

The BioLogos Foundation and “Darwin’s Pious Idea”

BY JOHN WESLEY WRIGHT

One should not underestimate the importance of the BioLogos mission. For years I have spent Tuesday nights distributing food to those who live on the streets and hotels in downtown San Diego. In order to show that it is the church present, not some benevolent humanism, I always wear a clerical collar when I am on the streets. Many of these are my dear friends and brothers and sisters in Christ; many, however, move in and out of the neighborhood anonymously. Two weeks ago I handed sandwiches to a newcomer. He looked at my collar and said, “Why are you guys so against science? You know, how you suppressed Galileo?”

The church has lost the ability to tell a coherent story about the relationship between its history and convictions and empirical discoveries of the modern sciences. We have lost the credibility of witness even to those who receive its charity. If this is so, how can we expect to be heard in certain bio-tech corporate board rooms that seek commercial advantage by moving to the “post-human”?

The mission of The BioLogos Foundation, to explore, promote, and celebrate the integration of science and Christian faith, recently took a huge step forward. A historically evangelical press, William B. Eerdmans Publishing Company, has just published a landmark volume: Conor Cunningham’s *Darwin’s Pious Idea: Why the Ultra-Darwinists and Creationists Both Get It Wrong*. The work deeply explores the integration of Darwinian evolutionary theory and Christian faith. Cunningham feels no compulsion to defend Darwin at all costs; there is no bowing to irrational claims of scientific reductionism, no tossing of the Christ child to save the scientific bathwater. His commitment is to the truthfulness of the Christian faith in its deepest, fullest, most historically authentic evangelical and catholic sense.

Yet Cunningham refuses to set the Christian faith at odds with the empirical results of biological science. Unlike Daniel Dennett, he finds Darwinian empirical results “pious” rather than “dangerous.” Cunningham separates the empirical results of biological science from the reductive philosophical and (a) theological commitments that often silently accompany them. When the Christian faith is properly articulated in its deepest orthodox, catholic, and evangelical form, the so-called war between “science and the church” dissolves. Properly articulated, the Christian faith, not Darwinian theory, is the “universal dissolvent.” All creation finds its origin and end in the eternally Triune Creator God. Cunningham shows one way that human beings as rational creatures may recognize by faith the beauty and goodness in creation, even as explicated by Darwinian theory, to the praise of our Creator.

Cunningham’s book is an amazing accomplishment. The book has already gathered acclaim. Christopher Benson at the First Things Blog (Dec 21, 2010) has named the book as one of the two most important science books of 2010 (“a rare combination of scientific competence and theological erudition”) and Scott Stephens at the ABC Religion and Ethics blog mentions the book as one just outside his top ten list of his “Books of the Year” for 2010.

I know of no writing that more successfully addresses a particular issue in the interface between the claims of revelation and the human observations that we call science. To explore the integration of “science and Christian faith” with Cunningham requires languages that cross what have come to be understood as “disciplinary boundaries.” It reveals an extensive reading that is humbling in its judiciousness, wisdom, and learnedness.

But the book is not erudite stuffiness. From Irish Methodist stock, Conor is as whimsical, gregarious, and gracious in print as he is in person. Cunningham freely quotes from Lewis Carroll, Monty Python, C. S. Lewis, and G. K. Chesterton; this is no ivory tower egghead. The book is a joy to read.

But the book is work to read, at times hard work, hard and rewarding work. The book begins by reviewing the standard story of Darwinian theory. He quickly plunges into the contested, suggestive, and problematic areas arising from this “received view.” The fifth chapter looks to “examine and critique the application of Darwin’s theory of evolution beyond the confines of biology” (p. 179), in an at times laudable, at time pernicious enterprise. The sixth chapter provides an all out assault on ontological naturalism*, and ironically, some of its likeminded theological partners in movements like Creation Science and Intelligent Design. The last chapter seeks to re-order the empirical results of Darwinian science with the biblical witness, particularly as understood within the first five centuries of the Christian traditions interpretation of Genesis 1-3.

The book therefore moves from contemporary biological sciences to high levels of philosophical and theological thought. Ultimately, however, the book finds its end in the Scripture’s witness to the eternally Triune God in Christ as found within the depths of the Christian tradition. This structure itself bears the form of the ancient, biblical structure of thought. With the Apostle Paul, Cunningham’s argument is simply, “For from God and through God and to God are all things. To God be the glory forever! Amen” (Rom. 11:36). If one at times finds oneself alienated as one moves through the technical aspects of the book, one will still find oneself fascinated and enriched by the journey.

Western culture now suffers deeply from how its cultural institutions have built a wall between “faith” and “reason.” Philosophers have long shown that philosophical rationale for such a divide is, at the very least overdrawn, if not completely false. Dominant institutional and legal categories, however, end up thinking for us and repeating the distinction. Networks then have developed that benefit from an antagonism between faith and reason to bolster their own institutional authority. Such fundamentalisms, religious and atheistic, use irrationality, fear, and power to pull their particular publics political and financial support to expand their own realms of influence.

For the church such a situation is intolerable. Such a divide between faith and reason places the scandal of the cross at the wrong place. Christ’s sacrifice on the cross demands faith and obedience; His sacrifice makes all other sacrifices, including the sacrifice of intellect, unnecessary. To allow false stumbling-blocks to be set up for our youth by intellectual sloth or its close cousin, apostasy, is unacceptable. Moreover, a continuation of the situation promises to lead to tragedy for North American culture. As even a secularized Christian culture has withdrawn from public discourse, North American society continues to reduce human life and even life itself to a commodity to be bartered on the free-market by the financial, political, and technological cultural elite. The unnecessary withdrawal of the Christian witness as yeast and light takes away options that the world does not have tools to conceive, yet alone implement. Into this cultural abyss, BioLogos has stepped. At some times, it must find itself very lonely. But in the abyss that refuses a dichotomy between faith and scientific reason, however, it finds friends, unexpected friends like Conor Cunningham.

In order to explore, promote, and celebrate Cunningham’s work, I would like to provide a summary, analysis, and guide through the book in this paper! I would encourage interested readers to purchase the book and follow the discourse together – a cyber reading group, if you will. Cunningham’s work needs not serve as the final word on the subject, but it represents an intellectual program that we cannot but take seriously. Too much is at stake in a refusal to do so.**

Darwin's Pious Idea deeply engages contemporary evolutionary theory. Conor Cunningham has entered fully into the evolution discourse by probing contested areas of biological research that question

what he calls “ultra-Darwinianism” or “vulgar Darwinianism,” His work shows the great good of scientific thought – it is open to rational examination and continual conceptual modification.

