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How not to be generous to fine-tuning sceptics

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Abstract: **The fine-tuning argument for the existence of God requires that the probability that the universe is life-permitting if God exists is not nearly as low as the probability that the universe is life-permitting if God does not exist. Recently, some proponents of the fine-tuning argument have reasoned as follows. 'Stipulate that the probability that there exists a life-permitting universe if God exists is one in a billion. Only the most hardened sceptic would refuse odds like that, right? So one in a billion is more than just fair to those sceptical of the fine-tuning argument. It is generous. Even on that generous assumption, the fine-tuning argument is very strong.' This article explains why the assumption is not, in fact, generous.**

The new claim about PLUG

The argument from cosmic fine-tuning for life to the existence of God has been discussed exhaustively in the recent philosophical and scientific literature (Barrow & Tipler (1986); Collins (2003); Collins (2009); Holder (2004); Leslie (1989); Lewis & Barnes (2016); Swinburne (2003)). Most explications of it include a premise to the effect that the probability that the universe is life-permitting if God exists is not nearly as low as the probability that the universe is life-permitting if God does not exist. In order to defend this premise, it is not enough to argue that it is extraordinarily improbable that the universe is life-permitting if God does not exist. One must also give reasons for thinking that the probability that the universe is life-permitting if God exists is not likewise extraordinarily low. For ease of reference, let us hereafter refer to the probability that there is a life-permitting universe if God exists as PLUG. Proponents of the fine-tuning argument need to give us some reason for thinking PLUG is not extraordinarily low.

As I have documented elsewhere (Manson (2009)), in the relevant literature discussion of PLUG has been glossed over by most proponents of the fine-tuning argument. Typically, they devote no more than a few sentences to arguing that

PLUG is not extremely low.[1] This is a real flaw in the standard presentations of the fine-tuning argument. There are serious theological questions lurking behind the claim that PLUG is not extremely low. Why would God create anything at all? Assuming God would create anything at all, why would God create a life-permitting physical world like this one? The answers to these questions are not obvious. As I have argued elsewhere (Manson (2013)), addressing these questions leads the philosopher of religion into deep waters. Yet they must be addressed if the fine-tuning argument is to be cogent.

Recently, however, some proponents of the fine-tuning argument have indicated that there is no need for a positive argument that PLUG is not extremely low. The universe's being just right for life is so vastly improbable if there is no God, they say, that the fine-tuning argument will be compelling even if we set PLUG at one in a billion (or even lower). In other words, even if one has real questions about whether God would create anything at all and about what sort of world God would create, that doubt can just be expressed as an extremely low personal probability of 0.000000001 that God would create a life-permitting universe. Even if that is one's credence, they say, the life-permittingness of the universe is compelling evidence of God's existence, because the probability that our universe is life-permitting just by chance is vastly lower even than one in a billion.

Let us look at three instances of this new manoeuvre. First, Michael Rota (2016) says that, to assign a probability to which even the person sceptical of the fine-tuning argument could agree, we can set PLUG at one in a billion.

> At the end of the day, how likely is it that an intelligent designer of the universe would design a life-permitting universe rather than a lifeless one? If I had to guess, I'd say over 1/2. But let's concede as much as possible to the person who will say that we know very little about what a universe designer might want. Very well, shall we estimate $P(E|H_D \ \& \ K)$ at 1 in 10? 1 in 100? How about 1 in a million? The smaller the number, the weaker the fine-tuning argument will be. In order to rely only on a premise that even a sceptic could agree to, let's be generous and assume $P(E|H_D \ \& \ K) = 1$ in a billion, i.e. $1/10^9$. The reader may be surprised to learn that, even so, the fine-tuning argument will be exceedingly strong. (*ibid.*, 119–120)

Next, John Hawthorne and Yoaav Isaacs (2018) say that even if we set both the intrinsic probability of theism and PLUG at one in a million, the result of updating one's beliefs in light of the evidence of fine-tuning is that theism emerges a 'virtual certainty'.[2] All that is required for setting PLUG at one in a million, they suggest, is a very modest degree of belief that creating a universe with life is something God might want to do.

