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Nothing in biology makes sense except in light of theology?

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ABSTRACT

This essay analyzes Theodosius Dobzhansky's famous article, "Nothing in Biology Makes Sense Except in the Light of Evolution," in which he presents some of his best arguments for evolution. I contend that all of Dobzhansky's arguments hinge upon sectarian claims about God's nature, actions, purposes, or duties. Moreover, Dobzhansky's theology manifests several tensions, both in the epistemic justification of his theological claims and in their collective coherence. I note that other prominent biologists—such as Mayr, Dawkins, Eldredge, Ayala, de Beer, Futuyma, and Gould—also use theology-laden arguments. I recommend increased analysis of the justification, complexity, and coherence of this theology.

"Nothing in biology makes sense except in the light of evolution." Written 40 years ago, Theodosius Dobzhansky's famous phrase has attained creedal status in the present day defense of evolution.[1] It is widely held as an incontrovertible fact and as a rallying cry against the incursion of fundamentalist religion into science. The statement itself is the title of an article in which Dobzhansky presents some of his best arguments *why* evolution alone makes sense of biology.[2] Given Dobzhansky's stature as one of the greatest geneticists of the twentieth century, his arguments warrant careful attention.[3]

Strikingly, all seven of Dobzhansky's arguments hinge upon claims about God's nature, actions, purposes, or duties. In fact, without God-talk, the geneticist's arguments for evolution are logically invalid. In short, theology is *essential* to Dobzhansky's arguments. Moreover, Dobzhansky's theology manifests several tensions, both in the epistemic justification of his particular theological claims and in the collective coherence of these claims. Accordingly, I argue that Dobzhansky's arguments crucially rely upon theology and that the justification and coherence of this theology requires further attention. I do not intend to criticize the justification for evolution per se, but rather to suggest that some of Dobzhansky's best arguments for evolution involve more theology and complexity than one might initially suppose.

Of course, I do *not* claim that evolutionary theory, or the polemic for it, requires theology per se. But while I focus on Dobzhansky's arguments for the sake of specificity, many of his theological claims, and more besides, also inform the justifications of evolutionary theory given by luminaries like Ernst Mayr, Gavin de Beer, Stephen Jay Gould, Richard Dawkins, Niles Eldredge, Francisco Ayala, Philip Kitcher, George Williams, Jerry Coyne, Francis Collins, Kenneth Miller, Douglas Futuyma, and others, including Charles Darwin himself. Accordingly, my conclusions can be widely applied *mutatis mutandis*. For a paradigm that putatively outgrew God-talk a long time ago, the presence of so much theology remains a striking curiosity (Avise, 2010; Ayala, 2006, pp. 25–42, 85–89, esp. 34–36; Ayala, 2007, pp. x–xi, 1–6, 22–23, 76, 88–92,

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[1] Unless otherwise noted, page citations are to Dobzhansky's "Nothing in Biology" piece (2011a).

[2] Several reasons suggest that the arguments in Dobzhansky's article represent his mature reflections. First, Dobzhansky published this article just two years before his death. Second, he describes the biological data—which he believes supports evolution—as "striking and meaningful," "the most impressive," and "undeniably impressive and significant." Presumably, Dobzhansky's arguments *why* these data support evolution do justice to the data itself. Third, the arguments contained within his article are consistent with (and sometimes more explicit versions of) arguments made in his major works during that same time, including 1967, 1970, 1973 and Dobzhansky, Ayala, Stebbins, & Valentine (1977).

[3] Stephen Jay Gould, for example, lauded him as "the greatest evolutionary geneticist of our times" (Gould, 1983, p. 197).

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154–60; Barbour, 2000, pp. 111–14; Collins, 2006, pp. 130, 134–37, 139, see also 176–77, 191, 193–94; Coyne, 2009, pp. 12, 13, 18, 54–58, 64, 71–72, 81–85, 96, 101, 108, 121, 148, 161[4]; Dawkins, 1986, p. 93; Dawkins, 1995, pp. 95–133, esp. 105; Dawkins, 2009, pp. 270, 297, 332, 341, 351, 354, 356, 362, 364, 369, 371, 375, 388–89, 390–96; de Beer, 1964, pp. 46–48, 55, elliptically; Dilley, 2012; Eldredge, 2000, pp. 99–100, 144–46; Futuyma, 1995, pp. 46–50, 121–31, 197–201, 205; Gould, 1977, pp. 91–96, esp. 91; Gould, 1980, pp. 20–21, 24, 28–29, 248; Gould, 1983, pp. 258–59, 384; Gould, 1986, pp. 60–69, esp. 63; Giberson & Collins, 2011, pp. 34, 38, 55, 101–108, 161; Kitcher, 1982, pp. 137–39; Kitcher, 2007, pp. 48–50, 57–58, 123–31; Lustig, 2004; Mayr, 2001; Miller, 1999, pp. 80, 100–103, 267–269; Nelson, 1996, pp. 12–39, esp. 31–34; cf. Numbers, 2003; Shermer, 2006, pp. 17–19, 42–44; Shubin, 2008, pp. 173–98, elliptically; Williams, 1997, pp. 2, 4, 6–10, 104, 132–60).[5]

My essay proceeds in several steps. First, I provide an overview of Dobzhansky's article, focusing on his main areas of emphasis as well as his general style of argument. Second, I explain in detail Dobzhansky's seven arguments, showing how each relies upon one (or more) theological premises; along the way, I raise queries about the justification of these premises. At the end of the essay, I reply to objections and reflect on puzzles implied by Dobzhansky's theological claims.