In chapters 1-4 (pp.1-177), Cunningham strips the intellectual hubris from those who would transform evolutionary theory into a “theory of everything.” The book purports to show how “ultra-Darwinians” enclose themselves within concepts like the gene as an “immortal replicator,” and demonstrates that this is actually an anti-evolutionary approach to describing the history of life (p. 65). In contrast, Cunningham argues, “Dobzhansky states that nothing in biology makes sense except in the light of evolution and the function of the gene is no exception.” Dawkins’ “selfish gene,” in other words, can’t be at the heart of evolution, since it had to start off as something else, and to suggest that it is, is itself an anti-evolutionary concept.

These extreme Darwinists have to deny the empirical results of recent biological sciences, Cunningham maintains, in order to sustain their commitment to conceptually reducing all there is to a strictly material realm. “Ultra-Darwinists keep pulling up our skirts, raising our curtains to reveal an absence—the missing homunculus [Descartes’ notion of ‘pure mind’]. But if we take a closer look, we notice there is something decidedly old fashioned about this approach” (parentheses added).

It is not that simple anymore, he says.

This leads us to the main, underlying theme of Cunningham’s argument: Christian thought is the great friend of *proper* scientific thought because it insists that scientific thought remain empirical and not become a materialistic “theory of everything.” The orthodox, catholic, and evangelical Christian tradition refuses to allow science to reduce all reality to strictly matter or to divide reality into two independent realms: matter on one side and spirit on the other. Neither is consistent with Christian thought; both are grounded in philosophically-derived views that rely on over-interpretation of the empirical data.

Christian Darwinian detractors often accept the terms presented by the ultra-Darwinists, but try to deny the conclusions they make on the basis of scientific arguments. Cunningham’s analysis goes deeper. As a theologian, he has learned well from his biologist colleagues. Cunningham shows that the full range of the empirical results of evolutionary theory limit the stories that secularists tell. Cunningham invokes cutting-edge biological studies, especially recent work in molecular biology, evolutionary developmental biology, and systems biology. In this way, he shows that as powerful as evolutionary biology is, it is increasingly clear that it is not a “theory of everything.”

Chapters 1-3 dissolve two “urban legends” that secularists impose upon evolutionary studies. Cunningham first re-narrates a secularist story that Darwin changed everything by freeing human thought about “nature” from previous irrational, tradition-bound, “religious” thought. In the secularist story, Darwin becomes the scientific genius who rises above history to describe reality as it is, heroically putting aside the biases of “pre-scientific” positions.

Cunningham also disputes a second narrative that evolutionary theory is a settled “thing,” a universal acid that focuses on a gene’s algorithmic struggle for survival through natural selection, encased in bodies.

These two narratives promote a secularist cultural agenda of a “disenchanted” world – a “flattened” world which rips to shreds the traditional tapestry that gives a transcendental purpose and meaning to human life. Darwin becomes celebrated in the role he played to open the world to human freedom for technical mastery and rational, benevolent manipulation. History is divided between “pre-Darwinian” and “post-Darwinian” eras, an era of irrational, tradition-based speculative “metaphysics” transformed into a

post-metaphysical era of pure rationality in “science’s” ability to describe what is. In these two narratives, Darwin plays the truly salvific role in the history of humanity. Darwin, not Jesus, becomes the hinge of history. For ultra-Darwinists Jesus becomes the “anti-Darwin;” for Christians Darwin becomes the “anti-Christ.”

Urban Legend #1.

Going back to Darwin himself, Cunningham deflates the hyper-exaggerated claims about Darwin through a summary of formative influences on Darwin in chapter 1. Cunningham does not deny Darwin’s accomplishment but places it in its historical context. Contrary to the myth that before Darwin, humans had always thought in terms of immutability of species, Cunningham reminds us that “there had always been theories of transmutation. Darwin’s innovation lay in the notion of species evolution and the manner of its occurrence” (p. 8). The cultural and intellectual forces of the 18th and 19th century influenced Darwin -- “one of its main inspirations apparently stemmed from reading in 1838 a book by the cleric and ‘gloomy parson’ Thomas Malthus entitled *An Essay on the Principle of Population, as It Affects the Future Improvement of Society*” (p. 9). In addition, the concept of natural selection was heavily influenced by the analogy with selective breeding of pigeons in England. At the time Darwin finally presented his theory to the Royal Society, “the society’s annual report for that year stated: ‘The year has not, indeed, been marked by any of those striking discoveries which at once revolutionize, so to speak, the departments of science upon which they bear.’ So much for the universal acid” (p. 9).

For Cunningham, Christians should find offense at Darwin in the deeply embedded philosophical background of Darwin’s theory. Darwin, like Malthus and Adam Smith upon whom he drew, depended upon a late medieval, early modern theological/philosophical presupposition called “nominalism”.

“Darwin apparently employs an individualist **ontology** ... a species is for Darwin a group of interbreeding individuals sharing a common ancestry, or more accurately, sharing a relatively similar distance from a common ancestor. . . this has radical implications, or so it would seem, for it literally historicizes species, which means a cat, for example, is only an accidental, historical lineage” (p. 15). For Darwin “change is what is really real (*ontos onta*), while stability is a construct” (p. 17-18). No being or essence exists except as cultural constructions of human language. Only becoming is real.

Precisely at this point, the philosophical presuppositions of Darwinism conflict with historic Christianity. Nonetheless, many modernist Christian theologians continue to try to translate the faith given to the saints into the philosophical categories of Darwinian struggles within the nominal, immanent flow of history; they give up the faith in order to try to save it from its scientific cultural despisers. Ironically, empirical research has shown that the so-called scientific cultural despisers unduly limit their biological understandings to support their philosophical views.

Urban Legend #2.

Cunningham deflates the second secularist narrative as well through his interaction with recent biological research. The nominalist presuppositions in the neo-Darwinian synthesis have led to such notions as “the selfish gene” as the unit of natural selection through violent competition. The gene, the ‘replicator’ becomes isolated as an individual unit within the “vehicle”, the organism, and thereby escapes history in its replication. Form follows function; function protects the gene, as a moat (the organism/vehicle) around a castle (the gene/replicator).

