

Reviews

Am I a Monkey? Six Big Questions about Evolution. By Francisco J. Ayala. Baltimore, MD: The Johns Hopkins University Press, 2010. xiii + 85. \$12.95 (hardcover).

Francisco Ayala is a world-renowned scientist and conservationist. He is not above using a little humor (“Am I a Monkey?”) to draw us into a very serious conversation about religion and science in the area of evolutionary biology. In an introduction and six short chapters, he presents a powerful justification of why we should all recognize evolution and accept it as proven fact in the same way we accept the theories of the heliocentric solar system and the atomic structure of matter. While I find that I have some quibbles and much delight with the earlier chapters, the last leaves me unsatisfied.

First, a moment of delight: George Gaylord Simpson, Ernst Mayr, and Theodosius Dohzhansky were leaders in establishing the Modern Synthesis, our basic understanding of how natural selection works and evolution occurs. Ayala agrees with the great geneticist Dobzhansky who famously said, “nothing in biology makes sense except in the light of evolution” (p. 22). With that as background, Ayala proceeds to show that molecular biology substantiates and expands our understanding of evolution as described by Darwin even though this relatively recent field is “a source of evidence and documentation that Darwin could not even have imagined” (p. 24). This is a powerful affirmation, indeed. It is but one of many places in which Ayala puts his case aptly and clearly.

The central question of the book is the title of the last chapter: “Can One Believe in Evolution *and* God?” Ayala’s first answer goes a good way toward the separate magisteria argument most notably propounded by Stephen J. Gould. Ayala says that science and religion look out on the same world through different windows. It is “the same world but [the views] show different aspects of that world,” and “[a]pparent contradictions only emerge when either science or belief, or often both, cross over their boundaries and wrongfully encroach upon another’s subject matter. Science is a way of knowing but it is not the only way.” “Common experience, imaginative literature, art, and history provide valid knowledge about the world, and so do revelation and religion for people of faith. The significance of the world and human life, as well as matters concerning moral or religious values, transcend science” (p. xiii, 73–74). This approach may work with persons willing to enter the dialogue on Ayala’s basis—seeing religion and revelation on a par with art, history, and common experience—but I believe the dialogue will end here for persons who hold that religion, revelation, and a literal reading of the Bible are supreme.

Ayala introduces several other approaches, seeking to create discussion between religion and science regarding evolution. He cites church fathers, popes, and doctrinal pronouncements; he notes that there are two stories of creation in the first two chapters of Genesis; and he raises the topic of “imperfections” in the products of evolution as well as the issues of death, predation, and disease.

Considering the last, Ayala states that, from a biological perspective, these issues hardly need explaining, and are, in fact, acts of natural selection. The rationale for this stance is simply that “natural processes do not entail moral values” (p. 80), and thus, we do not need to ask God to explain why they occur. Ayala says that his approach leaves us with a world shaped through natural selection that is more exciting, and creative, than a Genesis world—rather we have a world in which evolution operates, “new species arise, complex ecosystems come about, and humans have evolved. . . . I am suggesting that [this point of view] will provide the beginning of an explanation for many people of faith” (p. 80). All this leads to Ayala’s conclusion: “evolution is not the enemy of religion but, rather, its friend” (p. 83).

Ayala’s approach may be useful to many. I believe, however, that most literalists will be untouched. Consider, for example, that literalists seem not much troubled by the existence of two creation stories or by doctrinal pronouncements. For them, Chapter 3 of Genesis may account for the harms, injustices, imperfections, and catastrophes of this world—the Fall having deranged the whole apparatus of creation. Ayala does not seem to recognize that his implied calls to move away from biblical literalism are either extremely wrenching to literalists or simply preposterous to them, just as it would be for him if someone asked him to seriously consider giving up the heliocentric model of the solar system. It would be interesting to track the response to this book among Christians committed to a literal interpretation of the Bible, a useful study for the right graduate student.

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The Selfless Gene: Living with God and Darwin. By Charles Foster.
 Nashville, TN: Thomas Nelson, Inc., 2010. 240 pages. \$14.99.

