Reviews

Genesis, Evolution, and the Search for a Reasoned Faith. By Mary Katherine Birge, SSJ, Brian G. Henning, Rodica M. Stoicoiu, and Ryan Taylor. Winona, MN: Anselm Academic, Christian Brothers Publications, 2011. xiii + 133 pages. Softcover $26.95.

This book illustrates the difficulties of attempts at dialogue between science and religion, or, perhaps more specifically, the problems with the way we try to conduct the dialogue. The book contains an Introduction by Dr. Birge, one chapter by each of the authors, and a closing fable by Henning. As in so much of the "dialogue," the authors each write a chapter but do not engage with each other. Discussion Questions, Glossary, and Resources for Further Study conclude each

Sister Birge's contribution seeks to help moderns read the first three chapters of Genesis in a faithful and rational way by presenting the now widely accepted reasons for the two different stories and who may have written them. This chapter should incite at least two "dialogues"—one with fundamentalist interpretations and a second with the scientific story. Birge acknowledges fundamentalism, but this does not a dialogue make. Admittedly, any full engagement would be impossible in a chapter this short, but some acknowledgement of the multiple dialogues would seem justified. The chapter is further troubled by the mistaken assignment of P and J authorship in at least two places and Birge's insistence that the Tree of Life and the Tree of Knowledge are in fact one. This requires more detailed explication; while some symbolic meaning may benefit, posing the assertion here simply deflects from the central message Birge seeks to convey from her discussion of the J story. Here and elsewhere, one gets the feeling that the book was put together a bit too hurriedly and would have benefitted from a critical editorial eye.

The second chapter, "Scientific Knowledge and Evolutionary Biology," is by Dr. Taylor. He gives a creditable description of the scientific method and its application in genetics and paleontology. However, though Taylor is a specialist in animal communications, his chapter does not recognize the different levels and types of proof required in the various sciences. This kind of information would open new avenues for dialogue. In an effort to make science sound open, Taylor asserts that "Science never proves or guarantees anything with certainty and this is precisely what makes science dynamic and exciting" (43). However, this is not true. Water is H_2O and that is not going to change. More to the point for Taylor's chapter, a fossil is what it is though subject to reinterpretation, especially if the record expands—this is a different kind of proof structure than the one available in organic chemistry. Contrast this to field studies in behavior and ecology where even one repetition of an observation is often relegated to anecdote in the absence of video footage. And I am unaware that deniers or fundamentalists claim that science is too exciting; rather they claim it is just wrong and or damnably wrongheaded. Ryan also says that the *Origin* when published

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"caused tremendous social upheaval" (44). I am not aware of book burnings or riots in the streets in Darwin's time because of his publications. The storm was mostly huffing and puffing among the educated classes who went to church. I think it is at least equally fair to surmise that the educated classes were upset because Darwin violated Cartesian reductionism. By the way, Stephen Jay Gould has provided an approach to disproof of Darwin's theory of natural selection in his big book *The Structure of Evolutionary Theory*; this provides a whole new facet to the discussion of evolutionary theory which seems to have gone widely unrecognized.

Chapter 4 by Dr. Stoicoiu, "Theology in the Context of Evolution" dwells on the accusation of suffering related to natural selection: How could a loving God work on the basis of enormous amounts of suffering supposedly inherent in natural selection? Here is a deep misunderstanding. Natural selection within a species is primarily the outcome of leaving fewer descendent organisms than other organisms in that species. Death of an organism may in some way be sad or even terrible, but only humans purposely prolong and intensify the agony for substantial lengths of time [exceptions exist such as some insectivorous insects caching anesthetized prey insects to feed the predator's larval offspring]. But most death is not prolonged or even painful. Here, the counterpoint proposed by Stoicoiu is God's self-emptying, suffering love. She draws extensively from the works of John S. Haught, and includes a very brief discussion of the evolutionary ideas present in the writings of Karl Rahner and Teilhard de Chardin. Once again there are many dialogues or pathways of dialogue possible but these are not outlined.

