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Essay Book Review

# Mixed Metaphors: Intelligent Design and Michael Polanyi in *From Darwin to Eden*

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From Darwin to Eden: A Tour of Science and Religion Based on the Philosophy of Michael Polanyi and the Intelligent Design Movement *by William B. Collier. Eugene, OR: Resource Publications, 2020. 308 pages. Paperback; $36.00. ISBN: 9781532692710.*

Keywords: intelligent design, evolution, theology, natural history, science and faith, Michael Polanyi, protein chemistry

*From Darwin to Eden: A Tour of Science and Religion Based on the Philosophy of Michael Polanyi and the Intelligent Design Movement* by William B. Collier is unique among the books about intelligent design (ID) theory in its combination of scope and audience. The word "tour" in the subtitle is the first clue that the scope and audience are both broad. In the Preface, Collier writes, "Most of the material presented in this book was presented by many others in more technical publications." Each chapter corresponds to a previous book or two by an ID author making more-detailed arguments, sometimes reproducing entire figures from previous books.

So, to review this book is to review the entire ID movement. None of the arguments as described is complete in itself, nor can it be. Detailed rebuttals to the arguments from *Darwin's Doubt* or *Darwin's Black Box* must be located elsewhere. *From Darwin to Eden* invites a different kind of response, one that is more personal.

The personal response is provoked by two framing devices: First, Collier intersperses the arguments with a Greek chorus of sorts, in the form of vignettes of undergrads eating lunch and taking classes together while discussing the points in the surrounding text. Second, Collier integrates the life and writings of Michael Polanyi, including Polanyi's masterwork, *Personal Knowledge*. Polanyi's focus on the practical and social aspects of learning science resonates with undergrads, as I know from my personal classroom experience of assigning his texts. Therefore, the audience for this book is specifically focused at the general undergraduate level.

As a result, *From Darwin to Eden* is the closest thing we have to an intelligent design textbook for undergraduates. In addition to this survey of the ID movement, it includes some of Polanyi's thinking, but Polanyi's ideas are not deeply engaged. Polanyi died in 1976 and can't personally respond, but my guess is that Polanyi would object to the negative nature of the argument. Polanyi's ideas

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about tacit knowledge are more about how scientists know than what scientists don't know. Collier reverses this emphasis. Polanyi's tacit knowledge inspires me as a teacher toward positive actions: to involve students in the process of science so that they acquire the habits and language to recognize patterns and design structures. Polanyi's concept enables scientific work and experimentation, whereas Collier's interpretation of Polanyi's concept does not.

Both habits and language are creative scientific activities involving metaphors to communicate the patterns and designs, so that how you use metaphors is a key point to how you use Polanyi's ideas. In recognition of this, Collier's chapter on "Science and Metaphors" opens with a definition of metaphor (p. 173) from Janet Soskice's *Metaphor and Religious Language*,[1] which is another lodestone of potential inspiration, and is one of my personal favorite books on science and religion. A deeper look at Soskice's argument reveals that her definition of metaphor holds helpful nuance. Later in her book, Soskice writes that "a metaphor is *genuinely creative* and says something that can be said adequately in no other way, not as an ornament to what we already know but as an embodiment of a new insight" (emphasis mine).[2] Like Polanyi's tacit knowledge, Soskice's metaphor is a positive, creative act that supports, and perhaps even *is*, science.

When this many ID arguments are gathered in one place, it becomes clear that these metaphors are not used to construct and qualify theories such as those of Polanyi and Soskice, but are used to deconstruct and disqualify theories, especially regarding evolution. When a problem arises, often the issue is not with the theory itself, but with the metaphor. For example, ID's metaphors are consistently mechanical in nature, but they are applied to biological and chemical situations that are more biochemical than mechanical.

This has been a problem with ID arguments since the beginning. It is true that Michael Behe's irreducibly complex mousetrap would not be assembled from mechanical, human-sized nuts and bolts; however, proteins in aqueous solution at room temperature are dynamic biochemical polymers with nonspecific affinities and functions. The atomic world is different from the human world. Even the most "mechanical" of proteins (e.g., ATP synthase) is difficult to describe with completely mechanical metaphors in the present tense—how much more difficult would it be to describe its origin that way!

Biochemistry requires nonmechanical metaphors, but in *From Darwin to Eden,* mechanical metaphors are used throughout. Collier writes, "Let us try to envision a good mechanical analog" to the heart and lungs; he then compares them to motorized vehicles (p. 253). My personal knowledge of how proteins work says this is an inadequate comparison: my PhD in protein design does not make me a better car mechanic.

In my view, the most convincing evidence for evolution can be found by comparing genes, which Collier addresses on pages 254–56 in chapter 10. However, like the discussion of Soskice's proposals about metaphors, *From Darwin to Eden* remains superficial in this area. Collier shows an alignment of cytochrome c protein sequences from multiple species arranged from humans at the top to yeast on the bottom. My eye, trained with Polanyi's tacit knowledge, immediately reads this alignment as clearly showing gradual biochemical variation corresponding to the variation inferred from biology. The power of this observation is that this can be done with almost any shared protein sequence, and the alignment would look the same. You can choose a common gene at random and investigate this yourself on your laptop. Most genes will look the same as the figure Collier shows.