> Suppose that prior to the discovery of fine-tuning one thought that there was a one in a million chance that there was a God and further that there was a one in a million chance that God would go for life through laws like ours. Then if atheism produces life and laws like ours with a probability of less than 1 in 10^{120}, one's posterior credence in theism will constitute virtual certainty in theism. . . . [A] thoroughly pedestrian uncertainty about divine psychology is all that it takes to make the fine-tuning argument work. (*ibid.*, 151)

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Finally, Luke Barnes, as part of a dialogue with his co-author Geraint Lewis (Lewis & Barnes (2016)), suggests that the fine-tuning argument is compelling so long as PLUG is not extraordinarily low.

> A universe capable of producing and sustaining [moral agents] is a universe with moral worth, one that God might create.
>
> This 'might', it seems, is enough. Recall the card game discussed earlier, where Bob has dealt himself five royal flushes. Jane looks sceptical . . . and for good reason. The probability of five royal flushes is one in a hundred billion billion billion. Thus, Jane needn't assume that Bob would cheat, or even is likely to cheat. She need only assume that, before they started playing, the probability of Bob cheating isn't comparable to one in a hundred billion billion billion. Only an extraordinarily strong presumption of Bob's innocence would counter Jane's accusation. Similarly, only an extraordinarily strong presumption against the idea that God would want to create a universe with embodied moral agents will affect our conclusions. (*ibid.*, 341)

To repeat: Rota says he will 'concede as much as possible' to the person who doubts whether God would create a life-permitting universe, Hawthorne and Isaacs say that 'all that it takes to make the fine-tuning argument work' is a 'thoroughly pedestrian uncertainty about divine psychology', and Barnes says that 'only an extraordinarily strong presumption' against God wanting to create a universe like ours would block the conclusion of the fine-tuning argument.

Are they right?

What fine-tuning sceptics think

In order to answer that question, we need to understand better the thinking of those sceptical of the claim that PLUG is not extremely low. Let us call such people 'fine-tuning sceptics' (even while acknowledging that there are other ways to resist the fine-tuning argument). All fine-tuning sceptics who have written about the issue agree that there is no reason to think that PLUG is quite high. Several of them suggest a much stronger point: the value of PLUG is inscrutable.[3] They claim to see no basis for assigning any probability at all to the proposition that God would create a life-permitting physical universe.

Graham Oppy, Jan Narveson, Elliott Sober, and Stephen Jay Gould all express well the fine-tuning sceptic's position. Let us start with Oppy.

> Given only the hypothesis that there is an intelligent designer of a universe – and given no further assumptions about the preferences of that designer – it is not clear to me that there is very much that one can conclude about the kind of universe that the designer is likely to produce. (Oppy (2006), 207)

Furthermore, in private communication Oppy said that he is sympathetic to the claim that theists themselves should think PLUG is inscrutable. Here is how he says theists ought to think about PLUG.

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> What do we know about the range of natural realities that are open to God to create? It may be true that natural realities sufficiently similar to ours are all fine-tuned. But, even so, fine-tuned natural realities could be just the tiniest blip in the full range of natural realities that are open to God to create (i.e. that are creatable consistent with all of God's attributes). I can't see any good grounds for assigning a probability – high or low – to the claim that God will create a fine-tuned natural reality. (Oppy (private communication), 14 February 2018)

Narveson objects to all forms of the design argument on the grounds that we have no idea what sort of world God would create if God did exist.