Charles Foster, Oxford fellow and practicing barrister, confidently wades into topics for which he has had no formal academic training—medical ethics, the evidence for Jesus, origins and neuroscience of religion. Here, he attacks Richard Dawkins (*The Selfish Gene*) as an extreme, Fundamentalized ultra-Darwinist (UD) on the “jack-booted fringe of evolutionary biology.” But he also promises, “This book will have something in it to frustrate and annoy everyone.” It certainly will annoy the Creationists. He blithely vaults from the biology of cephalopod eyes (octopus, squid) to a discussion of the Tree of Life in Genesis, where he rejects mechanical interpretations, and sketches out scenarios that would make many dead theologians writhe in their graves.

The UD controversy with the Creationists ultimately turns on the power of natural selection—Darwin’s fecund insight that individuals who are better adapted to their environment tend to leave more offspring in coming generations. These adaptive traits grow in the population at the expense of traits that are not adaptive, eventually leading to transformation of species.

For the UD's and Dawkins, natural selection pretty much explains everything. Dawkins uses the Creationists as a foil, labeling them "spiteful old hardliners," and complaining about the "driveling ephemera of juvenile pamphleteers." His explanations are often persuasive—except his explanations of why nature exhibits a great deal of association, symbiosis, and apparent altruism. These "altruistic" behaviors present a serious problem, since on the face of things natural selection should be the apocalyptic monster waiting at nature's womb, ready to gobble up the infant of altruism as soon as it births. Yet, always creative, UD's have come up with three get-out-of jail cards—kin selection, reciprocal altruism, and group selection—all of them painting altruism as a special case of selfishness. In kin selection, the altruist benefits because he "reproduces" copies of his own genes by helping his own relatives. In reciprocal altruism, I scratch your back only because you will scratch mine. In group selection, I sacrifice for the group, but I ultimately benefit because my group dominates over other groups. Foster argues that these theories alone cannot explain all altruism, and points out that even Darwin fretted about some naturalist finding a biological adaptation in one species that altruistically benefits another species, a finding that would savage his whole theory of natural selection (Darwin loved hyperbole).

At the end of the nineteenth century, conservative Christians were more accepting of Darwin's ideas. But when their enemies began using him to attack a literal reading of the Bible, the conservatives withdrew into their fundamentalist fortress and never emerged. Today, these "Young Earthers" try to fit the appearance of life on the earth into an impossibly short timeframe, and make crapulous claims about changes in the speed of light and the pace of radioactive decay—changes that, if they had actually occurred, would forbid the rise of life on our planet and indeed, make the universe impossible. They practice the old Indian rope trick—climbing up ropes and disappearing off the tops of them. The Young Earthers have midwived the Intelligent Design movement, whose adherents believe that some biological structures are "irreducibly complex," and cannot have arisen by degrees through natural selection. Both the Young Earthers and Intelligent Designers reject the transformative power of natural selection, insisting that the various created species have changed little since the dawn of creation. They devoutly refrain from calling Richard Dawkins the devil incarnate, but do allow that he probably is the "handmaiden of Satan."

For his part, Foster pronounces a pox on both their houses—the UD's who say natural selection explains everything, and the Creationists who insist that it explains nothing. Both camps, he says, hold extreme, sclerosed positions in a conflict he describes as "a war in which the principal casualty is the intellectual credibility of Christianity." He quotes the paleontologist S.J. Gould: "What an odd time to be a fundamentalist about adaptation and natural selection—when each major subdiscipline of evolutionary biology has been discovering other mechanisms as adjuncts to selection's centrality." His conclusion? Natural selection wields great power, but it cannot explain everything—especially, it cannot explain pervasive selflessness.

Yet, Foster fails to distinguish between social altruism and genetic altruism. The social altruist accidentally benefits others while mainly benefitting himself. In contrast, the genetic altruist benefits the other while imposing a true reproductive cost on himself. Social altruism is abundant in the world; genetic altruism is rare.

Natural selection by itself could never foster widespread genetic altruism. Foster needs to distinguish these two, and needs to multiply examples of genetic altruism. This would lend support to his hints that nature is lit by a light from beyond this world.

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God Soul Mind Brain: A Neuroscientist's Reflections on the Spirit World.