Cunningham shows that the genotype-phenotype one-to-one correspondence that such a conception entails, fails to hold. Even worse for such ultra-Darwinists, “the molecular era of biology profoundly challenged the atomistic, informational understanding of the gene, which was thought to be discrete, or discontinuous, and thus identifiable and isolatable from its context” (p. 51). Rather than individual genes competing with each other for the survival of the fittest through their “vehicles”, the whole function of genes require cooperation both within the genotype, the phenotype, even between species, and between species and the environment. To speak of a unit of selection reductively simplifies a much more complex situation: “evolution consists in major transitions that are acts of group selection, or rather, that all individuals are composed of vestigial groups, as it were. In addition, all biological levels and entities that accompany these are radically emergent: the relationship of DNA to the phenotype, the very emergence of genes themselves by way of downward causation, not to mention natural selection, and so on” (p. 78).

A gene cannot be selfish before it exists; other chemical processes, not characteristics of the gene itself, must account for its existence. The gene’s “selfishness” is thus secondary. This, of course, begins to undercut the notion of “the survival of the fittest” that lies at the basis of neo-Darwinian’s notion of natural selection. Natural selection can only work on what already exists, refining and encouraging novelty. Current biological scientific thought more adequately speaks of “the arrival of the fittest” – a concept that works **with** natural selection.

Most significant for Cunningham is the discovery of form in the evolutionary processes. Evolution displays certain inherent properties. Cunningham notes research shows that “similar morphological design solutions arise repeatedly in . . . independent lineages that do not share the same molecular mechanisms and developmental systems . . . in other words, function follows form” (p. 112), a phenomenon called “convergence.”

Cunningham thus shows that evolution does not arise from purely random competition; formal constraints shape the evolutionary process. Cooperation, not competition, is primary for the “arrival of the fittest.” This does not annul natural selection, but complicates it. As Cunningham writes, “If we leave vulgar Darwinism behind, we can understand self-organization and natural selection in a relation more in keeping with a cooperative marriage than an acrimonious struggle” (p. 119). The role of form at various levels in biological life requires such cooperation. “The existence of such form more than suggests that nature manifests laws that are not caused by selection but . . . accommodate or subsequently encourage selection” (p. 122). Natural selection itself is an emergent phenomenon, a changing product of evolution produced by inherent natural laws or forms. The empirical data renders the nominalist philosophical background of Darwin as problematic.

Cunningham’s immersion into recent biological science will disarm both the secularist--who sees evolution as necessarily confined to “red tooth and claw” and confined to random historical processes--as well as “biblical science” that wishes to dispute the empirical results of macro-evolutionary processes. Both depend on the false narratives of secularism, one to affirm them; the other to react against them. What Cunningham shows, however, in light of a full range of evolutionary studies, is that such a dichotomy is itself overdrawn. He has set the evolutionary table, so to speak, for deeper theological reflection to come.

The mesa characterizes the landscape of the southwestern United States. A level plain rapidly ascends to meet a broad table top where various activities can take place. If chapters 1-3 rapidly ascend from the neo-Darwinian synthesis with a review of evidence for form, constraints, and convergence within

evolution, *Darwin's Pious Idea* reaches the top of the mesa in chapter 4. Cunningham enters the chapter with the difficult question, "Does Darwinism involve a notion of progress?" The underlying question of the chapter, however, is, "What is humanity that You are mindful of them?"

Cunningham argues that we need the "biology of being" within which to place the "biology of becoming" of the neo-Darwinian synthesis. Cunningham importantly does not reject the neo-Darwinian synthesis. He does, however, demand a larger theoretical framework that can account for deeper levels of the stability and cooperation and remote causes that we observe when we look at biological phenomena synchronically: "Such a gestalt switch in perspective – from the atomistic to the systemic, the discrete to the emergent – involves new levels of life and new modes of causality as we move from a wholly linear approach to a nonlinear one. Emergent systems (from cells to organisms) exhibit modes of behavior that demand new ways of thinking" (p. 157). Unless neo-Darwinism can account for such data (and in its ultra-Darwinian form, it cannot, Cunningham argues), in the words of Imre Lakatos, it will become a degenerating research program in light of the need for a wider synthesis, just as Newton's research program became degenerating to Einstein's.¹

Cunningham does not have to invent this "biology of being"; it is already present in developmental evolution and systems biology (p. 152). Cunningham writes, "Evolution, or at least biology, is not all about the flux of phylogeny, for nature manifests structure and form. There is a form of progress and inevitability in evolution, one that is lawful and thus demonstrably antireductionist. . . . Consequently, not only will the great chain of being be reinstated (as if it was ever removed, except in the vanity of man's mind) but also mankind, more importantly, will be shown to be both 'cross and crown' of creation. This claim precludes, rather than accommodates, anthropocentrism, for it is a matter of participation (*methexis*) rather than exclusivity. Indeed, accompanying man's ascendancy or uniqueness is a growing sense of vulnerability, even danger" (pp. 149-50).

Cunningham helpfully uses the analogy of the production of a play within a theatre to describe the interaction between **synchronic** and **diachronic** events within evolution: "The play of evolution (that which becomes, namely, phylogeny) takes place within a theater; in terms of that theater's structure, the play is constrained and therefore informed" (p. 159). Within this theater humans play a significant role in the drama because of what we are – the "cross and crown of creation"; the mode of transportation through which we have arrived at the "theatre" is irrelevant.

Cunningham reminds Christians that the "what" of humanity is special (their form on the stage of the theatre); pressing theologically the "how" question actually takes us towards a paganism where we conceive of god as a big, more powerful being like us. As Cunningham writes, "If we conceive God in terms of power, we have actually managed to reduce God to our own level, because divinity becomes a matter of something *we cannot do* – namely, suspend the natural order – rather than it being about *someone* we are not" (p. 172). As Cunningham notes, Thomas Aquinas would heartily agree (p. 151).

Cunningham's retrieval of "form" becomes the basis for his theological reflections. Properly construed, evolution signs that life's origin and end lies beyond itself in the Invisible "seen" in the visible. The "forms" of evolution, its "being" within which random "becoming" occurs, signs Transcendence beyond itself. Humanity results from the material process of evolutionary becoming; nonetheless we have a distinct form which allows us to participate in the symbolic science that biology is: "biology is a semiotic science, a science where significance and representation are essential elements. Thus evolutionary biology stands at the border between physical and **semiotic** science, just as man does" (pp. 165-66).