> [I]n order for the [design] explanation to have any content, we need to know something that is not often addressed: *Why* is this being supposed to have done this? Consider that a being of this type already knows everything there is to know, so he can hardly have created the world to satisfy his curiosity. And since he has no body, no senses, and no needs in any usual sense of the word, where are we to get the psychological premises we would require in order to make an inference to his creative activity plausible? . . . No matter what the Universe is like, it could have been created by a super-creator who, for some utterly unknowable reason, just wanted to create one of those, precisely the way it is. . . . [T]here is no credible reason why He would have done it one way, or another, or for that matter – worse yet – at all. (Narveson (2003), 96–98)

Sober raises the same sort of general question about design arguments.[4]

> When we behold the watch on the heath, we know that the watch's features are not particularly improbable on the hypothesis that the watch was produced by a designer who has the sorts of human goals and abilities with which we are familiar. This is the deep and nonobvious disanalogy between the watchmaker and the putative maker of organisms and universes. We are invited, in the latter case, to imagine a designer who is radically different from the human craftsmen we know about. But if this designer is so different, why are we so sure that he would build the vertebrate eye in the form in which we find it? (Sober (2003), 38–39)

As the quotation from Sober illustrates, one theme common amongst fine-tuning sceptics is that God is a being so unlike us that we simply cannot say what we ought to expect God to do with regard to creation. We humans are mortal, severely limited in our knowledge, and tied in our every thought and action to a physical world that constrains us. Our very minds were shaped by a long process of evolution – a struggle for survival in a harsh environment where resources were scarce. None of that, they say, is true of God. Even if both humans and God count as beings with minds, God's mind is so different from ours that we cannot judge what God would be likely to create, or even whether God would be likely to create at all. So how can we say with any confidence that God would create a life-permitting universe?

These questions were posed bluntly by palaeontologist Stephen Jay Gould.

> If disembodied mind does exist (and I'll be damned if I know any source of scientific evidence for or against such an idea), must it prefer a universe that will generate our earth's style of life, rather than a cosmos filled with diprotons? What can we say against diprotons as markers of preexisting intelligence except that such a universe would lack any chroniclers among its physical objects? Must all conceivable intelligence possess an uncontrollable desire to incarnate itself eventually in the universe of its choice? (Gould (1998), 190)

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In short: if you were to ask Oppy, Narveson, Sober, and Gould what PLUG is, their answer would be 'Well, we have no reason to think it is anywhere close to one, and for all we know it is zero.'

Two points about fine-tuning scepticism need clarifying. First, it need not extend past God's motives prior to creation. Ask fine-tuning sceptics to imagine God alone, at the very metaphysical beginning (so to speak), with God deciding whether and what to create. Then ask them to say what they think is likely to happen next. They will say they have no idea. But consistent with that they might maintain that if God decided to create a physical world in which life could develop, they would expect to see this or that specific feature (e.g. great beauty, lots of signs and wonders, no evil or suffering, and so on). It is like saying that you have no idea whether the next person you meet has the means or desire to have children. That is perfectly consistent with saying that you expect the next person you meet to have bought some children's clothing if they do have children. So while some fine-tuning sceptics might, in fact, adhere to a more sweeping scepticism about God's intentions and activities, it is possible to be a fine-tuning sceptic while agreeing that evil would be evidence against God's existence or that there would be evidence of God's existence if, for example, the stars miraculously rearranged themselves to spell out the Nicene Creed.[5]

Second, fine-tuning scepticism is not limited to atheists or agnostics. Fideists, adherents of 'reformed epistemology', and 'sceptical theists' might all agree that reason alone gives us no answers to the sort of questions about God raised by Oppy, Narveson, Sober, and Gould. Regarding sceptical theism in particular, Hud Hudson (2016a; 2016b) argues that the theist cannot make a plea for epistemic humility in the face of the problem of evil, then turn around and insist it is obvious that our universe is one of the sort God would probably create. Sceptical theists, he says, are in no position to assert 'the high probability premise' – Hudson's name for the claim that PLUG is quite high.

> It is an inconstant and uneasy sceptical theism which professes ignorance about how much we know about just which things are possible goods, about just how good they in fact are, and about the necessary conditions of their realization in a wide variety of scenarios, but gratuitously grants an exception when it comes to pronouncing on what God is likely to aim at in creating a cosmos. Once again, we are in the dark about whether the possible goods in question are representative of the possible goods that there are and about what far greater goods may of necessity be forfeited or far greater evils may of necessity be guaranteed, if the particular goods of embodied-free-intelligent-sentient beings are realized. (Hudson (2016b), 69)

Hudson (2016a) concludes from this that 'we do not have good reason to accept the high probability premise in the Fine-Tuning Argument. In fact, we are not in a position to assign any probability here at all!'