Chapter 3 by Brian Henning, "From Exception to Exemplification: Understanding the Debate over Darwin," is a delightfully written recap of the course of philosophical thinking related to nature and its history. Henning shows that philosophies have been barriers and encumbrances to evolutionary thinking at least as much as religious opposition. His contribution provides a series of portals for serious dialogue between science and religion as many scientists are sadly unaware of the philosophical structures within which they work. He shows, for example, how Cartesian dogma has promoted human exclusivism at least as profoundly as the demands of creationists for a privileged human position in the world. Cartesian dualism promoted the idea that all life forms were machines, except for human life—we might very well say "only some human life." To Henning's everlasting credit, he shows how field studies and language studies in chimpanzees have destroyed the viability of Cartesian dualism for anyone who pays attention.

Overall I cannot recommend this pricey small book. The many unreferenced assertions and the rather glib approach will not promote much advance in the science–religion dialogue. But, do get your hands on Henning's Chapter 3, a great read.

As a final note, for those interested in the many dialogues to be explored at the interfaces of religion–science–philosophy and their meanings for our lives, see the recent review "A Philosopher Defends Religion" by Thomas Nagel in *The New York Review of Books* (September 27, 2012,Volume 59, Number 14); the book reviewed is Alvin Plantinga's new book, *Where the Conflict Really Lies: Science,*

Religion, and Naturalism, Oxford University Press; I believe that both will be useful resources.

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Incomplete Nature: How Mind Emerged from Matter by Terrence W. Deacon. W. W. Norton, 2011. 624 pages. Hardcover $29.95.

For anthropologist Terrence Deacon, present day science is incomplete. It does not include human feeling, attitude, hope, value, and purpose, for which he coined the term *ententional*. His revolutionary proposal is to include the concept of absence in science, just as the inclusion of zero as a placeholder or symbol in the middle ages led to the Arabic number system that we find so useful today. Absence is pregnant with potential, as is the void within a glass container. It has the potential to be full.

The concept of absence (or difference) is part of information science, to which Deacon's book devotes a chapter. Information is difference that makes a difference. In the binary number system used in modern computers, information is encoded as something (one) or nothing (zero).

Deacon raises the philosophical question, "How can something not physically there (*entention*) be the cause of anything?" The book develops his "efficacy of absence," so that *ententions* become an integral part of science.

Absence is an integral part of Deacon's concept of emergence, which explains how the first cell came from dumb matter by natural processes. In the conventional understanding of emergence, primitive cells emerged with novel properties that are *greater* than the sum of their interacting parts. In Deacon's view, novel properties can be *less* than the sum of their parts. For him "*less is more." Absence* is a constraint which limits each part's infinite number of possibilities to the function that contributes to the whole. Deacon's three stages leading to the emergence of the first living cell from dumb matter are:

1. THERMODYNAMICS or CHAOS: atoms and molecules of water, methane, ammonia, carbon dioxide, etc. moving randomly from thermal fluctuations in a primordial soup.
2. MORPHODYNAMICS or FORM: [Morphology, or form, meaning structure, is generally regarded as being static. I therefore find morphodynamics to be a confusing term.]. This is the emergence of self-organizing form or "order for free," and the *absence* of dynamical variety. For example, diamond crystals found in the earth have carbon atoms with an orderly cubic structure. At high temperatures and pressures, diamonds

emerge from the self-organization of clusters of carbon atoms in the earth. Man-made diamonds are made by using the same high temperatures and pressures.

Morphodynamics also includes stable processes, like the flow of a river. The overall shape or the river's form remains the same even though each water molecule is continually flowing downstream. In autocatalytic chemical processes, the output products feed stably back into the input. These are the precursors of life.

The building blocks of long life-forming proteins chains are amino acids. The 1953 Miller and Urey experiment showed how they could have emerged. Miller and Urey subjected a mixture of water, hydrogen, methane, and ammonia—all of which were present shortly after the earth was formed—to an electrical spark, which simulated lightning. After one week they identified the formation of amino acids. Primordial amino acids could also have come from interstellar dust, meteorites, and comets. Long polymers are also formed in gaseous planets like Jupiter.

3. TELEODYNAMICS: (*telos* = purpose, goal) Similar to the formation of diamonds in the earth's crust, living cells emerged under the right conditions from amino acids, proteins, and autocatalytic processes in the primordial soup. The vital purpose (*telos*) of a cell is to eat and to avoid its *absence* (from being eaten) as well as to reproduce. The behavior and development of cells is constrained by *absence*. Each part is constrained to a function which serves the whole. To survive, a cell must move away from areas where food is *absent* to those where it is *present*.

