metaphysical problems that underlie modern science. Such readers, like the reviewer, will find Whitehead's book *Religion in the Making* (New York: Macmillan, 1926) more in tune with modern sensibilities.

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Whatever Happened to the Soul? Scientific and Theological Portraits of Human Nature. Edited by WARREN S. BROWN, NANCEY MURPHY, and H. NEWTON MALONY. Minneapolis: Fortress, 1998. 257 pages. \$19.00.

Science continues to offer more (tentative) answers about who we are as human beings than human beings are prepared to grapple with. From molecular genetics and twin studies to evolutionary biology applied to our ethical origins to the frontiers of cognitive neuroscience, cultural constructions of human nature compete with more traditionally religious conceptions in the popular culture. This is perhaps most true of any religious anthropology claiming that human beings have a soul. What of the meaning of *soul* in an age when "neuroscience has in a sense completed the Darwinian revolution, bringing not only the human body but the human mind as well, into the sphere of scientific investigation" (p. 1)?

Whatever Happened to the Soul? is edited by Warren S. Brown, a cognitive psychologist at Fuller Theological Seminary and director of the Lee Edward Travis Institute for Biopsychosocial Research; Nancey Murphy, a professor of Christian philosophy at Fuller; and H. Newton Malony, a professor of psychology at Fuller. The work features essays by Brown and Murphy as well as by an evolutionary biologist (F. J. Ayala), a geneticist (V. E. Anderson), a cognitive neuroscientist (M. Jeeves), a biomedical ethicist (S. G. Post), a biblical scholar (J. B. Green) and a practical theologian (R. S. Anderson). The backgrounds of the authors as well as of the publisher should make it clear that this work is intended mainly for a Christian audience concerned with ongoing conversations between Christianity and science.

The book maintains a central unifying theme throughout, and each author adds expert detail in support of this thesis. The "core theme—the key of the resonant chord—is a monistic, or holistic, view of humans" (p. xiii). This view is termed "nonreductive physicalism"—that is, "statements about the physical nature of human beings made from the perspective of biology or neuroscience are about *exactly the same entity* as statements made about the spiritual nature of persons from the point of view of theology or religious traditions" (p. xiii).

This view of human nature is motivated by three main concerns. First, there is a conviction that "the person is he or she who physically stands before you." Second, the various authors believe that nonreductive physicalism avoids the reductionistic denials of subjective experience of consciousness and freedom while allowing "one to accept and profit from both scientific and theological accounts of human-

kind.” However, these two reasons for adopting a nonreductive physicalist view of human nature are less important than the authors’ view of the conciliatory effect such an approach brings to the conflicts between (Christian) religion and science, for “if the human being is not divided into parts, such as body and soul, then explanations given by different disciplines and from [different] perspectives must ultimately be seen as noncontradictory” (p. 228).

Such considerations motivate a rereading of biblical texts, often taken to support dualistic (body/soul) accounts of human nature, as well as a reexamination of theological traditions that support a more monistic viewpoint. Indeed, Joel B. Green (in “Bodies—That Is, Human Lives: A Reexamination of Human Nature in the Bible”) revisits biblical texts to show how such “anthropological duality” (p. 151) may have been read into the texts from a tradition shaped by Hellenistic culture. Green asserts that “the prevailing view in the *scholarly* study of Scripture is that the Old and New Testaments support a monistic rendering of the human person” (p. 173), in contrast to more popular views. Green’s essay would have been strengthened by replacing his lengthy and inconclusive treatment of human nature in the Gospel of Luke with a more detailed analysis of Hebrew terms and Pauline language traditionally used to support the conception of a separate body and soul.

Ray S. Anderson’s chapter, “On Being Human: The Spiritual Saga of a Creaturely Soul,” argues that the “self’s existence as a personal, social, and spiritual being constitutes what the Bible calls the ‘image and likeness of God’” (p. 179). He uses the word *spiritual* “more or less in a functional way to describe the phenomena of human existence” and not to refer to a nonphysical entity or substance (p. 182). Drawing on Karl Barth’s conception of human body/soul unity in relation to God, Anderson identifies a “contingent monism,” in which body and soul may be conceptually differentiated while held together as one essential unity that is the human person. Anderson is concerned about the implications of this for the Christian doctrine of the resurrection of the body. He answers this concern by affirming, “What provides assurance of continuity of the self through death and resurrection is not an immortal soul but the granting of immortality to the mortal human person as a body/soul unity, as having already taken place on our behalf through the resurrection of Christ” (p. 191). Regrettably, surely due to space limitations, Anderson is silent about the christological implications of nonreductive physicalism. What does this thoroughgoing physicalist account of human nature mean for a Christian faith in the fully God, fully *human*, Jesus Christ? Many readers will surely be left asking this question of the advocates of nonreductive physicalism.