Inscrutability and credences, part one: two parlour tricks

So is the procedure suggested by Rota, Hawthorne and Isaacs, and Barnes actually generous to fine-tuning sceptics? Before addressing that question, let us

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first consider a more general one. May we assign a credence in a proposition P to a subject S when S claims to find the probability that P is true ('P(P)' for short) inscrutable? If so, how do we go about assigning a credence?

The answer to the first question is probably 'no'. Where is it written that any time S thinks about P, it must be that S has some degree of belief in the truth of P? It would be quite convenient to hard-core Bayesians if there were a credence every time a person entertains a proposition or engages in hypothetical reasoning involving a proposition, but that does not make it so. So it is probably just a mistake to assign any credence at all in P to S when S says she finds P(P) inscrutable. Perhaps in such cases all we are permitted to say about S is that S has thought about P. Beyond that, we can say nothing more.

But let us suppose, for the sake of argument, that there is nothing wrong in principle with attributing a credence to S when S claims to find P(P) inscrutable. How might one go about doing that in practice? We could, of course, press S on the inscrutability claim. 'You say you have no idea whether or not P is true, but is that really so? Surely you have some idea, if only just a bare inkling.' But if S sticks to her guns, it seems we have nothing more to say. We cannot assign even a vague credence in P to S. Yet some might think that there are ways to pull the rabbit of a credence out of the hat of inscrutability. Here are two proposals for doing so. As we will see, both involve a sort of trickery.

First parlour trick: ask subjects what they would bet

The first proposal for setting a credence in P(P) for S is to ask S what she would be willing to bet that P is true. Right away, this procedure should raise red flags. Though it is standard amongst Bayesians to model (ideal) credences in terms of betting behaviour (actual or hypothetical), betting behaviour is not a reliable guide to credences. This is true even if we limit ourselves to bettors who fail to commit any of the mistakes common to real-life gamblers (e.g. the Monte Carlo fallacy). Betting behaviour is an unreliable guide due both to the diminishing marginal utility of money for bettors and to their implicit knowledge of the financial limits of their bookmakers.

Consider an event E with somewhere around one chance in 10^{16} of occurring (e.g. 'Teresa May and Jeremy Corbyn defeat Vladimir Putin and Donald Trump in the 2025 International Team Lawn Bowls Senior Championship'). Suppose a bookmaker makes you this offer: if you bet the smallest unit of money in circulation – say, one US cent (0.01 US dollars) – that E will happen, and E does, indeed, happen, then you will get paid a large amount of money. What payout would the bookmaker have to offer for the one-cent bet that E to get paid its fair value?

The right answer, in terms of a mathematical calculation of expected value, is 10^{16} cents, or one hundred trillion US dollars – approximately the Gross World Product for 2014. Yet that is almost certainly not the payout you would demand if you decided to make the bet. First, as the bettor, you can barely comprehend

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controlling that much money. The usefulness to you of each additional dollar after some very large amount (say, one hundred billion dollars) goes down to practically nothing. Therefore, supposing you are willing to make the bet at all, you do not need to be offered 10^{16} cents if you win. All you need to be offered is enough money to satisfy your every worldly desire. Second, you know of your bookmaker that there is no way he could pay you 10^{16} cents if you won. Suppose that you know that the most any bookmaker is capable of paying out is 10^{9} cents (10 million US dollars). Then, if you want to make a bet at all, you will ask for no more from your bookmaker than 10 million US dollars for your one-cent wager.

