

Darwin's Gift to Science and Religion. By Francisco J. Ayala. Washington, DC: Joseph Henry Press, 2007. ISBN-13 978-0-309-10231-5. US\$24.95.

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Ayala's Potemkin Village

Reading Francisco Ayala's defense of Darwinian evolution in *Darwin's Gift* is like wandering through a Potemkin village: everything looks neat and spotless on the outside, but probe deeper and nothing is there. In offering this criticism, I don't mean to be unkind. Ayala is one of the premier evolutionists this side of the Atlantic. He is also a gifted expositor, as is evident, for instance, in his summary of William Paley's design argument in *Darwin's Gift*. But from the start it is clear that Ayala is out to debunk intelligent design (ID) and put Darwinian evolution in the best possible light. This leads him to ignore both the strengths of the former and the weaknesses of the latter.

For Ayala, Darwinian evolution is the best thing that ever happened not only to science but also to religion. By contrast, ID is for him both bad science and bad religion. But things are not that simple, neither for science nor for religion. Ayala casts Darwinian evolution as an overwhelmingly confirmed and vindicated scientific theory. Yet it has many weaknesses and lacunae—as he himself concedes when not trying to diminish ID's cultural influence, as he attempts to do throughout *Darwin's Gift*. Moreover, his chief theological argument against ID, namely, that it makes the theodicy problem irresolvable,

founders once one sees how his proposed resolution of that problem via Darwinian evolution encounters exactly the same difficulties that he attributes to ID.

Although Ayala's passion in this debate is more with religion than science, most of *Darwin's Gift* focuses on the science of Darwinian evolution. Thus, he devotes considerable space to defending the standard pillars of contemporary evolutionary theory: common descent (the universal common ancestry of all organisms), natural selection as the chief mechanism of evolution, human evolution from ape-like ancestors, and molecular phylogenies based on protein and DNA sequence comparisons. Throughout these discussions, Ayala consistently omits crucial information that would suggest there is a debate worth having.

Take the reconstruction of evolutionary relationships by molecular sequence comparisons of proteins or DNA. In *Darwin's Gift*, Ayala suggests that the methods of molecular biology allow for a slam-dunk reconstruction of the tree of life: "The virtually unlimited evolutionary information encoded in the DNA sequence of living organisms allows evolutionists to reconstruct all evolutionary relationships leading to present-day organisms, with as much details as wanted." (79 – 81) In this vein, he touts the molecular clock, the idea that "macromolecules," because of the rates at which they mutate, "may serve as evolutionary clocks." (132)

But when not trying to defend Darwinism against ID, Ayala is far less sanguine about what molecular methods can reveal about evolutionary relationships. Consider his 1997 article in the *Proceedings of the National Academy of Sciences* ("Erratic Overdispersion of Three Molecular Clocks"). There he questions "whether there is a

molecular clock at all” since they “evolve erratically,” thus undercutting any inference about where and when evolving organisms branch into new forms.

Or consider his interview with Larry Witham (*Where Darwin Meets the Bible*, 2002). In that interview, Ayala concedes that evolutionary theory still needs to resolve many fundamental conceptual problems before it can adequately reconstruct evolution’s past: “Unfortunately, there is a lot, lot, lot to be discovered still. To reconstruct evolutionary history, we have to know how the mechanisms operate in detail, and we have only the vaguest idea of how they operate at the genetic level, how genetic change relates to development and to function. . . . [sic] I am implying that what would be discovered would be not only details, but some major principles.” (90)

Such refreshing and stark admissions about the deep difficulties that continue to vex evolutionary theory, however, are nowhere to be found in *Darwin’s Gift*. Instead, the book presents Darwinian evolution as a package deal in which all loose ends have been sewn up. Thus, in discussing common descent, Ayala claims that “scientists . . . place it beside such established concepts as the roundness of the Earth, its revolution around the sun, and the molecular composition of matter.” (140) Such rhetoric (and that’s what it is) is disingenuous and cannot in the long run benefit the acceptance of evolutionary theory. Clearly, the analogy here is asymmetric—no physicist, to bolster belief in the roundness of the Earth, would claim that its roundness is as well established as common descent. And yet everyone in the U.S. population believes the Earth is round; close to half reject common descent.

For the purposes of this review, I am happy to concede common descent. My point is simply that Ayala’s glib manner of supporting common descent and other

evolutionary claims does not withstand closer scrutiny. For instance, he cites a 2000 article by molecular phylogenetics pioneer Carl Woese, claiming that Woese's research supports common descent (81). Yet Woese's most recent work casts doubt on common descent by arguing for multiple origins of life ("Collective Evolution and the Genetic Code," *PNAS*, 2006). Ayala, to be sure, knows of this work. Yet in not citing it and going with older work that makes his defense of common descent more clear-cut, Ayala does his readers a disservice, dumbing down *Darwin's Gift* when his readers not only deserve better but also could handle better.