The more scientifically focused chapters are as tantalizing as the two just discussed. In “Human Nature: One Evolutionist’s View,” Francisco J. Ayala presents an engaging overview of what is known about human evolutionary biology and argues strongly that moral norms are products of cultural, not biological, evolution. He does not make a clear distinction, however, between reasons an organism has for a particular behavior and evolutionary causes favoring that behavior, and so advances the biologically questionable thesis that “ethical behavior is not causally related to the social behavior of animals, including kin and reciprocal ‘altruism’” (p. 42).

In “Cognitive Contributions to Soul,” Warren S. Brown defines the soul or souliness as a “physiologically embodied property of human nature” (p. 99) that

emerges from experiences of personal relatedness to self, others, and God, which in turn rests on certain cognitive capacities. These capacities include, but are not limited to, language, a theory of mind, episodic memory, conscious top-down agency, future orientation, and emotional modulation. Thus, Brown advances a relational conception of the soul and makes this relational capacity dependent upon complex cognitive abilities. "Experiences of personal relatedness, in their deepest and richest, create in us that which is semantically designated as 'soul'" (p. 102). He later backs away from this idea in addressing mentally impaired individuals. It is also unclear how such a relational concept of soul squares with the more individualistic notion that "the person is he or she who physically stands before you" (p. 228).

One of the most important chapters in the volume is Nancey Murphy's philosophical exposition of nonreductive physicalism. The main issue is how the "one set of events" (that is, mental/neurological events) can be addressed from both scientific and religious perspectives. How does one affirm "the acceptance of ontological reductionism" while rejecting "causal reductionism and reductive materialism," as nonreductive physicalism holds? Murphy finds her answer in the philosophical concept of *supervenience*, which played a role in moral philosophy before being taken up by philosophers of mind such as Jaegwon Kim (*Supervenience and Mind* [Cambridge: Cambridge Univ. Press, 1993]). Although Murphy makes a compelling case in "defeating causal reductionism" (p. 131), she seems unaware that philosophers of mind have largely given up on supervenience as any kind of solution. Most side with Kim in seeing in supervenience a complex, creative route leading to nothing but a "dead end" (*Supervenience and Mind*, p. 367).

Whatever Happened to the Soul? is an intriguing entry into the conversation between Christian anthropology and the sciences of human nature. It enlightens as it invites readers to think more deeply within the conversation, but these same readers would benefit from a more prolonged treatment of the issues by each of the scholars involved.

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The Turn of the Millennium: An Agenda for Christian Religion in an Age of Science. By JEFFREY G. SOBOSAN. Cleveland, Ohio: The Pilgrim Press, 1996. 242 pages. \$16.95 (paper).

Jeffrey Sobosan is clearly deeply concerned about the multiple threats that face us at the dawn of a new millennium. They are undoubtedly serious threats, too often ignored or minimized, and it is helpful to have our attention drawn to them once again and to pause for theological reflection on them.

The first four chapters take us through a series of arenas in which threats arise, moving down from the most general to the most specific. There are threats to the universe, such as the "heat death" that would ensue if the universe expanded infinitely. There are more specific threats to the planet Earth, such as those arising from irreversible exploitation and pollution. There are threats to the rich variety of

animals and plants on Earth, many of which are in danger. There also are threats to humanity, arising from destructive forms of human relations.

Sobosan offers us, in the words of the subtitle, an “agenda for Christian religion in an age of science.” Science here takes the form of an analysis of the threats to the universe and to Earth and its inhabitants, and the agenda is for an adequate response to them. (I will return to the question of what this has to do with the Christian religion.) One reviewer, quoted on the back cover, said the book is “the best synthesis of science and religion I’ve read.” However, it doesn’t really synthesize science and religion in any comprehensive way. Both are brought in highly selectively and only around the central theme of threats to the universe, planet, species, and humanity.