By Michael S.A. Graziano. Teaticket, MA: Leapfrog Books, 2010.
154 pages. \$13.95 (paper).

I find books such as this, written as they are at the extreme end of the popular market, difficult to review. In any popularization, certain compromises have to be made. Complex concepts have to be simplified. The necessary nuances and qualifications that accompany any scientific finding (“in this instance . . .” “for the most part . . .” “excepting . . .”) are encouraged to be left out. Bold claims are required to attract the casual reader. These requirements, or perhaps temptations, become stronger the wider the audience is appealed to. Such is the case with this small book.

Michael Graziano is a neuroscientist at Princeton University who has also dabbled in novels and children books. Much of his scientific work has focused on the sensory and motor cortex of primates, and this expertise shows in portions of the book, the aim of which is quite a bit larger. As the title indicates, Graziano has religion in his sights, although not exclusively so, and the larger aim of the book is to give an account of how cognitive psychology and social neuroscience can explain much about how we view the world.

The explanation that Graziano lays out is rather bleak, although Graziano does not seem to think so. What he would like us to know is that we do not experience the world, but a model of the world created by the perceptual apparatus of the brain. Nevertheless, we experience this as perception, and Graziano goes on to explain some of the findings of visual perception in cognitive psychology and neuroscience, which has revealed over the past decades some of the very specific ways that our perceptions do not match the real world. In addition to visual perception, Graziano argues, is social perception, and just as visual perception can be mistaken in systematic ways, so can social perception, leading us to attribute minds to objects (such as a childhood toy or teddy bear) that do not have any.

It is this phenomenon of misplaced social perception that Graziano sees as the explanation for belief in God, which he conjectures to have emerged from attributing intentionality to natural events or objects, such as a lightning strike or a river. The God of the monotheistic traditions is the “perception of intentionality on a global scale” (p. 48). The reason that religious convictions are held so strongly is that our neural systems trick us into perceiving God, rather than just inferring God’s existence by use of logic, the same way I perceive my friend John, rather than inferring he exists from the movements of his body.

Strangely enough, this whole argument is made as if the author is unaware both of the history of this thesis in religious studies (starting with E.B. Tyler) and the more recent and sophisticated arguments in cognitive science of religion made by scholars such as Pascal Boyer that develops this very line of thought in considerably more detail. It is all the more glaring given the greater attention to detail in other portions of the book. Nor does Graziano consider criticisms or alternative schemes of interpretation.

Having disposed of God in the first fifty pages, the author turns to the soul, or rather its modern proxy, consciousness. It turns out that, on Graziano's account, consciousness is as illusory as God, and he hypothesizes that our perception of consciousness is created by the some neural machinery supporting social perception that also creates our perception of God. The author then quickly moves on to the second half of the book, which places greater focus on the brain itself. These chapters are a bit more satisfactory, dwelling in greater detail on visual and social perception and the brain regions involved, and they clearly reflect the author's expertise. Research on neurons dedicated to faces and hands leads down a path of argumentation suggesting an area of the brain key to the experience of consciousness, the Superior Temporal Polysensory area (STP). This more interesting material is followed by a less than satisfactory chapter on emotion, which strangely implies that the hippocampus is the only significant brain region involved in emotional processing, followed by a chapter on memes and the importance of emotion for social learning.

In conclusion, the casual reader may find in this book some important and interesting tidbits about brain science, and about visual and social perception as well. The author does spend some time on key areas of contemporary exploration, including theory of mind, that are useful and perhaps important for the public to know about. Some of the inferences are also interesting, and while I disagree with illusion theories of consciousness (trying to write this sentence without the word "I" in part exemplifies why), I do find the perceptual theory he proposes to be of interest and one with a long pedigree, with roots in David Hume, among others. Indeed, the brief arguments made concerning religion are the least satisfactory and least developed elements of the book, and it would likely be a much better and interesting read if they had simply been left out. This is somewhat curious, since the book speaks of the greater respect the author has for religion due to his study of it, although this study is nowhere apparent in the writing of the book itself. Indeed, the emphasis placed on the gap between appearance (in the form of brain-produced perception) and reality is in many places so great, that one wonders about our ability to know anything at all, including the results of brain science that tell us what we cannot know. Acknowledging this problem at the outset may well have led to a more interesting, but very different volume.