Contrary to Deacon's naturalistic description of the emergence of the first cell, the intelligent design movement does not believe that Darwinian evolution can account for the origin of life, although variations and natural selection could be a mechanism for small changes. Biochemistry Professor Michael Behe, Lehigh University, PA has claimed that the first cell was so irreducibly complex that it required an "intelligent designer" to assemble all the necessary micro-machines. Deacon notes that the "intelligent designer" could be a homunculus, the little man or agent in my head. This is not modern science, which is based on natural laws and processes.

Deacon develops an emergent theory of energy and work. He applies the emergent steps of thermodynamics, morphodynamics, and teleodynamics to the playing of a flute. Thermodynamics represents the energy that the player expends in blowing the flue. Morphodynamics is the vibrational patterns of the standing waves of sound within the instrument. Teleodynamics is the meaning and purpose for which the flute is played. Is the music played for practice or the uplifting and inspiring of an audience?

Deacon emphasizes the historical evolutionary emergence of human mind and consciousness from simpler organisms over the materialistic reductionism of the nerve firings of the synapses." Single cells have sentience, the ability to respond to their environment, but not consciousness. Mind and conscious emerge from the gigantic number of nerve firings in complex organisms, but cannot be reduced to them. Deacon states, "The title of this book is slightly

misleading. Mind does not emerge exactly from matter but from constraints on matter." Can Deacon's concept of absence be extended to give some assurance of immortality after the death and absence of the brain?

I believe an alternate title to this book could be "Incomplete Science: The Power of Nothing." The symbolic representation of nothing or "zero" gave birth to the modern Arabic number system. Similarly the symbol *i* as representation of the square root of minus one led to the complex number system and the complex graphical plane that has been so useful in mathematics and engineering. Deacon's use of symbol is an appropriate sequel to his book *The Symbolic Species: The Co-evolution of Language and the Brain.*

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Where the Conflict Really Lies: Science, Religion, and Naturalism. By Alvin Plantinga. New York: Oxford University Press, 2011. xvi + 369 pages. Hardcover $27.95.

This book has been a long time coming. Plantinga has addressed the perceived conflict(s) between science and Christianity for decades, and with this book he brings all of his reflections and intellectual powers to bear on the topic. It showcases one of the greatest living philosophers at the top of his game addressing one of the most controversial (hence, interesting) topics.

He begins with biological evolution, going over the attempts by Richard Dawkins, Daniel Dennett, and others to demonstrate an incompatibility between current biology and Christianity. These authors suggest that the randomness involved in evolution means that God had no hand in it, but Plantinga points out that "random" merely refers to the absence of physical mechanisms which foresee and cause beneficial mutations. Nonphysical nonmechanistic forces are not ruled out by this. Indeed, attempts to concoct a conflict between evolution and theism are precisely what fuels skepticism about evolution in western culture. Plantinga next asks whether the possibility of miracles is incompatible with science. He argues that neither Newtonian nor quantum physics conflicts with the possibility of miracles since they both address closed systems. He mentions the Divine Action Project, which seeks a noninterventionist theory of God's action, and although Plantinga rejects this approach, he offers a solution to their quest as a byproduct of his musings—as if a time-traveler explained to Kepler how to make his Platonic solid-based celestial physics work before informing him that it is, nevertheless, wrong.

This constitutes the first part of Plantinga's book: alleged conflicts between science and religion. Part 2 deals with genuine but superficial conflicts. His targets here are evolutionary psychology and historical biblical criticism, the conflicts arising by employing either a strong or weak methodological naturalism. The strong form presupposes the falsity of certain theistic tenets, such as miracles,

while the weak merely brackets them for the purpose of the study. The former will obviously produce conflicts with theism as it supplements the scientific evidence with anti-theistic claims. In this case, however, it is obviously the *supplements* that conflict with religion, not the *science*. "Suppose I propose as a theory the conjunction of Newton's laws and atheism: have I succeeded in producing a scientific theory inconsistent with theism? Hardly" (142). The weak form may produce a conflict because it is working from a truncated evidence base, one which does not include the existence of God and the tenets of theism. In the same way, if I limit my evidence base to introspective knowledge, beliefs gleaned via perception may become improbable, thus producing a conflict between these two sources of information. But so what? This does not give us a reason to doubt the general reliability of perception. Similarly, neither the strong nor weak form of methodological naturalism gives the theist a defeater for—a reason to withhold belief in—theism, a concept about which Plantinga has written much.

