Faith and Philosophy: Journal of the Society of Christian Philosophers

Volume 37 | Issue 2 Article 10

4-1-2020

Elliot Sober, THE DESIGN ARGUMENT

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old-fashioned) Swinburnian apologetics for the coherence of Christian beliefs and Plantingian responses to fideism or the more newfangled developments regularly appearing in issues of this journal. Attending to the literature might have staved off the many conflations and confusions in the book about the rational entitlements of Christians in their religious beliefs that forms the proper background against which to judge whether some putative theological justification can be judged to be a good or bad one.

Given these serious defects, I cannot commend McClendon's book as a worthwhile philosophical analysis or evaluation of black Christology. For those SCP readers who wish to become more familiar with that literature *Black Christology and the Quest for Authenticity* is an unreliable guide. For those readers of *Faith and Philosophy* who wish to constructively engage with the theological project of black Christology, we must await a more fruitful treatment to fill the gap identified by this book. That is not to say, however, that McClendon's book is wholly without merits. While underdeveloped, the four criticisms I've distilled above represent potentially pressing problems that merit careful reflection from advocates of black Christology. Teasing out the particular shape that such problems might take remains important work, but it is work that remains to be done.

The Design Argument, by Elliot Sober. Cambridge University Press, 2018. Pp. 94. $18.00 (paperback).

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Elliott Sober's *The Design Argument* is, in many ways, a fine little book. I certainly enjoyed and benefited from reading it and thinking about the issues raised within. It's important to note, however, that the book is an *extremely opinionated* introduction to the biological and cosmic design arguments. The restrictive word limit for the Cambridge Elements series surely played a role here: when there's not space to cover everything, one's particular judgements about what is most worth covering make a bigger difference. Still, there are places where I think the perspective represented in the book is at odds with the state of the literature.

The brief introductory chapter was quite nice. Sober gives a quick but interesting history of design arguments and lays the terminological and conceptual groundwork for what follows. Two of Sober's choices here are

pp. 258–264 FAITH AND PHILOSOPHY Vol. 37 No. 2 April 2020
doi: 10.37977/faithphil.2020.37.2.10

important later: he defines "God" as the intentional creator of the universe, and claims that design arguments are intended to be

> part of *natural* theology, not *revealed* theology . . . They do not appeal to the authority of sacred texts or traditions. Design arguments are intended to obey the same rules that govern scientific arguments (2).

This way of setting things up rules out design arguments' appealing to (purported) facts about God—e.g., that God is good—that follow from scripture and tradition (or from the idea that God is a perfect being) but not from the mere claim that God intentionally created the universe.

The primer on probability theory in Chapter 2 was clear, concise, and engagingly written, but a few more diagrams would have been helpful, especially for the uninitiated. I had some questions about the intended audience for the book in general—I had initially assumed that it was undergraduate students—but those questions were particularly acute here. While the primer is only sixteen pages long, it is quite dense: too dense, I think, to be used easily and effectively in the classroom. It would take at least three weeks to teach the material in the primer to undergraduates unfamiliar with probability theory, and instructors would need to provide supplementary explanations, readings, and practice exercises. By my lights, the chapter is also too compressed to serve as an effective introduction to probability theory for *anyone*. It would be most useful for readers who have some familiarity with probability theory but who could use a refresher. This, to be fair, describes a fair number of philosophers of religion.

In Chapter 3, Sober considers six ways of formulating design arguments: (i) as significance tests, (ii) as inductive inferences, (iii) as analogical arguments, (iv) in Bayesian terms, (v) in likelihoodist terms, and (vi) as inferences to the best explanation.

According to Sober, likelihoodism is the best of these frameworks. I largely agreed with Sober's criticisms of argument forms (i)-(iii) and (vi), but I was a bit surprised that Sober chose likelihoodism as the framework for the book, given that Bayesianism is more familiar to more people. (Bayesianism is derided for its reliance on ur-priors: *a priori* probability assignments not based on experience.) Anyone familiar with Bayesianism should be able to easily understand likelihoodist arguments, however: likelihoodism is essentially a restricted form of Bayesianism that eschews ur-priors and "catchall hypotheses" (disunited negations of real or unified hypotheses). As Sober says, "there are *two* reasons why likelihoodists aren't Bayesians: they often don't want to talk about the prior and posterior probabilities of theories *and* they often don't want to talk about the likelihoods of catchalls" (22).