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The Cambridge Companion to Science and Religion. Edited by Peter Harrison. Cambridge, UK: Cambridge University Press, 2010. xi + 307 pages. \$24.99 (paper), \$85.00 (hardcover).

The Cambridge Companion to Science and Religion is a welcome addition to the Cambridge series and a valuable contribution to the growing literature on science and religion. Sound in scholarship yet accessible to nonspecialists, this volume is rather more focused than its ambitious title might suggest. Edited by Peter Harrison, the Andreas Idreos Professor of Science and Religion at Oxford University and Director of its Ian Ramsey Centre, it collects essays from distinguished historians, philosophers, scientists, and theologians.

As befits the editor's own scholarship, the *Cambridge Companion* begins with studies of historical relations between science and religion in the West; most of these serve to debunk the perplexingly persistent "myth of conflict" in favor of more nuanced narratives. David C. Lindberg traces "The Fate of Science in Patristic and Medieval Christendom," from Augustine's appreciation of Greek natural philosophy as "the handmaiden of theology" through its preservation and expansion in medieval monasteries and universities. Notwithstanding Tertullian's objection, "Athens" was often well received in "Jerusalem"—and more consequentially in Rome, Bologna, Paris, Oxford, and Cambridge. This sets the stage for "Religion and the Scientific Revolution," in which John Henry examines varying receptions of early modern science in Roman Catholic and Protestant traditions—most notably among the Puritans. Jonathan R. Topham considers "Natural Theology and the Sciences" from Newton to Paley and beyond; he rightly observes that Darwinism did not kill natural theology, but more dubiously suggests that scientific professionalism and Barthian theology did. Jon H. Roberts carefully chronicles differing "Religious Reactions to Darwin" in Great Britain and the United States. The common European reaction, according to conventional wisdom, has been a decline in religious belief; but John Hedley Brooke cautions against any simplistic correlation between "Science and Secularization." In America, liberal Christians have typically tended toward models of theistic evolution, while some conservatives have opted for "Scientific Creationism and Intelligent Design," as detailed by Ronald L. Numbers.

The volume then turns toward contemporary relations between science and religion, illustrating a variety of disciplinary approaches. Evolutionary biologist Simon Conway Morris lifts a spirited toast to "Evolution and the Inevitability of Intelligent Life." In "God, Physics, and the Big Bang," cosmologist William R. Stoeger explores the import of both fine-tuning and multiverse scenarios for theological understandings of creation. Psychologist Fraser Watts argues that theological anthropology can make a robust contribution to science in "Psychology and Theology." Sociologist John H. Evans examines the power relations in expert and popular discourse about "Science, Bioethics, and Religion."

The volume concludes with philosophical considerations. Michael Ruse defends methodological naturalism as essential to science but denies that this implies metaphysical naturalism in "Atheism, Naturalism, and Science: Three in One?" In "Divine Action, Emergence, and Scientific Explanation," Nancey Murphy challenges causal reductionism and determinism in explanations of human

freedom and divine action. Discerning a grand teleology, John Haught proposes a process theology as the framework for comprehending “Science, God, and Cosmic Purpose.” The volume ends where many such books might begin, with a methodological reflection by Mikael Stenmark on “Ways of Relating Science and Religion.”

Despite Harrison’s judgment that “those with more than a passing familiarity with both science and religion have little time for the conflict thesis,” episodes of conflict nevertheless receive considerable attention. Inasmuch as the *Cambridge Companion* places greater emphasis on historical studies than do some comparable books, it would be enhanced by a chapter on the recent growth of scholarship in science and religion as an historical development in its own right. As Harrison acknowledges, the historical scope is limited to Western Christianity, Anglo-American philosophy, and the natural sciences—a focus that may disappoint readers led by the title to expect coverage of other world religions, Continental philosophy, social sciences, or environmental concerns. Still, this fine companion welcomes company, closing with a brief but useful guide to further reading on some of these latter subjects as well as those specifically and superbly covered within.

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