But instead of zooming out to note all the proteins this would apply to, Collier zooms in to a pattern of four amino acids. He writes,

> … students quickly notice all of the insects have the pattern VPAG near the start of the protein sequence, except for the honeybee which has IPAG … Is it *descent with modification* that caused this difference [the pattern IPAG] or *needed design constraint*? It all depends on your perspective. (p. 256)

I am not satisfied with shrugging and saying "it all depends" for an argument like this. Collier's example

is specific enough that it can entail a specific chemical hypothesis: the V/IPAG sequence in insects is a design constraint because it provides a certain chemical structure that interacts with another part of the organism. I can imagine experiments to investigate this step by step.

No structural rationale is investigated or even proposed. This example is meant to tear down evolution, not to build a theory of the chemical nature of "design constraints." Even if a "design constraint" is found, an evolutionary path might be found to that constraint, leaving us back at square one.

This chapter's argument culminates with a tacit admission that, to the biologist looking at genes (like me when I looked at the cytochrome c alignment), evolution makes sense. Collier writes, "If you are looking at the tree of life from the top it is very easy to extrapolate down and call it a fact of science" (p. 258). This means that most protein sequence alignments, as views "from the top," make sense with evolution. Then Collier contends, "If you look at the tree of life from a bottom-up view, the case for evolution and the tree of life is pretty terrible. From the physical scientist's perspective it is tempting to call it impossible …" (p. 258).

Indeed, chapter 6 details the shortcomings of origin-of-life chemistry, arguing from a "bottom-up view," and chapter 11 is titled "View from the Bottom." But earlier, in chapter 4, Collier argues "from the top" to support intelligent design from astrophysical arguments, repeating fine-tuning arguments to conclude, "We are positioned in time for the best possible view of the universe" (p. 105). The argument flips from "top down" to "bottom up" in its use of data depending on the scientific discipline.

If the difficulties of building origin of life chemistry from the bottom up prevent knowledge about the evolution of species, as Collier asserts, then the difficulties of building a universe through the inflationary epoch (for example) would also prevent knowledge about the privileged nature of our planet—yet Collier never makes this argument. On the other hand, if we are positioned for a top-down view back in time using a survey of the universe to show how special our planet is, then I would argue that we are also positioned in time for a top-down view back in time using a survey of DNA sequences.

Looking top down in astronomy, we see that our planet has unique features; in biology, we see molecular similarities among species. Evolutionary theory can "connect the dots" (at least most of them) into reasonable biological mechanisms of species formation. Arguing that our uncertainty about some of these "dots" at the origin of phyla or the origin of life invalidates evolution, shifts the argument far back in time to either the Cambrian explosion 540 million years ago or the origin of life 4 billion years ago. It is like arguing that any uncertainty about the inflationary epoch after the Big Bang somehow invalidates the wealth of evidence from the Cosmic Background Explorer's top-down scan of the entire sky. Collier's survey of ID literature lays out this contradiction by repeating these arguments in nearby chapters.

As you have no doubt noticed, in reviewing a book so dependent on Polanyi's ideas, I cannot avoid using the first person and invoking my own personal knowledge. I have experiences both in the lab and in church that have given me a much more positive view of evolution than that held by Collier.

From my own personal laboratory knowledge of designing proteins, I have found that small changes are usually tolerated and can even increase binding function. I was not testing this point directly, but it emerges from the data in many of my published papers. In one case, we reshaped amino acid residues that are "hot spots" for binding, and found that most of the changes we tried were tolerated. In fact, substituting in one kind of residue actually increased affinity over the wild-type native protein, suggesting that the protein is not optimized for function in the manner that ID theories would suggest.[3] In another set of experiments, a "broken" protein design bound more tightly than the "fixed" version![4]

In my personal laboratory experience, proteins are much more plastic and dynamic than implied by Douglas Axe[5] and by Michael Behe and David Snoke.[6] I could be convinced against my own personal experiments by something like a meta-analysis of *in vitro*

binding data from scientists who are not trying to prove protein plasticity either way. A wealth of such data exists in the literature. I suspect that, like my inadvertent experience, such neutral evidence shows that most proteins tolerate minor alteration without complaint.

My own personal theological knowledge has also contradicted the view of divine action assumed in books like Collier's. One theologian who recently unfolded scripture in this regard for me is Katherine Sonderegger. She starts from the perfect Oneness of God and develops it into a systematic theology that explicitly critiques William Paley's design arguments while keeping a strong view of God's otherness and unity (expressed as God's omnipresence, omnipotence, and omniscience).[7] Sonderegger writes, "The omnipotent Nature of God *intends* the creation: Let there be light!"[8] When I read this, I heard the same ultimate theological goal as Collier's, despite the vast difference in arguments: this planet is personally privileged with blessing, or at least I am. I need a theology that lets me know that I am personally intended—I am loved—by the Creator of the universe. This is true for all of us, whether we see the origin of life as a problem or not. Sonderegger accomplishes this gratitude and wonder with a Divine Designer who acts in mysterious, not mechanical, ways. How else should an omnipresent yet personal God work? His ways are not our ways.