What people think of this book will be much influenced by how they react to the style in which it is written. Let me admit that I took against it, and that has no doubt heavily influenced my overall assessment. In the Foreword, John Cobb writes that “the style is meditative and the writing beautiful.” The style is certainly meditative. At its best, this is a book that could be an aid to prayer or preaching. That sets it apart from most science and religion books and gives it a particular value.

However, the style of writing seems to me more execrable than beautiful. There is a constant straining after effect, but most of the time it does not come off. There are countless sentences that might have been moving but end up just being obscure. The style is consistently ponderous and verbose. For example, early in the chapter on the universe, Sobosan indicates three “directions” that he intends to discuss. Then he adds, “The only definite point of confidence I would care to assert for the moment about each of them is that at the end of the coming thousand years, should we continue to progress in scientific and technical skills without employing any of them to our own regression or demise, we will know an immeasurably greater amount about each of these issues than we do now” (p. 4). Is such a sentence worth writing? There are a few points at which the style lightens and suddenly becomes direct and passionate, probably where the author’s anger is roused.

There are also problems in adhering to the logical sequence of the chapter headings and in maintaining focus. Most chapters contain a good deal of material that doesn’t quite belong there. Take, for example, the section on “the water” in the chapter “The Earth.” It doesn’t begin with water at all but with a page about the fundamental physical forces that hold elementary particles together. There is then an odd section on the coherence of memories that seems out of place here and also wrong in assuming that memories are assembled from some kind of atomistic components rather than reconstructed “top-down.” These thoughts on coherence are then to some extent redeemed in terms of the point that water arises from a bonding of two different elements. Next, there is a section on threat of pollution to freshwater and the role of religion in meeting this challenge, which leads into a longish digression on the nature of disciplined “asceticism.” The section winds down with reflections on the role of water in relation to food, on the destructiveness of water, and on the importance of thankfulness. Some readers will be happier than others with this stream-of-consciousness approach to the organization of a book.

Sobosan sees his task as being to propose an agenda. The proposal is generally stated rather than argued for. For example, chapter 3 begins with a definition of

life in terms of the four attributes of movement, duration, novelty, and relationship, which leads Sobosan to the nonobvious conclusion that everything is alive. You might have thought that a definition of life that led to such a conclusion would thereby be shown to be mistaken. At very least, it seems a position that needs an argument; it is not enough for it to be advanced merely as a proposal.

Much of the book is concerned with an ethical response to the threats facing us at the beginning of a new millennium, but surprisingly little attention is given to the nature of ethical argument, to *why* people should respond to threats in a particular way. Sometimes it seems to be a matter of obedience to absolute values, which carry their own authority; sometimes it seems that the implicit considerations are more pragmatic. I would have welcomed more explicit discussion of just exactly why particular responses are proposed.

There is also the question of in what sense this is a religious or theological book, which of course links to how far the threats and problems dealt with are religious ones. Sobosan rightly points out that there is a problem of commitment to action. Most people are aware of the issues in general terms, but they do little about them. We are, as Sobosan says, faced with a problem of *parenesis*, which he defines as a challenge to the will on the basis of knowledge already possessed. But though the problem is, in this sense, religious in character, it is not clear how far Sobosan sees the *solution* as being religious. He clearly thinks it is helpful to draw on faith traditions to illuminate the nature of the problem, but he does not appear to be arguing for a religious solution in the more radical sense that faith, or the grace of God, are prerequisites.

This leads on to the question of how far this is a specifically Christian book. Certainly, Christianity is the faith tradition with which Sobosan seems most familiar and to which he most often turns for religious material. Some of his scriptural reflections I found very illuminating. I liked, for example, the suggestion that we need to free the idea of a promised land from the confines of geography and history. Indeed, he seems to want to go further and to want to free religious teaching from the confines of any one faith tradition. This is implicit in the treatment of spirituality in chapter 4 as it “moves from dimensions of it that are acknowledged only intermittently (childlikeness), to ones more fully acknowledged (the messianic traits), to ones universally acknowledged by all worthy religions (the doctrine of love)” (p. 138). Christianity is seen as a valuable religious source, but there appears to be no particular commitment to it, even though the book is offered as an “agenda for Christian religion.” He would probably see a particular commitment to Christianity as part of the “religious tribalism” that he wants to see defeated.