Knowing all of this, you, as a fully rational bettor, might tell the bookmaker 'I would not bet a red cent on E'. What you would be saying is that, even if you only bet the smallest unit of money in circulation, the bookmaker could not offer you fair odds and still pay you off if you won. But if you were to say that, it would not mean that you think E is impossible, or that no matter what your bookmaker suggests as the probability of E, it is not low enough. It would just mean that you think that the probability that E occurs is so low that there is no way to bet on it fairly given our current monetary system (and maybe given any plausible monetary system). On the other hand, you still might bet some very small amount of money on E as a lark. There's nothing particularly irrational about that, so long as you do not make a policy out of it. Either way, your betting behaviour would not correspond to your beliefs about the probability of the occurrence of E.

Let us go back to S, who thinks P(P) is inscrutable. If S really does think this, then S thinks that it might be even less probable that P is true than that Teresa May and Jeremy Corbyn defeat Vladimir Putin and Donald Trump in the 2025 International Team Lawn Bowls Senior Championship. Despite that, S might very well bet, say, one cent if a bookmaker promises to pay S 10 million dollars if P turns out to be true. But, for the reasons just given, that would not mean S thinks P(P) is no less than 10^{-9} or that S thinks that P(P) is more likely than not to be higher than 10^{-9}. It would be wrong to infer from her betting behaviour that S thinks that there really is one chance in a billion that P is true.

In the case of fine-tuning, suppose a Christian apologist is making the fine-tuning argument to an audience of everyday people. She begins by offering a (hypothetical) billion-to-one wager to audience members that God would create a life-permitting physical universe if He existed. Doubtless a high percentage of the audience will say that they would take the bet. They do not want to say that it is impossible, and billion-to-one odds are close to the lowest betting odds it is feasible even to propose. She then inserts 'one in a billion' as the collective credence of the audience that God would create a life-permitting universe. And she then proceeds to run the fine-tuning argument in the manner of Rota, Hawthorne and Isaacs, and Barnes. Such an apologist would be quite a sly person and would have a great future designing circus games. Proponents of the fine-tuning argument should not act like her. This is not the way to assign a value to PLUG.

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Second parlour trick: ask subjects to name their minimal acceptable chances

Suppose S tells you that she finds P(P) inscrutable. Rather than probe S's betting behaviour, you might just ask S to provide a number for P(P) small enough that it would satisfy her that you are not overestimating the chances that P.[6] That is, you might ask S what she would regard as the minimal acceptable chances for her that P. If S cooperates, you will have a specific number with which to work. Indeed, you might even prompt S as she comes up with her minimal acceptable chances. 'For the sake of argument, would you concede that P has at least one chance in a billion of being true? How about one in a trillion? Just give me some number that is acceptable to you so that I can get going with my argument.'

If S is an everyday person, there is a good chance she will go along. The literature from experimental psychology indicates that few people think of their own beliefs in terms of numerical probabilities. Instead they think in non-numerical terms such as 'doubtful', 'probable', 'slight chance', 'very likely', and so on. These terms are vague. When test subjects are asked to correlate those terms with specific numbers or ranges of numbers, their answers show considerable intersubjective variability. For example, 'unlikely' gets assigned ranges that vary considerably, with a low range centring around 5% and a high range centring around 30% (Wallsten *et al.* (1986)). Furthermore, the relevant studies indicate that the probability judgements of most people are not very fine-grained. Most test subjects are unable to discern any probability range narrower than a few tenths of a per cent. All of this suggests that, if S is an everyday person, she is unlikely to provide odds lower than one in a billion. Our untrained minds are not equipped to volunteer numbers that small. But even if S gives 10^{-9} as her minimal acceptable value for P(P), or agrees to have you set P(P) at 10^{-9} for the sake of argument, that does not mean that she really thinks that P(P) is at least 10^{-9}. When S thinks that P(P) is inscrutable, this way of generating a credence that P for her is clearly faulty.

This is particularly a mistake in the context of the fine-tuning argument, in which we encounter improbabilities utterly unfamiliar to ordinary people. Again, imagine a Christian apologist saying this to her audience. 'I am going to give you a new argument for the existence of God, but before I do, let us settle something first. Do you think that it is at least possible that God exists and that it is at least possible that God created our universe? If so, what do you think the probability is that God would create a universe like this one – a universe with embodied life? Is it at least one in a billion?' Probably almost everyone who would answer 'yes' to the first question would answer 'yes' to the last question. One in a billion will sound very low even to people who say that they have no idea what God is likely to create – especially when they do not know that 10^{-120} is coming. Once again, that would be a sly, deceptive way of assigning to fine-tuning sceptics 10^{-9} as the value of PLUG.