Personal knowledge is inherently political. Throughout *From Darwin to Eden*, Collier remarks on the political nature of scientific decisions, especially when ID is not given a seat at the table for scientific discussion. By reviewing this book, I am personally implying that the "table" set by the ASA is a place where Collier's arguments should be heard and debated in good faith. But every finite table involves some exclusion—even Collier's table. For example, I can't locate myself on Collier's spectrum of science-and-faith views (p. 242). I see design in the universe, but it is eternal and outside of time: chemical design in the construction of the periodic table from consistent physical laws unfolding over billions of years. This increases my confidence in both evolution and purpose.

Collier quotes Phillip Johnson quoting paleontologist David Raup: "In the years after Darwin, his advocates hoped to find predictable progressions. In general, these have not been found …" (p. 248). Collier effectively closes his investigation at this point, like someone who made up their mind first and went searching for a quote to support their stance second. But what if you keep an open mind that predictable progressions may exist—and what if you find one? I ask because I believe I have.

Since we are talking about personal knowledge here, I should mention that I have written a book about how a predictable geochemical progression in mineral evolution led to a predictable biochemical progression in biological evolution.[9] Raup, quoted decades ago, was disappointed in one paleontological progression, but I found a biochemical progression. This is not *intelligent* design, but the metaphor of design used in a different way, maintaining the integrity of nature fitting with Sonderegger's theology about the patient, consistent, and humble working of God.

Sonderegger and Collier (and I) have very different views on Darwin and Paley, but we agree that there is more to this life than mere atoms and void. We inherit this anti-Epicurean argument from Paul of Tarsus at Mars Hill.[10] This speech, and Paul's first speech to Gentiles at Lystra,[11] both appeal to God's action as the font of existence, above all idols and mechanisms. The evidence (or "testimony") Paul cites at Lystra is all in the present tense: rain from heaven, crops, and food. Now that science allows us to look into the deep past, we can look for God's goodness and design there as well, but it must be secondary to God's present work—after all, Paul didn't need design arguments to preach the gospel in Lystra.[12]

The apparatus of science provides many kinds of evidence, from the astronomical to the biochemical. Polanyi's writing about tacit knowledge and the inadequacies of naturalism opens the door to other kinds of evidence, but that evidence must be weighed fairly and completely. It is a good thing if we as ASA members end up talking more about Polanyi and Soskice, so I appreciate the philosophical

frame of Collier's argument and citations, and hope that future ASA meetings will discuss these thinkers and others.

Michael Polanyi's life and work promoting personal knowledge is a welcome framing device, but what this device frames is not new. Collier's stated goal is breadth, not depth, and a broad array of unconvincing arguments does not add up to anything: to use a mathematical rather than mechanical metaphor, the series does not converge. Let's continue to bring new findings to the table and debate them to see what kind of adjective is best suited for the design and purpose we intuit in the universe. For now, I find the adjective "intelligent" for "design" to be wanting.

## Notes

[1]Janet Martin Soskice, *Metaphor and Religious Language* (Oxford, UK: Clarendon Press, 1985).
[2]Ibid., 48 [emphasis mine].
[3]David J. Culpepper et al., "Systematic Mutation and Thermodynamic Analysis of Central Tyrosine Pairs in Polyspecific NKG2D Receptor Interactions," *Molecular Immunology* 48, no. 4 (2011): 516–23.
[4]Candice S. E. Lengyel et al., "Mutations Designed to Destabilize the Receptor-Bound Conformation Increase MICA-NKG2D Association Rate and Affinity," *Journal of Biological Chemistry* 282, no. 42 (2007): 30658–66.
[5]Douglas D. Axe, "Estimating the Prevalence of Protein Sequences Adopting Functional Enzyme Folds," *Journal of Molecular Biology* 341, no. 5 (2004): 1295–315.
[6]Michael J. Behe and David W. Snoke, "Simulating Evolution by Gene Duplication of Protein Features That Require Multiple Amino Acid Residues," *Protein Science* 13, no. 10 (2004): 2651–64.
[7]Katherine Sonderegger, *Systematic Theology,* vol. 1 (Minneapolis, MN: Fortress Press, 2015), 57–65 on Paley; 300–318 on Genesis.
[8]Ibid., 318.
[9]Benjamin J. McFarland, *A World from Dust: How the Periodic Table Shaped Life* (New York: Oxford University Press, 2016).
[10]Acts 17:22–31.
[11]Acts 14:15–17.
[12]Paul's statement that "From one man he made all the nations" in Acts 17:26 does not seem like a design argument to me, because it does not require design but rather purpose ("that they should inhabit the whole earth"); this idea fits equally well with Sonderegger's creation theology, given its emphasis on God's intention for what they should do.

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