Combining concepts from Augustine and Kierkegaard, Cunningham describes how humanity results both from “recollection” and “non-identical repetition”: “Yes, humans are different. Yes, they forge whole new levels of existence. In so doing they are only recollecting evolution’s history, yet at the same time they are nonidentically repeating it” (p. 159). He finds a parallel between this evolutionary understanding of humanity and that proposed by the early church fathers: “cooperation is the truth of nature and . . . competition is secondary; . . . more basic forms of nature are themselves not devoid of intelligence, or rationality; and . . . there is definite progress in evolution, with man at the pinnacle, because man is a microcosm of the universe, both recollecting and nonidentically repeating the lives of his ancestors, right back to basic chemical, as the Church Fathers correctly saw. But such ascendancy is not simple, for with increasing complexity comes increasing danger, to the point that what theologians term sin becomes possible” (p. 163). Evolution does provide progress, but progress itself has an inherent ambiguity. Again, welcome to humanity--the “crown and cross of creation.”

This is no “creation science” or “intelligent design” argument. While matter has an inherent rationality, Cunningham, with the historic Christian tradition, refuses to reduce God to an agent of design. Cunningham concludes the chapter with a wonderfully provocative shift in our language in order to not make God a “creative force” that guides an evolutionary process: “if we are going to employ such terms as ‘natural’ and ‘supernatural,’ then it is better (at least for theology) if we think of God as the only truly natural phenomenon, while the world around can be thought of as ‘supernatural.’ For what else is creation meant to signify? Indeed, is creation’s status as signifier not reflected in the very fact that when we try to return what exists, here in our universe, to itself, we fail to save the phenomena. Rather, the phenomena are shown to exhibit the one thing that is intrinsically their own, namely, the nothing from which they came” (p. 177).

If the book stopped with Cunningham’s provocation at this point, it would represent a tremendous accomplishment. Cunningham teaches us how to order the language of post neo-Darwinian evolutionary theory in light of the classical Christian understanding of the world in which essences are “seen” in, but never abstracted from, the materiality of God’s good creation. Creation itself becomes a sign of a radically transcendent God from whom and through whom and to whom are all things because God created all things from nothing. Cunningham, however, extends his argument farther.

Chapter 5 critically examines attempts to generalize the neo-Darwinian synthesis beyond biology. As Cunningham has already found “ultra-Darwinism” limited in explaining evolution itself, it is no wonder that he finds its extension in evolutionary psychology (and its earlier vehicles, social Darwinism and Sociobiology) severely lacking. Cunningham uses this opportunity, however, to show the underlying logic of ultra-Darwinism. Ironically, by stressing adaptivity, such generalized ultra-Darwinism evaporates truth, the good, even science itself into what Nietzsche called “the true lie”. Beliefs themselves become “intrinsically fictitious” (p. 214), repeated only because of their adaptive function – including the belief in evolution. Our lives are really about sex and sex is really about the survival of genes and thus evolution.

Attempts to generalize ultra-Darwinism require a concept of evolution that itself stands outside of time. To save evolution, therefore, we must de-mythologize it and return it to a biological theory. We must save it from the antievolutionary reductionism of the ultra-Darwinism whereby evolutionary thought functions as “a security blanket, one loved by willful secularists who demonstrate no reluctance at destroying the natural world” (p. 262). Such a cultural bias is thoroughly “unnatural.”

Through the evolutionary emergence of humanity, the human mind, and human language, the symbolic activity of thinking about “God” became profoundly natural. Cunningham cites the research of

Justin Barrett: “With the arrival of our minds in the story of evolution, religion became inevitable. It was, quite simply, not an option” (p. 252). At the same time, the symbolic, the “cultural,” directly shapes the “natural”: “Symbols have true causal powers over the physical, though the language here is potentially misleading, for we must resist the temptation of setting symbols over and against the purely physical, at least in any naïve sense” (p. 256). As culture is thoroughly natural, nature becomes thoroughly cultural. Therefore, “there is no mere animality, and thus we can have neither a pure culture nor a pure animality” (p. 239). In the emergence of the uniqueness of the human being, Cunningham argues, “the elements gifted to us at the beginning of time are, quite literally, transubstantiated, and new, real relations are forthcoming, relations that then recapitulate the entire process” (p. 242). Evolutionary psychology, as set of ultra-Darwinism, cannot account for such an evolutionary process. They seek the security for their secularity in the ahistoricism of the endless repetition of the same neo-Darwinian natural selection.

Cunningham will continue his attempt to save evolutionary theory from its ultra-Darwinian supporters in chapter 6. But he will also increasingly have to save Christian orthodoxy from its ultra anti-Darwinian supporters as well. If Darwin’s theory signed the death of Protestant fundamentalist readings of the Scriptures (even as it created them), *Darwin’s Pious Idea* itself signs the death of the “true lie” that God is dead within a secularist, scientific culture. Such secularists will have to go perhaps to Huxley for their security blanket; the blanket that was theory of evolution of the ultra-Darwinists has dissolved. Perhaps they can meet their fundamentalist Christian allies there.**

If chapter five of *Darwin’s Pious Idea* functions as a plateau after a steep ascent, chapter six slowly ascends in the wide circling pattern of a hawk caught in an upbreeze, rising higher and higher until the human observer loses sight of it in the blaze of the sun – or in the darkness of retinas reduced to nothing. Conor Cunningham has recollected and repeated the thoughts of biological scientists, particularly as these thoughts merge with the philosophy of biology. Now he ascends the heady heights of ontology (the philosophical discourse of what is), swirling through the philosophy of mind and into a phenomenology of consciousness and everyday life.

Chapter six is complex, even difficult; it is the longest of the book, well over 100 pages. Cunningham covers an immense range of contemporary, often contested, discourses (the chapter approaches 600 footnotes!!). Amid the complexity, however, is a simple argument with a paradoxical conclusion. Cunningham argues that to remain science, science must remain empirical, not metaphysical. Science will not bear the weight of explaining all existence without collapsing in on itself in irrationality. Science must remain open to other, more basic realms of rationality; it cannot offer an account of all existence. If science attempts to become a theory of everything, it ironically loses the very matter that it seeks to investigate – and the reason for doing science and even the scientist herself! Here is where the paradox enters: such a reductive naturalism ultimately shows that in itself, matter is literally nothing. Therefore reductive naturalism points past itself to the Christian understanding of creation ex nihilo. Ironically, the new atheists point to God, the Creator of all that is from nothing.