The four chapters on universe, Earth, plants and animals, and humanity are followed by one on God, in which a central theme is a plea for “natural theology.” What he means by this is not the Enlightenment tradition of natural theology, associated with people such as Paley, in which nature is used as the basis for an argument for the existence of God. If you make a distinction between natural theology and the theology of nature, then I think it is more the theology of nature than natural theology that Sobosan wants to recommend. I fully share his conviction that this is an important project, though it is another matter whether, as Sobosan thinks, Whitehead is the best guide to a revived theology of nature.

The “God” chapter proceeds with a list of conceptual tools that are important in understanding religion, including some particularly interesting remarks on the nature of revelation and its relationship to love. It ends with a proposal about the nature of the relationship between science and religion that is constructed around the distinction between metaphysics and metaphor. The proposal is roughly that, at the level of metaphysics, science and religion are referring to the same thing when they talk respectively about the singularity and God. However, at the level of metaphor, they remain distinct. This was one of the most helpful parts of the book, and there I sensed that I was reading an author who at last was doing what he knew how to do best. Yet it was done relatively briefly, and I would like to have seen a much fuller and more rigorous treatment that explored more fully this distinction between metaphor and metaphysics—and perhaps related it to other somewhat similar distinctions such as Gottlob Frege’s between sense and reference, and that made by contemporary philosophers of science such as Rom Harre between referential realism and theory realism. One key issue is surely whether God and the singularity have anything more in common than being beyond human knowledge. Is the point just that everything that is beyond human knowledge is in some sense identical? Also, just how separate can metaphysics be from metaphor, and if science and religion are radically distinct at the level of metaphor, in what sense can there be metaphysical identity?

There is much of interest and value in this book. However, I found the style an obstacle. I admire the author’s thoughtfulness, integrity, and commitment but wish that these had been more fully combined with the traditional virtues of rigorous thought and clear expression.

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God without the Supernatural: A Defense of Scientific Theism. By PETER FORREST. Cornell Studies in the Philosophy of Religion. Ithaca and London: Cornell Univ. Press, 1996. xiv + 256 pages. \$39.95.

Philosophers of religion sometimes indulge in thought experiments, taking license from the way the world is seen through the natural sciences; a similar tendency can be found in philosophy of mind (for a critical discussion of thought experiments in philosophy and of the difference with their use in science, see Kathleen V. Wilkes, *Real People: Personal Identity without Thought Experiments* [Oxford: Clarendon Press, 1988], especially chapter 1). Such artificial analytical philosophy is less relevant for reflection on science and religion than it could be—and should be, for the science-religion discussion can benefit from precise and clear argument from philosophers. The Australian philosopher Peter Forrest exerts some restraint in thought experiments but falls back upon them when considering nonsupernatural possibilities of an afterlife.

Forrest offers a lucid defense of scientific theism, which he takes to be belief in a god as the best explanation of features revealed by, or implicit in, modern science.

This god is personal and after the well-being of humanlike beings. Forrest intends to defend his case without appeal to supernatural entities for which there would be no familiar analogies and without violations of laws of nature. God does not break any laws of nature, even in creating the universe or ensuring an afterlife. Though offering arguments against atheism, Forrest appreciates atheism as a high-minded love of truth, more faithful to the Judaeo-Christian tradition than many a superstitious corruption of that tradition (p. xi).

In a chapter on “the theocentric understanding of life” Forrest argues that, even if physics would derive all fundamental constants from an elegant system of fundamental laws, this would not explain why the laws are life-friendly rather than life-hostile. This question might be answered in terms of the divine motive in creating. Motives based on need or envy are not applicable to God, but recognition of intrinsic value could be acceptable.

Forrest argues for the epistemic possibility of a nonsupernatural afterlife; this would greatly increase the value of the creation of persons, especially when considering persons struck by misfortune. An afterlife might arise when in the vast universe the proper material elements come together in such a way as to bring forth living beings with the same memories on a paradise-earth. Forrest offers a variety of other speculations, not as assertions about how things are but rather as ideas as to how God could bring about an afterlife. In my opinion, these thought experiments do not result in a genuine epistemic option. They do not address how scarcity, finitude, and decay are among the ambivalent consequences of the life-friendly laws of physics.