As is his wont, Plantinga reverses popular conceptions. Part 3 deals with the claim that science actually offers *support* for religion, a first reversal. A second reversal is seen in how Plantinga finds the popular design arguments about cosmic fine-tuning to offer only mild support for theism, but considers the much more suspect biological design arguments—suspect in light of evolution—to be stronger. Plantinga, however, does not see the strength of these examples as arguments; he sees them as *perceptions*. It is not a matter of inferring that biological structures were designed, we just immediately form beliefs that they were designed upon being presented with them. He sees the arguments of William Paley and Michael Ruse as pointing to how this process works rather than as actual arguments. This is of a piece with Plantinga's naturalized epistemology, where we are designed to form beliefs about various things in response to certain experiences. Beliefs formed in this way are properly basic and do not need to be defended by reference to other beliefs or experiences. This does not mean that they are infallible, they are just innocent until proven guilty—by one of those elusive defeaters mentioned in the previous section.

In the next chapter, Plantinga makes a third reversal, looking at the "deep concord" between science and Christianity that is found in the origins of modern science in Christian theism, a point that has been exaggerated in the past, and so is often treated as a historical curiosity. Plantinga argues instead that the notion that we are created in God's image provides a reason for thinking our cognitive faculties are reliable, and that they are attuned to the universe. Science presupposes the veracity and applicability of mathematics; that nature behaves in a consistent and law-like fashion; that simplicity is a guide to truth; and that we are capable of apprehending all of this. Explaining these phenomena in naturalistic terms is much more difficult than many are willing to think, but they make perfect sense given Christian theism.

We have moved from alleged conflict to superficial conflict, and then to concord and deep concord. Plantinga concludes by pointing to a deep conflict between science and religion, but the "quasi-religion" in question is naturalism, which serves "one of the main functions of a religion: it offers a master narrative, it answers deep and important human questions. . . . Naturalism is therefore in competition

with the great theistic religions: even if it is not itself a religion, it plays one of the main roles of a religion" (311).

The conflict is Plantinga's Evolutionary Argument against Naturalism, and here he presents its "official and final version (I hope)" (310 n. 4). The focus is on two types of representations: indicative and depictive. The latter depict the world as being a certain way and so has content and can be true or false. Indicators, however, indicate something about the world without being true or false. If what they indicate about the world is not the way the world actually is, we do not say that they are false, merely inaccurate. Beliefs are depictive, but evolution could only see and select indicators. Therefore there is no reason to think the (depictive) belief that associates with an indicator would even be about the same set of circumstances. From this, the rest of the argument follows: this scenario produces a defeater for accepting any particular belief, including belief in naturalism and evolution. So if naturalism is true, we have a defeater for evolution and even naturalism itself. There is indeed a conflict between science and religion, but we have mistaken where the conflict really lies.

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The Scientist as God: A Typological Study of a Literary Motif, 1818 to the Present. By Sven Wagner. Heidelberg: Universitätsverlag Winter, 2012. 263 pages. Hardcover €44.

How easily the description "playing God" slips off the tongue! It has long been a recourse of those who resent the machinations of over-ambitions scientists seeking unprecedented powers over nature. As a derogatory trope, it provides a colourful metaphor in suggesting that the scientific project in question exceeds the boundaries of discretion and wisdom. Just as often, if not more frequently, the accusation "playing God" stems from religious concerns about the hubris of scientists who are seen as usurping roles traditionally assigned to a Creator, as when seeking to create living things, mould them through genetic engineering, or intervene controversially in natural processes. It is a familiar theme in literature on science and religion, and indeed in popular culture where Mary Shelley's *Frankenstein* has iconic status as a cautionary, tragic tale.