If Ayala offers a dumbed down defense of evolutionary theory, he is guilty as well of offering a dumbed down critique of ID. Indeed, he devotes far more space to William Paley than to contemporary design theorists, thereby giving the impression that contemporary proponents of ID have accomplished nothing since Paley. But the fact is that ID has gone well beyond Paley: (1) ID abjures natural theology; (2) ID accommodates a great deal of evolutionary change (even full-blown common descent); (3) ID, though often understood in supernaturalist terms, can also be understood in terms of teleological organizing principles built into nature; (4) ID separates the problem of design from the problem of bad design (a point about which both Paley and Darwin were confused); and (5) ID employs the tools of molecular biology, nanotechnology, and information theory to draw its conclusions.

Ayala ignores these points in *Darwin's Gift*. In fact, he gives no evidence of having spent any time reading, much less digesting, the ID literature. Rather, Ayala gives the impression of someone who has gone to the ID literature simply to find objectionable passages, which he then reads in the worst possible light, forswearing any principle of

charity. In critiquing Michael Behe, the best known of the design theorists, he cites Kenneth Miller's response to Behe in *Debating Design* (Cambridge, 2004), an anthology I coedited with Michael Ruse. But Behe has a piece in that anthology as well in which he replies to Miller, and none of Behe's reply receives mention. I myself, perhaps the next best known design theorist, am referred to as a "sociologist." (138) Even my worst critics have never denied that I am a mathematician and that my main claim to fame is making ID mathematically rigorous. To be sure, they think I've failed in this regard, but at least they understand the point and discipline at issue.

The most interesting part of *Darwin's Gift* is Ayala's argument that Darwin's theory constitutes a gift to religion. For Ayala, Darwin resolves the problem of evil. By contrast, Ayala claims that any God who is also an intelligent designer renders the problem of evil insoluble, since such a designer God would be responsible for all the botched and malevolent designs we see in nature. Henceforth, with Darwinian natural selection serving as a designer substitute, Ayala can refer all those botched and malevolent designs to evolution:

A major burden was removed from the shoulders of believers when convincing evidence was advanced that the design of organisms need not be attributed to the immediate agency of the Creator, but rather is an outcome of natural processes. If we claim that organisms and their parts have been specifically designed by God, we have to account for the incompetent design of the human jaw, the narrowness of the birth canal, and our poorly designed backbone, less than fittingly suited for walking upright. Proponents of ID would do well to acknowledge Darwin's

revolution and accept natural selection as the process that accounts for the design of organisms, as well as for the dysfunctions, oddities, cruelties, and sadism that pervade the world of life. Attributing these to specific agency by the Creator amounts to blasphemy. Proponents and followers of ID are surely well-meaning people who do not intend such blasphemy, but this is how matters appear to a biologist concerned that God not be slandered with the imputation of incompetent design. (159 – 160)

In turning the table thus, Ayala in fact turns it 360 degrees so that the problem he meant to shift to ID confronts him still. For Ayala, the problem is that a designer God creates by direct intervention and thus must be held accountable for all the bad designs in the world. Ayala's proposed solution is therefore to have God set up a world in which natural selection brings about bad designs. But how does this address the underlying difficulty, which is that a Creator God has set up the conditions under which bad designs emerge? In the one case, this God acts directly; in the other, indirectly. But a Creator God, as the source of all being, is as responsible in the one case as in the other. What difference does it make if a mugger brutalizes someone with his own hands (i.e., by direct means) or employs a vicious dog on a leash (i.e., by indirect means) to do the same? The mugger is equally guilty in both cases.

The same holds for a Creator God who creates by direct intervention or by secondary causes. That's why so much of contemporary theology has a problem not just with ID but also with the traditional doctrine of creation ex nihilo, which makes God the source of being. The rage these days in theology is to attenuate the power and ultimacy of God so that God is fundamentally constrained by the world and thus cannot be held

responsible for the world's evil. Process theology is a case in point. In my view, process theology opens a whole new set of problems and thus is not a suitable replacement for the traditional doctrines of God and creation. But let's grant that it resolves the problem of bad design resulting from natural selection. The problem is that Ayala is not arguing for process theology (or some other attenuated deity), but that religious believers can maintain any doctrine of God they want.

According to Ayala, science and religion operate in completely separate realms (his view is identical with Stephen Jay Gould's NOMA—non-overlapping magisteria). Thus Ayala is in no position to require religious believers to revise their doctrine of God in light of scientific discoveries. In particular, he cannot require believers in divine omnipotence and creation ex nihilo to moderate these beliefs. Accordingly, religious believers who hold to a traditional doctrine of creation and accept natural selection as God's method of creating organisms confront the problem of evil with the same force as believers with the same doctrine of God who reject natural selection and accept ID.

Ayala's imagines that grappling with the problem of evil is the same as passing the buck to natural evolutionary processes (processes created by God). Such a theodicy is inadequate and simplistic. This same failure to grapple is evident throughout *Darwin's Gift*. Over and over in reading this book one finds Ayala filling one hole by digging another. Ayala is capable of better. As a former Catholic priest, he knows what the issues are and that they are difficult. But to admit that there are difficulties on both sides of the divide (Darwinian evolution *and* ID) did not fit the purpose of this book, which was to convey that all is well with the house of Darwin.

Grigori Potemkin fooled Empress Catherine II during her visit to Crimea in 1787, convincing her the villages there were thriving. Likewise, *Darwin's Gift* may fool some into thinking that Darwinian evolution has completely trumped ID. Neither subterfuge withstands closer scrutiny.