Conceptually Forrest aligns divine action with the free actions of conscious beings. In my opinion, an antisupernaturalist scientific theist could also argue that the difference between existence and nonexistence is such that there is a genuine case to be made for a nonnatural concept of creation which would not violate any natural laws, although there are no familiar analogies between such a creation *ex nihilo* and actions within the natural world. Forrest acknowledges that “God’s act is *physically singular*” but does not allow this to have conceptual consequences for our idea of God; God’s act “is nonetheless in accordance with a general principle governing the powers of agents” (p. 80). This makes his account dependent upon a particular, and in a sense non-naturalist, view of the power of free conscious agents.

Forrest then discusses naturalism as the ambition to understand “by going beyond the natural sciences as little as possible” (p. 89). Forrest argues that the detail of scientific explanations (e.g., as to why there are five inert nonradioactive gases such as helium and neon) does not make a difference between a naturalist and a theocentric explanation of reality as long as they accommodate science. The theocentric understanding is stronger when considering other features of our world, its regularities, the progress of science toward truth, moral supremacy, beauty, and the serendipity of mathematics. With respect to the success of science, I would suggest that there might be granted more to piecemeal improvement, as in the development of precision multipurpose technologies from Stone Age tools.

Forrest considers not only naturalism as a rival to theism but also non-naturalistic rivals such as pantheism, polytheism, plenitude, a primacy of values, idealism, a malevolent God, or a God who creates out of boredom or at least for nonmoral motives. Some of these positions have particular advantages, for instance the last

one with respect to the problem of evil, but Forrest points out other disadvantages.

After arguing against such rivals, Forrest comes to a further underpinning of his preferred view. He argues that theism is a genuine epistemic possibility. Since humans cannot be understood purely in physical terms, there is the theoretical possibility of unrestricted consciousness. I do not see how an epistemic nonreducibility of embodied social persons delivers any clue regarding the ontological possibility of a nonembodied consciousness. In the final chapter Forrest responds to objections based on the reality of evil; he suggests a theodicy based on plenitude and soulmaking.

In my opinion, Forrest still relies too much on thought experiments and analogies to establish "genuine epistemic possibilities." However, he offers careful arguments and distinctions in a clear style and gives a respectful, fair, and original consideration of alternative views. The book thus is well worth careful study for all who embark on discussions on theism as an explanation of our universe.

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Religion and Creation. By KEITH WARD. Oxford: Clarendon Press, 1996.
351 pages. \$19.95 (paper).

Keith Ward, Regius Professor of Divinity at Oxford, offers here the second part of his comparative theology project. He assesses major themes from the perspective of Christian theology through comparative analysis of other religion traditions. The putative theme of this study is the doctrine of creation, although the bulk of the discussion centers on the attributes of God as creator.

Ward examines the God-world relationship in four religious traditions: Judaism, Christianity, Islam, and Hinduism. In each case, he studies scriptural traditions as interpreted by a contemporary writer. Those selected are Abraham Heschel, Karl Barth, Mohammed Iqbal, and Aurobindo Ghose. Each has sought to restate the classical tradition of his faith in an effort to bring God into a positive relationship with the cosmic process. This requires emendation of traditional ideas about divine impassability, the unreality of the temporal world, the necessity of spiritual detachment from material processes, and an unrelenting monism. Ward describes how these thinkers from four different theistic traditions have sought to modify received teaching in this direction. Within all four, the cosmos is interpreted as brought into being to realize values of goodness, bliss, happiness, freedom, and creativity. This comparative analysis is then followed by substantial philosophical reflections on theological realism, religious language, and the divine attributes. The concluding section engages with recent cosmological theories (Hawking's and others) and trinitarian thought.