Chapter 4 is dedicated to the biological design argument. Sober uses "Pr(X)" to express the probability that X is true, and "Pr($X \mid Y$)" to express the probability of X given Y. In those terms, what Sober calls the "Law of Likelihood" says that evidence E *favors* hypothesis H_1 over hypothesis H_2 iff $\Pr(E \mid H_1) > \Pr(E \mid H_2)$.

Sober gives the following objection to likelihoodist arguments from biological design:

> Suppose a design argument asserted that
>
> > Pr(vertebrates have eyes that have features F_1 | God gave organisms their features) > Pr(vertebrates have eyes that have features F_1 | mindless natural selection caused organisms to have their features)
>
> The problem I have with this claim is that there is no saying whether the first of these probabilities is big, middling, or small . . . This point about the God hypothesis, if correct, is fatal to likelihood versions of the biological design argument, regardless of whether evolutionary theory is able to say how probable it is that vertebrates have eyes that have features F_1 (42).

This problem—the problem of determining God's goals and the concomitant likelihoods of God doing various things (like ensuring that vertebrates have eyes with features F_1, or fine-tuning the constants)—comes up again later. I argue below that the problem of God's goals isn't as "fatal" as Sober suggests, and hence that the cogency of the objection here *does* depend on the probability of evolution producing features F_1. Nonetheless, I agree with Sober that in fact this probability is high enough to undermine likelihoodist arguments from biological design.

I was, however, taken aback by Sober's suggestion that deleterious traits are not evidence against intelligent design. He says,

> This Darwinian argument against intelligent design is flawed. If a trait's being neutral or deleterious favors evolutionary theory over the God hypothesis [biological-design hypothesis], then a trait's being advantageous must have the opposite evidential significance . . . However, few evolutionists would want to concede that a trait's being advantageous favors the God hypothesis over the hypothesis of mindless evolution, and they are right to resist that conclusion (49).

This can easily be read in a way that is dangerously misleading. Some people are pleased to say that there's no evidence for the existence of God. An important fact about (standard) probabilistic theories of confirmation is that this just isn't true: there will be all sorts of evidence for all sorts of claims, including the "God hypothesis." And advantageous traits *are* evidence for the God hypothesis—at least on many standard definitions of "God"—for precisely the reason Sober discusses. They're just not *significant* evidence, since they don't significantly favor the God hypothesis (neither *simpliciter* nor over evolution). Consider: if I received a news update saying that Trump had admitted to collusion and resigned, I'd gain significant evidence for collusion. It follows that when I don't receive such a news update, I've gained evidence *against* collusion. That might seem radically counterintuitive or stupid, but it just falls out of standard theories of probabilistic confirmation. But while the confirmation provided by receiving such a news update would be significant, the disconfirmation from not receiving one is insignificant. Indeed, it's miniscule—miniscule enough that it seems silly to mention it. And it *is* silly to

mention it, except in contexts where we're asking, in the strict and philosophical sense, about what evidence there is. Just so, deleterious traits are (perhaps significant) evidence *against* the biological-design hypothesis, and hence advantageous traits are evidence *for* the God hypothesis. It doesn't follow, however, that they're *significant* evidence, and indeed they're not, since both the God hypothesis and evolution entail that most traits are advantageous. But even if the discovery of advantageous traits is merely *insignificant* evidence for the God hypothesis, it *is* evidence. Of course, the relevant question is whether there are any "observations that favor the God hypothesis over the hypothesis of natural selection" (56). But the discovery of advantageous traits is evidence favoring the God hypothesis over natural selection if the probability that a trait will be advantageous is higher given the God hypothesis than it is given evolution. Since evolution works by trial and error and God is omniscient, that seems rather plausible.

None of the above entails, or even suggests, that our observations of the traits of organisms, taken as a whole, favor the God hypothesis over evolution—I agree with Sober that they don't. But that doesn't justify saying that there are *no* observations favoring the God hypothesis over evolution *at all*. That's just not true, and it gives a misleading impression of how to think about evidence in probabilistic terms. We shouldn't spend time debating whether there's *any* evidence that favors one view over another. That's silly: pretty much *every* (non-gerrymandered) view has *some* evidence that favors it over incompatible (non-gerrymandered) views. What we should care about, the *only* thing we should care about, is which view is best supported by the *total* evidence.