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Inscrutability and credences, part two: a tempting *non sequitur*

In a section of one of his most detailed presentations of the fine-tuning argument, Robin Collins (2009, 254–256) tries to justify the claim that PLUG is much higher than the probability that our universe is life-permitting if God does not exist. In that section, Collins considers the epistemic situation of an 'unembodied being' – a being in a position to 'walk into' a universe for the first time, so to speak. For ease of discussion, call this being 'Angel'. Collins asks us to suppose that this being does not have a theodicy adequate to account for the existence of moral and natural evil in a world created by God. Angel would thus have no reason to expect God to create a life-permitting universe and no reason to expect God not to create a life-permitting universe. For our purposes, the epistemic situation of Angel is equivalent to that of a fine-tuning sceptic.

In that case, it seems that Angel would assign no particular value and no non-trivial range of values to PLUG. Yet Collins says that, even for a being like Angel, it would still follow that it is not the case that the probability is much, much less than 1 that the constants are life-permitting, conditional on the hypothesis that God exists and creates only one universe. Collins concludes from this that the life-permittingness of the constants would still give us good reason to believe that God exists and created just one universe. It would be much more reasonable to believe that than to believe that there is no God and that the one universe there just so happens to be is the way it is by chance.

This is a non sequitur. If (a) Angel assigns no particular value to PLUG, then (b) it is not the case that PLUG is extremely low for Angel. But that does not mean that (c) it is the case that Angel assigns a value to PLUG and that value is not extremely low. To make that jump, we would have to assume that Angel assigns a value to PLUG, but that assumption about fine-tuning sceptics is exactly what we have been calling into question. If fine-tuning sceptics really do find it inscrutable whether or not God would create a life-permitting physical universe, then they just do not have a credence in that case.

What tempts Collins to make this mistake? Perhaps it is the sort of unusually low probabilities mentioned in presentations of the evidence of fine-tuning – numbers like 10^{-120}. It is natural, in such cases, to think that any randomly selected probability will have to be higher than those exceptionally low probabilities. If you have a choice between two probabilities, where you know one of them is 10^{-120} and you have no idea what the other one is, you would understandably be inclined to choose the second one. It is hard to imagine that you would be doing anything but 'trading up'. But that is not necessarily a wise strategy, as the following thought experiment suggests.

Suppose you are a contestant in a game show. Before you are two large curtains. Behind each curtain is a scenario that either will or will not unfold in a specified way. For each scenario, the probability of its occurrence is something that you, the contestant, can determine objectively (more or less). You get a £100 prize if

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you choose the curtain concealing the scenario with the highest probability of occurring.

The game show host asks you to pick a curtain. You choose Curtain 1. The curtain is pulled back and you see an amusing scenario. A Primary School teacher has been told to write down a number on a board. The number has to be between 0 and (10^{120}–1). Then 120 Year Four students come in from behind the set. They are lined up across the stage, each one with a marker and a blank sheet of paper. They cannot see what the teacher wrote on the board. They are told that, when the host of the show says to, each one of them must write down a number between zero and nine. If the number they generate matches what the teacher wrote down, each student will get a free Cadbury Creme Egg. Otherwise, the students get nothing. Based on the set-up, you conclude that the probability that the students get the free candy is 10^{-120}.

The host of the show then offers you a deal. In exchange for reducing your prize from £100 to £50, you can switch your choice from Curtain 1 to Curtain 2. Instead of the host's instructing the students to generate the 120-digit number and seeing whether it matches the number the teacher wrote down, some other scenario would play out. You just have no idea what that other scenario might be. It may involve Primary School teachers and Year Four students or it may not. It may involve large numbers or it may not. It could be anything whatsoever that could play out on the stage of a television studio. Ought you to make the switch?