Cunningham’s argument unfolds in several steps. First, he refutes the false, worn out mantra that “religion” stands in opposition to science (pp. 269-300). Cunningham shows that Intelligent Design rightfully argues that neo-Darwinianism is “not sufficient to explain the natural world” (p. 277). Yet it is not a science. It must appeal to a non-empirical cause for creation – and thus, like the Neo-Darwinianist, seeks to extract a metaphysical position from science. The resultant god of Intelligent Design more pagan than Christian, or as Cunningham writes, “more Homeric than Abrahamic” (p. 279). Both ultra-Darwinians and

Intelligent Design misunderstand what Christians confess when they confess that God creates from nothing. Cunningham allows Ernan McMullin to remind us what Christians historically have confessed when they confess *creatio ex nihilo*: ‘The appeal is not to a ‘gap’ in scientific explanation but to a different order of explanation that leaves scientific explanation intact, that explores the conditions of possibility of there being any kind of scientific explanation’ (p. 280). Rather than the “science versus religion” motif, Cunningham shows that such Abrahamic faiths have provided the very conditions for the emergence of science (pp. 291-300). Cunningham concludes that “science versus religion” motif is “a conveniently contrived invention, not at all based in historical fact” (p. 300).

Cunningham then turns to science. If Intelligent Design loses the orthodox Christianity they hope to defend in their move from science to metaphysics, Cunningham argues that scientism loses the science that it hopes to defend by making a similar move (pp. 300-319). Cunningham here introduces an argument that he will pursue through various means throughout the chapter in his argument to keep science a method, not a theory of everything: “Science must forever return to the source of its possibility and not deny its origins, or its future. For all science has arrived from an enabling past and will develop and evolve into an unknown future; only the tension between these two poles allows science to be true to itself. . . . The primal validity of the life world (*Lebenswelt*), of the subjective givenness of experience, both grounds and makes possible the objective world of science, without which science is quite simply impossible. When such impossibility is ignored, destructive ideology is all that is forthcoming” (p. 311).

Cunningham proceeds patiently to disembowel ontological naturalism: the argument that matter is all that there is. Verificationist arguments to support naturalism dissolve in the light of contemporary philosophy of science; Hempel’s Dilemma shows that one requires that one cannot confine reality to what is “natural” without first a definition of “nature.” Belief itself evaporates – survival, not truth, becomes determinative for all thought: “There is no universal reason by which our thoughts should be judged. Instead reason becomes a wholly local affair, at best, and is itself subordinate to the utilitarian principle of mere survival. This creates a disconnect between survival and truth, for they only ever coincide contingently” (p. 336). Cunningham argues that ontological naturalism is self-refuting.

Cunningham’s argument is not merely negative, however. He turns to the results of science to show that science provides positive, even pious signs of that which transcends matter. Quantum physics has dissolved the “matter” required by reductionism: “Gone are the inert particles or, more crudely, dead bits. Instead the world arises out of, or is ‘built’ from, what we might usefully term tendencies or potentialities. . . . As a result, the divorce between mind and matter (coming after Descartes and Newton) was itself annulled. . . . Mind once again takes center stage and is no longer exiled to the land of impotence (where it existed but was epiphenomenal) or to that of illusion (where it existed but was epiphenomenal) or to that of illusion (that is, eliminated)” (p. 327). Such quantum theorizing takes Cunningham directly into the complex contemporary discussions of the philosophy of mind – a discourse anchored in contemporary Anglo-American analytic philosophy. And as usual, he brilliantly flips the terms of the presupposed relationship between “mind” and “matter”: “If the mental reduces to the physical, then maybe ‘reduce’ is the wrong word, for maybe, in being able to accommodate the mental, the physical is itself related to the mental” (p. 331).

Such theorizing allows Cunningham to move from analytic philosophy’s discourse in the philosophy of mind to [phenomenology](#). Cunningham delves into the implications of the mystery of consciousness and its relationship to scientific explanations. Science itself requires the irreducibility of the **person** for Cunningham: “All sciences are created and carried out by humans; it is humans that give rise to experience

and then abstract away from this experience to gain a better understanding of it. . . . their sciences are theory-laden – not in a bad way but in a human way, for that is part of their glory. In this way the lab is an immature theater, just as the science textbook is very awkward literature” (p. 352). Science as a method provides discourses only of causality; human beings, however, require a sense of normativity and teleology, even human beings who provide the third-person discourses that we call “scientific results.” This first-person discourse is logically required lest science itself falls inward upon itself, a first-person discourse anchored in consciousness that is irreducible to brain activity (which itself requires a first-person perspective to describe its third person activity). As Cunningham memorably states, “the notion of a strictly third-person science is simply a fantasy. Like some corpse that just won’t lie down, the first-person keeps interrupting every process of reduction” (p. 353). Building on the natural selections evolution from earlier chapters with his philosophical analysis in chapter six, Cunningham concludes: “Evolutionary explanations are causal, while commonsense psychology, for instance, is irreducibly teleological. Indeed, how can consciousness ever be understood in terms of survival when all its functions can easily be accounted for in physiological terms, with no actual reference to consciousness? Instead of viewing consciousness through functions, and in terms of survival . . . we should and must understand that consciousness is not some secondary tack-on but is existentially, transcendentally, and methodologically primary. It is primary because it is a condition of the very possibility of any experience at all” (p. 370) – including the experience of evolutionary biologists in conducting their scientific research. Scientific reason needs a wider non-scientific reason in order to sustain its own activity as a method; when science attempts to eliminate all other discourses, it, as Cunningham states several times, “Cuts off its face to save its nose.”

Science moved to a metaphysical system, a theory of everything, cannibalizes itself, Cunningham argues. The argument of atheistic naturalism, therefore, provides a paradoxical, pious function for theology, the very discourse it seeks to eliminate: “It is here that our preceding analyses of both materialism and naturalism reveal their worth, for if we search the ‘purely’ natural world for an actual birth of a person, we will not find one. Alas, we cannot even find a person, no matter his or her birth. Thus these ostensibly atheistic philosophical positions are in the end servants of the truth, that is, of theology. They are servants of theology insofar as what they take to be negative findings can be read, instead, as iconic revelations of creation ex nihilo, which is to say, the nothingness they strive to find. This is the case only because what is presented in nature declares the dependence of all on their very source. Like Darwinism – which came in the guise of a foe but did the work of a friend – the bid to capture nature has returned us to the font of subjectivity, to the sacramentality of each and every day. Therefore, such philosophies, despite their apparent hatred of religion, are indeed handmaidens to theology: *Scientia est ancilla vitae*” (p. 376). It shows that nature itself rationally requires that we accept creation as a sign of the glory of God, the Triune God who created everything through the eternal Word, the very Word of God who literally became flesh in Jesus Christ. All six chapters thus find their end in chapter seven, the theological discourse which is required if the truth of evolution, indeed of science itself, is to be retained.