Ward's treatment of the subject matter is characteristically brisk and refreshing. He has an ability to identify the nature of a problem and the principal arguments advanced toward its resolution. There is a refusal to be intimidated by jargon or rhetoric and a frankness often lacking in other writers. Readers of two earlier works, *Images of Eternity* and *Rational Theology and the Creativity of God*, will find much that is familiar here. There is a concerted attempt to bring Christian theology into closer intellectual contact with the doctrine of God in other religious traditions. A similar dual-aspect theism is thus detected in writers espousing different faiths. At the same time, Ward continues his assault on aspects of traditional Christian theism, especially Thomism, arguing that it makes impossible divine interaction with the world through rendering time, human freedom, and divine suffering unreal. The God who emerges from this study is one who is temporal, passable, and has contingent states. Divine omnipotence and omniscience are abridged to the extent that God can neither create all possible worlds nor know the precise outcome of the future.

The principal strength of Ward's approach is the ability to work on several fronts simultaneously. Comparative theology, Christian theology, and philosophy of religion are all blended to produce an account of God and the world that is both religiously adequate and intellectually defensible. I find Ward's position deeply attractive. He is one of the clearest exponents today of a position which amends classical theism while keeping its distance from fashionable forms of pantheism. In this respect, it can reasonably claim to offer one of the most plausible philosophical constructions around of biblical theism.

Yet there are some possible weaknesses in this project. The purported comparative study sharply declines after the opening part. The long sections on the divine attributes are preoccupied with debates and writers largely internal to recent Christian philosophy of religion. There is here only infrequent and passing mention of other religious traditions and their exponents. Interaction with the philosophical theology of Judaism, Islam, and Hinduism is brief and very occasional. Perhaps this is to expect too much, but one may nonetheless wonder how well the aim of the study, as an essay in comparative theology, has been achieved.

This raises a further question. Ward's approach to a range of issues is strikingly orthodox. He defends what are, at least in my judgment, fairly traditional accounts of divine action, creation out of nothing, incarnation, resurrection, Trinity, miracle, and eschatology (albeit of a universalist variety). While Ward is determined to engage with other faiths, his own position remains some way to the right of John Hick's pluralist hypothesis. Where does this leave other faiths? Does the Christocentrism of Ward's approach not relativize other claims to revelation and thus reduce in significance their accompanying conceptual descriptions? Why then bother with comparative theology? An account of other religions and the action of God within their historical purview is required to fill this lacuna. This account must proceed from within Christian theology. Without this, the project lacks a clear rationale. Of course, much of this ground has already been mapped out in the first part of Ward's comparative theology, *Religion and Revelation*. Yet it is not entirely clear that the strong Christocentrism of this latest volume sits easily with the "open theology" characterized in the closing stages of the earlier work.

Ward's defense of traditional Christian themes is impressively direct. Some ambivalence, however, surrounds his own account of the doctrine of the Trinity.

Following Karl Rahner, he acknowledges the need to coordinate the immanent and the economic without collapsing the former into the latter. His own position appears to eschew modalism in maintaining that God is internally differentiated and that a belief in revelation yields convictions about the way God is in the divine self. He castigates Jürgen Moltmann, rightly in my view, for failing to take into account the way in which the New Testament interprets monotheism in a trinitarian direction rather than baldly predicating a threeness of God over against monotheism. However, Ward goes on to express dissatisfaction with recent doctrines that “take the hypostases of the Father, Son and Spirit out of all historical relations and present them as internal goings-on within a wholly self-contained and self-sufficient Godhead” (p. 328). Yet, the point of such teaching about the immanent Trinity and the aseity of God is to distinguish the unoriginate nature of God from the contingent world in such a way as to render creation a free act but one which corresponds to the divine essence. To be free yet consistent with the divine nature, the act of creation must manifest but not replicate the prior essence of God. In strangely avoiding this point Ward’s own construction of the Trinity bears some resemblance to that of Tertullian. Modalism is eschewed, yet the coming to be of the Trinity seems coextensive with the economy of creation and salvation. “The primordial depth of being (the Father) moves outwards in love to generate creatures and to respond to them in loving-kindness and judgment, through the archetypal pattern of Divine Wisdom (the Son), which takes particular form in human history, and in the power of the creative Spirit, which makes that form present throughout history” (p. 345). In light of his earlier comments this creates an unresolved dilemma. Either the three persons emerge from the divine essence as the necessary instruments of creation and redemption, in which case we have another God behind the Triune God, or else the economic Trinity corresponds to an ontologically prior, immanent Trinity which is self-sufficient.

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