1. Overview of Dobzhansky's article

We may begin with the title of the article, "nothing in biology makes sense except in the light of evolution." The statement appeals to understanding and intelligibility: nothing "makes sense" aside from a particular perspective. Without evolution, biology remains mysterious, impenetrable, and opaque. As Dobzhansky explains, "Seen in the light of evolution, biology is, perhaps, intellectually the most satisfying and inspiring science. Without that light it becomes a pile of sundry facts some of them interesting or curious but making no meaningful picture as a whole" (p. 129). The *meaning* of the organic realm itself is at issue; without evolution, we literally do not understand how biota and their histories fit together into a coherent, compelling mosaic.

These themes of sense making, understanding, and intelligibility resurface repeatedly in Dobzhansky's article. The phrase "makes sense" (or its cousins) appears in all six sections of the article, nearly always closely associated with the core argument in each section. Clearly, Dobzhansky wants to show that key biological data are intelligible only under evolutionary theory. To demonstrate this claim, he provides arguments for evolution in seven crucial areas: radiometric dating, comparative anatomy, embryology, adaptive radiation, biodiversity, molecular homology, and paleontology. In arguing for evolution, Dobzhansky primarily defends common ancestry. At times he explicitly argues for evolution by natural selection, but his central aim is to establish common descent.

As Dobzhansky presents his arguments, he also targets a main rival: "antievolution." Although he does not give a precise definition of the term, his references to Bishop Ussher, a young earth, the creation of multitudes of species by "supernatural fiat," and so on, suggest that he has a version of young-earth creationism in mind. As such, I will use 'antievolution,' 'young-earth creationism,' and 'creationism' as synonyms, even though these terms can have quite different meanings in other contexts. Also, for stylistic variety, I will occasionally refer to the God of creationism as the God of miracles.

Before turning to the arguments themselves, some brief clarifications about Dobzhansky's theology may be helpful. First, scholars disagree about Dobzhansky's personal religious views. Francis Collins writes that Dobzhansky was "a devout Eastern Orthodox Christian" (2006, p. 141).[6] By contrast, Francisco Ayala, Dobzhansky's former student, claims that "he apparently rejected fundamental beliefs of traditional religion, such as the existence of a personal God and of life beyond physical death" (1976, p. 6). Fortunately, Dobzhansky's personal beliefs are irrelevant for present purposes. Instead, my interest centers on the claims he utilizes in his arguments for evolution (and against creationism). I focus on the epistemic role that these theological claims play in establishing evolution, not on whether Dobzhansky personally believed them. Thus, even when I occasionally use the phrase "Dobzhansky's theology," I simply mean his use of theology, regardless of what he personally believed.

In addition, Dobzhansky's God-talk extends beyond simply articulating creationism's own theology in order to evaluate its empirically-testable predictions against the natural world. I call this "*reductio* theology" because it tries to reduce creationists' theology to an absurdity, so to speak, by showing that creationism's predictions conflict with nature (cf. Nelson, 1996, pp. 496–497). While Dobzhansky uses *reductio* theology, he also relies heavily on "*positiva* theology" (Dilley, 2012, p. 30). *Positiva* theology functions at two levels. First, it serves as *positive epistemic support* for evolution. For Dobzhansky, any sensible deity—generic, miracle-working, or otherwise—would have acted in ways supportive of evolutionary theory but contrary to creationism (cf. Radick, 2005, p. 455). In fact, all seven of Dobzhansky's arguments for evolution are comparative in nature, and these comparative arguments ensure that his *positiva* claims do not simply attack creationism, but also help establish descent with modification. Thus, claims about God serve as direct epistemic justification for evolution.

Second, *positiva* theology is also *sectarian*. Dobzhansky does not simply borrow creationists' own theology in order to counter creationism or to support evolution; instead, he imports partisan theology into his arguments for evolution. In particular, Dobzhansky draws on theological concepts foreign to creationism or appropriates elements of creationist theology in a manner alien to creationism. Dobzhansky, too, adds tendentious God-talk to the discussion.

In the seven arguments below, Dobzhansky typically adopts a basic form of argument:

1. If evolution is true, then natural phenomenon X is expected.
2. If creationism is true, then natural phenomenon X is *un*expected.
3. If a datum is expected given one hypothesis but unexpected given another, then the datum "makes sense" in light of the former hypothesis rather than in light of the latter.
4. Thus, evolution rather than creationism "makes sense" of natural phenomenon X.

Each time Dobzhansky uses this argument-form, premise two hinges upon one or another claim about what the God of miracles would do (or would not do). In some cases, Dobzhansky uses a different form:

1. Either evolution or creationism "makes sense" of natural phenomenon X.
2. The creationist explanation of X implies that God acted in Y manner (or has Z property).
3. God would *not* act in Y manner (or have Z property).

[4] I thank Colin Zwirko, one of my students, for his fine research on the theology-laden arguments of Dawkins and Coyne.

[5] Of course, I do *not* claim that the thinkers listed here have *only* theology-laden arguments for evolution; my claim is just that *some* of their arguments for evolution are theology-laden.

[6] See also Ruse (1996, pp. 385–401, 406–409; 1999, pp. 100–121) and Greene & Ruse (1996).

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