No. As seeing what was behind Curtain 1 indicates to you, it is quite easy to generate scenarios such that a specified outcome has less than one chance in 10^{120} of occurring, not to speak of one chance in a billion. Consider that behind Curtain 2 might be stacked as many pieces of paper as can be fitted onto the stage of a television studio. Each piece of paper might have written on it as many propositions as can be written legibly on a standard sheet of paper. Each proposition might be as specific as, say, 'The next person you meet will be Borneo's finest Badminton player who just won a million dollars in a Powerball lottery before being struck by lightning and surviving' – to borrow an example from Hawthorne and Isaacs (2018, 152). And the scenario that has to play out behind Curtain 2 might just be that the conjunction of all of the propositions on all of the sheets of paper turns out to be true. Of course, behind Curtain 2 might be a scenario that is much more likely to play out. You just do not know either way. The probability that the scenario behind Curtain 2 plays out is inscrutable to you. Thus you ought not to switch from Curtain 1 to Curtain 2. You would be reducing your potential prize for no reason.

Proponents of the fine-tuning argument are asking members of their audience to make a similar switch – to switch from being atheists or agnostics prior to learning of the evidence of fine-tuning to being theists afterwards. This switch is presented as 'trading up' epistemically. But if fine-tuning sceptics really have no idea what kind of universe God would create or even whether God would create

a universe at all, then they ought not to agree to the switch, because they do not even agree that PLUG is no less than 10^{-120}.

Why fine-tuning sceptics say that PLUG is inscrutable

Suppose all that has just been said about inscrutability and credences is correct. The implications for the fine-tuning argument are clear. Certain people – people we have dubbed 'fine-tuning sceptics' – insist that, for them, PLUG is inscrutable. The attempts we have surveyed to convert that inscrutability into 'about one chance in a billion' or 'surely not lower than one chance in 10^{120}' all fail. Thus if we take fine-tuning sceptics seriously, we will have to acknowledge that, for them, the fine-tuning argument is a non-starter.

If proponents of the fine-tuning argument are to make any progress with fine-tuning sceptics, they will have to get them to no longer regard PLUG as inscrutable. How might they do that? In order to answer that question, we should take a closer look at how fine-tuning sceptics think about God, omnipotence, goodness, and creation. Doing so will, perhaps, give proponents of the fine-tuning argument a better sense of how to get through to fine-tuning sceptics.

In trying to see how fine-tuning sceptics view PLUG, let us make a simplifying assumption. Although it is not the only way to think of probabilities, a quite natural way to think of a probability is just as a proportion, N/M. The probability of getting an outcome with feature F is just the number N of outcomes with feature F divided by the number M of all possible outcomes, assuming all possible outcomes are equally likely to occur. So, for some N and for some M, PLUG = N/M. In the case at hand, let the numerator N_T ('T' for 'theism') stand for the number of ways God might create a life-permitting universe and let the denominator M_T stand for the total number of ways God might make some possible world actual. Those ways include God's not creating anything at all as well as all of the ways God might create some reality distinct from Himself.

On this way of judging probabilities, if one assumes that all of the possible outcomes are equally likely (that is, if one assumes that there is no bias in favour of outcomes of a particular sort), then one's estimate of PLUG will just be one's estimate of N_T/M_T. Fine-tuning sceptics claim to find it inscrutable what sort of universe God would or would not want to create. So their estimate of PLUG will reflect their estimates both of how many ways God might create a life-permitting universe and of how many total ways God might create some reality distinct from Himself.