Perhaps readers, secular or Christian, who turn to chapter seven of *Darwin’s Pious Idea* will experience a bewildering disorientation. Secular readers might find the chapter confusing for its strong emphasis on Jesus Christ as witnessed to in the Christian Scripture as the key to sustaining evolutionary science. Contemporary Christian readers might experience the same confusion, but for different reasons. After all, Genesis 1-3 does not directly refer to Jesus Christ but creation and fall – the reason why Jesus had to come.

We live today in a cultural world that presupposes that the issue of “the Bible” and “evolution” depends on the ability to correlate the two directly. This predetermines the logic of possible positions. The issue of the “seven days” of creation in Genesis 1 supposedly depends upon “day” as serving either as a twenty-four hour period (young earth creationists) or an undetermined amount of time (evolutionary theists); one builds one’s scientific position directly on faith in the Scripture as the Scripture refers to creation. Of course, secularists see the Scripture as utterly irrelevant. Why even care about ancient document’s “mythological” view about creation? Science has nothing to do with the Scripture.

One can always move to the mediating position of mainline Protestant liberalism -- one can read the text “non-literally” through de-mythologizing the ancient Israelite “view of creation” to retrieve some inner experiential essence that the text expresses. Of course lines get fuzzy, particularly as “educated evangelicals” bleed over from “evolutionary theism” into “mythological” readings of Genesis 1-3.

We can understand the heat generated culturally within evangelical Protestant circles over “young earth” versus “old earth” creationists positions. Such heat reinforces the secularist’s cultural prejudices against evangelical Christians; young evangelicals move to mediating Protestant liberal positions of mainline Protestantism before exiting the faith altogether later in life or in the [next generation](#). Meanwhile BioLogos Foundation steps into the heat to dissipate it, to undercut the secularist’s scholarship of the sneer amid an evangelical commitment to the authority of the Scripture, without experiencing the drift into the mainline cultural Protestant liberal commitments that end in American civil religion. Samuel Huntington has recently nicely summarized the current form of American cultural Protestantism: “Protestantism without God” (i.e., emphasis on “faith” as a human experience that gets expressed in various, equally legitimate, pluralistic ways in various “faith-communities”); “Christianity without Christ” (i.e., Christianity is essentially about a benevolent ethical program of inclusion within the world to encourage “love of God” manifested as [“love of neighbor”](#)).

In chapter 7 Cunningham reconfigures the debate by returning to the basic logic of historic Christianity. Cunningham argues that both evolutionary science and the Scriptures refer to Jesus Christ, the eternal Word of God, who raises and perfects their literal senses as their Alpha and Omega, their Creator and Sanctifier unto Perfection. Against the secularist, Cunningham argues that evolutionary thought either finds its origin and end in Jesus Christ, the Word (Reason) made flesh or collapses back into its own nihilistic logic; against the creation scientist, Cunningham argues that the literal sense of Genesis 1-3 finds its origin and end in Jesus Christ or the Bible becomes the oracle of a pagan [demi-urge](#); against the Protestant liberals, the mediation of “theology and scientific results” either requires its origin and end in Jesus Christ, or it falls into the same logic of the secularist position by positing a “more” found deep within human experience that expresses itself in various ways as each human being moves onward into nothingness. While Cunningham’s argument has a certain family resemblance to “theistic evolution,” such language is much too imprecise to describe the eternal Triune God who has revealed God’s Self fully by taking creation fully into God’s Self in Jesus Christ. As Cunningham writes, “creation is about Christ, and nothing else. Jesus, as the Word of God, is the metaphysical or ontological beginning and end (*telos*) of all that exists” (p. 378).

Cunningham attempts no novelty in his theological interpretation of Scripture and creation. He returns to the sources of Scripture and the theological reflections in early Christianity. He insists that the Christian interpretation of the Scripture regarding creation requires a profoundly Christological focus. Quite simply, “We should not isolate creation from incarnation, for it is true to say (as do both Gregory of Nyssa and Maximus the Confessor) that incarnation and redemption are no less part of God’s purpose than creation. . . . Therefore, the incarnation is not the consequence of, or a reaction to, the Fall, but was always God’s intention” (p. 384).

We do not interpret Scripture “as a self-enclosed, discrete text that can simply be opened, read, and understood” (p. 393). Rather, Cunningham quotes the remarkable words of John Behr: Scripture provides a “treasury of imagery for entering into the mystery of Christ, the starting point for which is the historical event of the Passion” (p. 393). We don’t interpret Scripture to see what it says about creation; God has given us the Scripture to interpret Christ. Therefore, we have to speak about creation from the Scripture because the Word through Whom God the Father created all things was made flesh and dwelt among us.

If we can grasp this profoundly Christian conviction, we can understand why Cunningham emphasizes the “sabbath” to interpret Genesis 1-3. The seventh day shows the utter gratuity of creation – creation comes to us strictly as gift and is not in any way necessary for God: “The Sabbath is, therefore, the meaning of creation, for creation is meant to have rest; it is to repose within divine purpose, a purpose that is free of necessity and that is instead a matter of utter generosity” (p. 386). The development of the first six days in Genesis 1 and the focus on humanity in Genesis 2-3 occurs only within the context of the divine purpose found in creation’s beginning and end in Christ: “Life and history, then, are a matter of pilgrimage and development, and the language of return correlates not to history but to divine, eternal intention: God made man to become divine, knowing that this could only be achieved through the reality of history into which would come his only begotten Son. Salvation is therefore true hominization, and thus real humanism: man becomes man only in Christ (pp. 391-2). Sabbath provides the purpose and meaning of creation, even as the Sabbath rest comes in Christ.

The first human, the “historical Adam,” so-to-speak, *is* Jesus Christ. Jesus Christ mediates creation, incarnation, and the end of all things: “As Christ is eternally the Word of God, there was therefore always a Savior, so in this sense there needed to be someone to save. Creation involves one long process of habituation between humans and God, and God and humans, where each developed in their mutual participation. The second season, which in terms of logic is the first, is the incarnation. . . . Christ assumes and recapitulates all that has come before him, thus demonstrating that they come from him as the pre-existing Son, rather than he from them. . . . This helps us realize that there was, in a logical sense, no first Adam. The third and final season is Christ’s return in glory, for the Word who is the beginning will also be the end. . . . ‘First and alone’: thus there is only one Adam” (p. 394). As with the Apostle Paul, so for Cunningham: “Yes, through one man death was defeated, because Christ offers naturally mortal man eternity, which is man’s natural desire but not his natural competence. For Paul it is more a matter of what Adam is, not who he is. Adam is a type of Christ” (p. 397).