Sober knows all this, of course: indeed, he has a nice article on issues in the neighborhood ("Absence of Evidence and Evidence of Absence: Evidential Transitivity in Connection with Fossils, Fishing, Fine-Tuning, and Firing Squads," *Philosophical Studies* 143 (2009): 63–90). It's his restricted definition of "God" that is doing all the work here. As he says,

> I provisionally defined "God" as a being who intentionally created the universe. This definition leaves open whether God is all-PKG [all powerful, knowing, and good]. In consequence, the existence of imperfect adaptations, of neutral and deleterious traits, and of evils aplenty all fail to prove that God does not exist. (51)

While *proof* is beside the point—what's at issue is *evidence* against God's existence—deleterious traits etc. plausibly fail to even qualify as *evidence* against Sober's "God," since that God is defined merely as the (possibly incompetent or malicious) creator of the universe. One might think that this suggests that we should use a richer conception of God for assessing our evidence. Sober, however, says that while taking God to be all-PKG is

> an assumption that many atheists and theists embrace . . . why should this assumption about God's characteristics be accepted? Does the assumption have independent justification? (51)

This strikes me as an odd way of framing things. It's not that we're really only interested in whether a (possibly incompetent or malicious) creator of the universe exists, and are illicitly assuming the creator is all-PKG just to bolster certain theological (or atheological) arguments. Christians, Muslims, and Jews believed in an all-PKG creator before anybody knew about deleterious traits (or fine-tuning). So it's natural—indeed commendable—to want to know the evidential significance of deleterious traits (or fine-tuning) for an all-PKG creator.

Sober's objection to this is that while the idea of God being all-PKG is "part of some religion [*sic*] traditions . . . sacred texts and traditions have no place in *natural* theology" (51). But this is just to insist that God's being all-PKG is an *auxiliary* assumption to the hypothesis under evaluation. But why can't we evaluate the hypothesis that there's an all-PKG creator, and do natural theology with respect to that—especially if that's what we're interested in anyway? Sober suggests at various places that this might be illicitly "packing" the observations we want to explain into the hypothesis with which we hope to explain them. While there certainly are illicit forms of "packing in," given that God was defined to be all-PKG long before the discovery of deleterious traits or fine-tuning, it's hard for me to see how *this* could be one.

In the final chapter of the book, Sober discusses the Fine-Tuning Argument (FTA). He presents it in terms of the following inequality:

> Pr(the value of physical constant x is in W | God set the value of x & W is narrow) > Pr(the value of physical constant x is in W | a mindless chance process set the value of x & W is narrow).

Sober has two main objections to the FTA. As he puts it, "The first focuses on the FTA's assumption that God is life-loving. I see no way to provide that assumption with independent justification. The second . . . is that the FTA is vitiated by an observation selection effect" (76).

The first objection is the problem of God's goals again: if we don't know that God is life-loving, we don't know how likely it is that God would fine-tune the laws, and so (the thought goes) we don't know whether that's more likely than that the laws were fine-tuned by chance. That might seem plausible, at least if we don't know the probability of the laws being fine-tuned by chance. It's curious that Sober doesn't actually mention what that probability is. Physicists say that the probability of the cosmological constant alone being in the life-permitting range is something like $1/10^{120}$. That is *astronomically* low. In fact, calling it astronomically low is an understatement. There are about 10^{21} stars in the known universe. That's nowhere close to 10^{120}. The number of *atoms* in the universe is about 10^{80}. Still nowhere close. A credence that God would want to fine-tune the universe for rational life that was anywhere in the neighborhood of $1/10^{120}$ would correspond to *utter certitude* that God wouldn't want to do that. I'm utterly certain that I won't win the next five Powerball lotteries, but the probability of that is *much* higher than

$1/10^{120}$. So, as long as we're not *utterly certain* about what God *wouldn't* want, ordinary uncertainty about what God *would* want doesn't undermine the FTA. This response is well represented in the literature, so it's odd that Sober doesn't mention it. If Sober thinks the response is mistaken, it would be nice to be told why. And while we're at it, it would be nice to be told what's wrong with asking about the evidential impact of fine-tuning on the life-loving god worshipped in the Abrahamic traditions—which would simply *bypass* the problem of God's goals—other than that it wouldn't count as "natural theology." Natural theology or not, it seems like an interesting and important question. (Neil A. Manson pushes back against the "utter certainty" defense of the FTA in "How Not to be Generous to Fine-Tuning Sceptics" (*Religious Studies*, 2018). But my aim isn't to be generous to fine-tuning sceptics: I'm not trying to grant them their premises and argue that the FTA works nonetheless. I'm just trying to figure out what premises are *true*.)