The association of "playing God" with tragedy is, however, only one of several literary genres that Sven Wagner explores in his exciting and original book. Based on a doctoral dissertation completed at the University of Bochum in 2009, this is a study that reveals how pervasive the motif has been in Anglophone literature, and indeed in that of other linguistic cultures. Some "scientist-as-god" texts, such as H. G. Wells's *The Island of Dr. Moreau*, are almost as well known as *Frankenstein*, but Wagner has unearthed several less familiar works to demonstrate how novels of the genre adopt widely divergent attitudes towards the scientist and his godlike

project. The great strength of the book derives from the sophisticated techniques of literary criticism that enable the author to achieve a refined analysis of his exemplary texts. His approach is primarily typological. Novels exploring the fate of scientists who play god may be didactic tragedies; they may be combinations of tragedy and theological allegory; they may combine tragedy with comedy and satire—in some cases with theological allegory as well, as in Margaret Atwood's *Oryx and Crake* (2003). In Bernard Shaw's *Pygmalion*, Wagner locates another type—a comic reworking of the Frankenstein myth, as Henry Higgins refers to his "creation of a Duchess Eliza," a creation out of the "squashed cabbage leaves of Covent Garden."

For readers of *Zygon*, one of the most interesting facets of Wagner's study will be his detection of theological allegory in works that are routinely categorized simply as cautionary tales. One of his main theses is that several authors, including Mary Shelley, who depict the scientist as godlike were not simply drawing attention to the baleful consequences of hubris. Rather, they were ingeniously engaged in a critique of theology. Their narratives, as allegories, hint at a god who has not played god well enough—in making a world so badly flawed. As Wagner puts it, "the allegory in these works presents god as an incompetent mad scientist, rather than as a transcendently perfect being" (229). This narrowing of the gap between human and divine is skilfully discussed with reference to Atwood's novel. The scientist, Crake, appears as a fairly godlike figure in that he creates a race of posthumans who are almost perfectly virtuous. However, he can also be viewed as a cold-blooded murderer who commits specicide to achieve his aims. Wagner is particularly successful in teasing out such ambiguities and in expounding the theocritical allegories, which in this case call into question the perfections of the biblical God. It is difficult to find original things to say about Shelley's *Frankenstein*, but Wagner manages to do so, drawing on an allegorical reading to argue that if God is merely the archetypal mad scientist, there is no reason why humans, including scientists, should *not* seek to take his place. The allegory portrays a *quasi*-human God and hints at the possibility of a godlike humanity. In that respect it "weakens the conservative, anti-hubris message of the novel" (229).

In his concluding remarks, the author notes that even the texts that offer the most positive portrayal of a godlike science do not reject the proviso that science needs to be controlled. His discussion also reveals that in these literary works the attempt to rival God through science is a male project. He astutely observes that four of the five characters depicted as resisting their maker are women, for example Eliza in Shaw's *Pygmalion* and Bella in Alasdair Gray's *Poor Things* (1992), where Wagner counts more than a hundred references to the scientist as "God." Hence his suggestive remark, based on the sexuality of the scientists depicted, that their methods of creating life in the lab may be motivated by the desire to circumvent the female and the feminine. Another telling observation is that in the scientist-as-god texts, the quest for divine power is never accompanied by a desire for divine love. Frankenstein and Moreau die because they fail to love and show compassion for their creatures, who kill them because of the cruelty they have received from them. Despite the many contrasts Wagner finds between the novels he has analyzed, there is this overriding moral: although science may potentially equip humanity with near-divine powers, it cannot generate the compassion and

love necessary for altruistic application. Not perhaps a surprising conclusion, but one that springs here from a penetrating analysis of imaginative literature.

This is a book that will surely appeal to those who have been attracted to Philip Hefner's characterization of the scientist/technologist as a "created co-Creator." By many conservative theologians, this formula has been considered too presumptuous in its tacit elevation of the human. A preference for "created collaborator" is sometimes expressed on the ground that no creation *ex nihilo* is available to humankind. Wagner's book, fastidious almost to a fault in its filigree analysis of the meaning of tragedy, brings important and refreshing new perspectives to bear on this debate drawn from a range of sources rarely considered in this context, or rarely considered with such insight.

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