Genesis 1-3 provides an indispensable treasury so that we might recognize, through faith, Jesus Christ. Having recognized Jesus Christ according to the Scripture, we then can recognize ourselves and all of creation as icons of Christ. Through the Scriptural witness to Christ, we discover “to put it crudely, *matter matters*. Christ loves the body to the ultimate degree, for he creates it, assumes it and thus redeems it, and lastly, resurrects it: there is nothing more carnal than resurrection. This is the Christian revolution” (p. 405).

Scripture, like we saw with the theory of evolution itself, belongs amid a creation that signs beyond itself in Jesus Christ or collapses back inward to nothingness – and thus forces us to deny our experience at its very core: “If we presume the Scriptures can exist or be read except through Christ – then we fall on folly, for there is no history without Christ. Put differently, in purely secular or naturalistic terms we cannot locate people, or events, the meanings of words, for the arbitrary nature of any other first principle than Christ would cause all form to hemorrhage” (p. 397).

As Cunningham states in the chapter Scripture is not a cheap replacement for a time machine to “know what happened back then” because we would like to shake hands with Adam and Eve and chat with

the serpent in Eden. Scripture is God's gift that the Holy Spirit has sanctified in order to show us our origin, sustaining, and end in Christ – lest we fall into nothingness alone. Therefore Cunningham types our lives through the treasury of Scripture in the terms of the nakedness of the first humans in Genesis 2 to make an evangelical decision of faith: "There are two complementary ways of looking at being . . . It is our reactions to them that determine whether it is a question of sin or faith (whether we fall or rise, as it were). Because we are created, because all we have is received, it is perpetually the case that, in a sense, our being is always naked. . . . If we are not to read our nakedness negatively . . . our nakedness is one of intimacy – of the very relationship of immanence and transcendence, which cannot, on pain of invoking a third term, be set over and against each other. This intimacy, this noninvasive, divine concurrence, informs the world" (p. 411).

We need to take serious Cunningham's use of the word "in-form." The Scriptural narrative of creation signs the enchantment of the world in Christ, just like Cunningham argued for the theory of evolution. Scripture and the world reveal God's glory – but God's glory is mediated to us through the incarnate Christ, the very glory of God. No such thing as pure nature exists, for it was/is/and will be "formed" through the eternal Word, the very Reason of God, the image of God that shows that humans receive their vocation as created in the image of God, i.e., from and toward Jesus Christ. The hyper-Darwinians and the interpretative practice of creation scientists both presuppose an unmediated reality purely accessible through "science" or "the Bible." Instead, Cunningham gives us a sacramental world, in its very ordinary materiality, that signs beyond itself. As in creation, so in redemption, both united in the eternal Word, all we can therefore say as human beings is "eucharist" – or more simply, "thank you," thank you to God for the gift of life in creation and the gift of the fullness of life eternally, both mediated to us from God the Father by the Holy Spirit through Jesus Christ, one God, forever and ever.

At this point it should come as no surprise that I think that Cunningham's work exemplifies the mission of the Biologos Foundation. I am humbled at the sheer magnitude of Cunningham's work. Perhaps the most amazing feature is Cunningham's ability to see connections in disparate areas of contemporary biology, physics, and philosophy, while maintaining a mastery within the orthodox, catholic, and evangelic "great tradition" of historic Christianity. Cunningham is thus able to see coherences that lesser minds miss.

Cunningham mediates historic Christian theological positions to contemporary scientific thoughts with a thoroughness that would make even the most liberal Protestant blush. Unlike liberal Protestants, however, never, never does Cunningham alter the fundamental grammar of the Christian faith to make it more palatable to its cultural despisers; he writes continuously aware of the adage that the theologian who marries the thought of their age is widowed tomorrow. Cunningham argues for the coherence of evolutionary theory, properly construed, with historic Christianity; but he argues for more: without the truthfulness of historic Christian convictions, centered on Jesus Christ, fully human and fully divine in one undivided person, only nihilism remains. And nihilism cannot give an account of the rationality of human experience at its most basic levels, let alone with the complex rationalities of the sciences. Science without Christ undercuts its own rationale and rationality.

Cunningham permits no "faith" and "scientific reason" divorce. He does not limit reason to make room for faith, or modify revelation to the "givens" of reason, scientifically or otherwise. Reason itself becomes tied to God's revelation in Jesus Christ. Divorced from its origins in God, reason, and all creation, ultimately collapses inward upon itself. Here is the core importance of the Biologos foundation: to retrieve genuinely the faith given to the saints, not for building a "faith fortress" impenetrable against the attacks of "secular reason" in order to protect revelation. It is rather to articulate the truthfulness of the faith given to the saints for the sake of the world, to render all creation intelligible to the world for the glory of God with a

thoroughness that the world itself cannot provide and finally to show that, ultimately, there is no such thing as “secular reason” -- reason itself is imbued “all the way down” with its origin in the eternally Divine Word from Whom and through Whom and to Whom are all things.

I would like to summarize Cunningham’s accomplishment in three main points that I deem most important about his work. First, in unity with pre-modern Christian thought, Cunningham insists that we frame issues of “science” and “religion” with a thoroughly Christological beginning, middle, and end. Evangelicals may balk here. A deep strand of American evangelicals have historical roots in the early modern, dissenting, English Puritan tradition that sought to ground all its language about God in what the Scripture explicitly affirms. The impulse within evangelicals is always to reduce issues of “science” and “faith” to issues of the Bible. Therefore, Dr. Henry Morris, the founder of creation science, sought to attack modern scientific positions on the age of the earth to preserve his reading of Genesis 1 -3. Yet to preserve a historicist reading of the first Adam and Genesis, he embraces a radically unorthodox view of Jesus Christ. Of course, liberal Protestants merely invert such a reading to argue that Genesis 1-3 has an enduring “mythological significance” grounded in human experience. Just like Henry Morris, such a view seeks to preserve Scripture from scientific criticism. Again, it does this by making Scripture a reservoir of some human experience behind it that is utterly separated from Jesus Christ. This undercuts the particularity of Scripture and tends to make Jesus a representative of God, the same God found within the human experience behind Scriptures, rather than God’s eternal Word in the one human person, Jesus. One thus finds the heat of the dispute between “creation science” and “intelligent design advocates” with those formed by critical biblical scholarship so vociferous, unending, and unenlightening. “Science” and “revelation” becomes equated with “science” and “the Bible.”