Sober's second objection postulates an observation selection effect that undermines the FTA. To account for such effects, Sober claims that we should adopt the "Revised Law of Likelihood":

> Given that P is true, where P is a proposition describing the process by which the observation was obtained, observation O *favors* hypothesis H_1 over hypothesis H_2 if and only if $\Pr(O \mid H_1 \& P) > \Pr(O \mid H_2 \& P)$.

Given this revision, Sober maintains that the FTA hinges on the relationship between:

> Pr(the value of physical constant x is in W | God set the value of x & W is narrow & P) and
> Pr(the value of physical constant x is in W | a mindless chance process set the value of x & W is narrow & P).

Sober claims that these probabilities are the same, since P entails that we are alive, which entails that the value of x is in W. As he puts it, "Given that you are alive, the probability of your observing that the constants are right is the same, regardless of whether the God hypothesis or the chance hypothesis is true" (70).

This might be true if by "the constants are right" we mean "the constants are life-permitting" (as Sober glosses things (75)). But we've *always* known that the constants are life-permitting: if W is the life-permitting range, we've known that the constants are in W since we formulated the idea of a physical constant. The basis for the FTA is that the constants are in W, *and* that W is incredibly, unfathomably, narrow. So "W is narrow" should be on the left side, with the evidence, not the right side, as part of the hypothesis. This is important because if "W is narrow" belongs on the left, the FTA hinges on the relationship between:

> Pr(the value of physical constant x is in W & W is narrow | God set the value of x & P)

and

> Pr(the value of physical constant *x* is in *W* & *W* is narrow | a mindless chance process set the value of *x* & *P*).

And if *that's* right, nothing about *P* (the process by which we discovered that *x* is in *W* and *W* is narrow) suggests that the first probability isn't larger than the second. We might have discovered—we *expected* to discover—laws that didn't need fine-tuning. (Sober himself asks why God didn't create such laws if God likes life so much.) But, in fact, we discovered laws that *don't* permit life to exist across a wide range of values for their constants. That fact is crucial to the FTA. And so there isn't an observation selection effect generated by the fact that we're alive. Sober seems to acknowledge this (n. 74), and notes in response that this alternative formulation of the FTA still faces the problem of God's goals. Maybe so (or maybe not), but wouldn't it make sense to focus on the strongest version of the FTA in the main text?

The last two pages of the book discuss the "multiverse objection," widely taken to be the most powerful objection to the FTA. Given the significance of the objection in the literature, it's striking that Sober's discussion is so brief, and that some of the most important responses to the objection are not considered. I found this odd, and odd in a way emblematic of the book as a whole.

I really did enjoy reading *The Design Argument*. There are lucid and enlightening discussions of many aspects of the biological and cosmic design arguments. But there are also peculiar decisions about what gets covered, and how things get covered, and how much things get covered, and what objections to what get covered. Such decisions are unavoidable: the book is short and wide-ranging. But the particular decisions Sober makes paint an idiosyncratic picture of the state of the literature. Of course, it would be unreasonable to expect Sober to agree with me about the *exact* state of the debate. But it doesn't seem unreasonable to expect that, having read a book on design arguments, one would (for example) be familiar with the suggestion that uncertainty about God's goals is compatible with the FTA, and have a sense of the centrality of, and complexities surrounding, the multiverse objection. Neither topic needs to be *extensively* discussed, especially if Sober thinks them peripheral. But some footnotes acknowledging the controversy in the literature would have been appropriate. So while I think *The Design Argument* is an excellent introduction to Sober's work on design arguments—and his work on design arguments is important indeed—it's worth keeping in mind that it's a partisan and non-comprehensive introduction to the overall state of the literature on design arguments themselves. (Thanks to Nevin Climenhaga, Joseph Corabi, Lorraine Juliano Keller, Neil Manson, Andrew Payne, Steve Petersen, Daniel Rubio, and especially Elliott Sober for helpful feedback.)