Cunningham refuses to correlate scientific findings directly with the biblical witness so that one or the other has to give. Instead, he mediates both through a rich, deep, fully evangelical, orthodox, and catholic view of Jesus Christ. In so doing, he brings all things in submission to Christ, re-ordering both science and Scripture to Christ in a way that maintains the full integrity and authority of each. The simplicity, beauty, and truthfulness of such an understanding show the intellectual vitality of the historical Christian tradition.

The so-called “science versus religion” debates evaporate and the disciplining of the church by a secular reason shows itself as the irrational power move that it always has been, even as the church’s attempt to discipline empirical science tries to emulate the same power play. Cunningham reorders our understanding of Scripture as absolutely necessary for the church to render Jesus Christ and the church’s life intelligible; Scripture does not, however, function as a replacement for a scientific and historical discourse that would actually render Scripture unnecessary if we had full historical and scientific transcripts of the events.

Secondly, Cunningham delves into the relationship between the “orthodox Copenhagen” interpretation of quantum physics and philosophy. Underneath all of Cunningham’s work is an often subtle, at times explicit criticism of contemporary scientific and philosophical thought, particularly in its reductionist form. Cunningham argues that too many contemporary thinkers still dwell in a Newtonian rather than a quantum understanding of “matter.” More fundamentally, such thinkers persist in a “culture/human” versus “nature/matter” dichotomy that has become philosophically, institutionally, and culturally embedded into Western culture. Cunningham thus pulls together disparate movements in philosophy, ancient and contemporary, to challenge the dominance of modernist and postmodern philosophies (modernist philosophy’s inverted twin). Cunningham grasps that the Christian tradition refuses a “mind/matter” dichotomy that has become basic in the modern (and post-modern) Western world. He thus shows a deep

common logic shared between a certain strand of quantum physics (the irreducible and indispensable role of the participant-observer in Copenhagen quantum physics), recent continental philosophy (the phenomenology of Michel Henry), and recent analytical philosophy (philosophy of mind of E. J. Lowe). He thus subtly aligns himself with a new movement in philosophy that seeks to overcome or deny the “correlationist” commitments between the binary poles of the human and nature, a correlation that has formed all of us in Western culture and is classically stated in the works of Immanuel Kant.

Thirdly, Cunningham shows the need for new evolutionary synthesis that accounts for form. Cunningham participates in an inner-biology, scientific dispute that argues that the neo-Darwinian synthesis is not sufficiently comprehensive to account for the empirical data. He explicitly notes his dependence on the work of Conway Simon Morris – as readers of the BioLogos blog have noted as well. To steal a pun from Cunningham itself – evolutionary studies show that form matters. Evolution itself depends on the formal characteristics the very materiality that evolution presumes—and matter itself evolves in formally rational ways. Suddenly the abandonment of a Platonic/Aristotelian/Thomistic theory of forms that entered scientific discourse in Francis Bacon with his commitment to late medieval **nominalism** no longer seems warranted. We remain in the awkward position in evolutionary theory whether the neo-Darwinian theory can account for this new data, or whether a new theory that incorporates the successes of the neo-Darwinian account into a broader understanding remains to appear. In either way, it seems to me that any full biological account with have to include the role of structure and form within evolutionary and biological systems. Cunningham places his finger on the correct spot for biological, philosophical, and theological reflection – which, of course, are not three different “things.”

Perhaps the “orthodox Copenhagen” account of quantum physics will pass as a scientific theory; perhaps a neo-neo-Darwinian synthesis can appear to account for the role of structure, systems, and form in evolution. Perhaps someone can give a neo-Darwinian account where natural selection itself evolves along formal patterns. Even if so, in his most fundamental point, Cunningham is correct: because of the Incarnation, the church catholic is committed to matter, not because matter is ultimate, but because it is not: it is a gift of God. Christian thought at its most basic commitments, is a type of speculative materialism or realism. If and/or when new data requires a modification to our scientific understandings, it will still be human beings that produce the science, and human beings who understand it. And Cunningham’s book will still sustain its importance: for it is ultimately anchored in Jesus Christ, the same, yesterday, today, and forever.

Given the constant production of new knowledge, Cunningham’s work will require new mediating thoughts, rethinking the issues again and again in taking all things to Christ. In so doing, humans may receive the gift of the wonder at the life that the eternally Triune God, as Life itself, has given us through participation in Jesus Christ, who is the Way, the Truth, and the Life. It is this very same task that lies at the root of the BioLogos Foundation. By the grace of God, may its program continue for its witness to a humanity that finds itself, at the point of its highest achievements in science and technology, unable to give an account of even why it should matter -- and in the process, even lose its grip on matter. At least Christians can tell why it does: because God has gifted us with life, and redeemed this life from endlessly turning into itself through becoming incarnate in Jesus Christ, to point us to not only God, but in pointing us to God, to point us to our truest humanity.

Notes

*Cunningham writes, “There are two types of naturalism: methodological and ontological. The former is the approach science must take when it engages with the universe insofar as it will fail to make any progress unless it brackets the divine. The latter holds that bracketing the divine is not merely methodologically necessary but constitutive of reality as such. . . . While methodological naturalism issues no philosophical or metaphysical opinion on what exists, ontological naturalism suffers no such shyness. It tells us not only that science must stick to what we take to be natural but also that the natural is all there is, indeed all there ever could be. Moreover, ontological naturalism deposes philosophy’s ancient position as the final arbiter of our understanding of existence to which even science is subjected (what is called first philosophy)” (pp. 265-6).

**Commentators in the previous discussion have noted Cunningham’s dependence on the work of Simon Conway Morris, a dependence that Cunningham notes in the acknowledgements. In a recent article, Conway Morris reviews research that “point to a biology that will move far beyond the Darwinian formulation. . . . Today our understanding of evolution is immensely widened, but naturally it remains thoroughly Darwinian. The aim of this review is not to dispute this synthesis, but simply to enquire if it is complete” (p. 1337). See Simon Conway Morris, “The Predictability of Evolution: Glimpses into a post-Darwinian World,” *Naturwissenschaften* (2009) 96: 1313-1337 (<http://www.springerlink.com/content/b46l378pju61h6k2/>).