So how do fine-tuning sceptics estimate N_T and M_T? To begin addressing this question, consider that, for them, the probability that the universe is life-permitting conditional on God's non-existence is already very low – probably far lower than one in a billion. Let N_A ('A' for 'atheism') stand for the total number of ways that there might have been a life-permitting physical universe conditional on atheism and M_A stand for the total number of ways that reality might have been conditional on atheism. Numbered amongst M_A are not only all of the possible distributions of

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matter and energy given the actual law structures and the actual values of the free parameters of physics, but also all of the possible distributions of matter and energy given the actual law structures and every possible combination of values of the free parameters of physics. M_A might be inflated further if the atheist includes possible physical universes with different law structures, possible physical universes with non-physical, epiphenomenal properties supplementing the inventory of physical properties in the world, possible physical universes with brutely emergent phenomena, and so on. M_A might be inflated yet further if the atheist thinks wholly non-physical concrete realities are possible. (Remember – naturalism entails atheism, but atheism does not entail naturalism.) And, finally, M_A might be inflated further still if there could be realities consisting of combinations or fusions of any of the above. While there is no precise metric for determining what proportion of these possibilities are ones in which the universe allows for the eventual emergence of embodied life, the life-forbidding possibilities seem to outnumber vastly the life-permitting ones. Setting N_A/M_A at one in a billion on behalf of fine-tuning sceptics risks severely understating their estimate of M_A.

Precisely because of this, however, fine-tuning sceptics see M_T as beyond comprehension. Why? Because they agree with theists that God is supposed to be omnipotent. So God can create any reality that could possibly exist if there were no God. '[I]f we suppose – as I think we should – that God could make any universe that is possible on the naturalist hypothesis, then we are surely entitled to the conclusion that the range of possibilities is no narrower on the theistic hypothesis than it is on the naturalistic hypothesis' (Oppy (2015), 301). Thus for fine-tuning sceptics, M_T is going to be at least as big as M_A, and arguably much bigger.

To see why M_T might be much bigger than M_A, consider first the physical universes that are impossible under atheism. These are physical universes in which God miraculously rearranges the matter and energy of the universe in any number of ways. Of course, some of these new possibilities will inflate N_T. For example, there will be ways for a life-unfriendly physical universe to yield embodied life through God's miraculously rearranging the matter and energy in that universe (by creating Boltzmann brains, for example). But some of these new possibilities will also inflate M_T. For every way God could intervene to make a life-unfriendly physical universe have life in it, it seems that there are just as many ways that God could intervene in a life-friendly physical universe to guarantee that life never arises in it.

In addition to these new possibilities for physical realities, God has the power to create realities with non-physical entities and processes that are not possible on atheism. Thus God could create worlds in which occasionalism or Berkeleyan idealism turns out to be true. For the members of this enlarged set of possible worlds, if there are intelligent beings in them at all, those intelligent beings are either not actually or not necessarily embodied in living matter. The bearers of intelligence would not be living things, but rather souls, spirits, or immaterial minds. And then there are possible realities that fuse these possibilities – say, by

having a physical realm but also Heaven, with angels spending most of their time in Heaven but also able to interact in the physical realm. So these new possibilities introduced by theism inflate M_T even further. Note that these are just the metaphysical possibilities we limited humans have imagined. Fine-tuning sceptics will think that theism generates other metaphysical possibilities of which no philosopher has yet dreamt.

Proponents of the fine-tuning argument are surely chafing at this point. 'All of this is true if we assume that all of these possibilities are equally likely conditional on theism', they will say. 'But why should we do that? And if we should not, then simply coming up with the ratio N_T/M_T would not tell us the value of PLUG.' It certainly is epistemically possible that not all of the metaphysical possibilities are regarded equally by God. There might be a preference function for God that assigns different probabilities to different possible worlds (or sets of worlds) depending on the overall features of those worlds. Given that God is supposed to be morally perfect, perhaps God would prefer worlds capable of producing intelligent life over worlds capable of producing only diprotons. That would be because, other things being equal, worlds containing intelligent life are better (richer, more valuable) than worlds containing only diprotons.

Two points need making in response. First, some fine-tuning sceptics will endorse some form of moral anti-realism, according to which nothing is morally good or bad independent of the existence and actions of conscious agents. In that case, if God exists, then prior to creation what is morally good would depend wholly on God. All of the possibilities delineated in M_T would then remain equally likely, because for each possible world God could arbitrarily command that the realities contained in it are morally good.

Second, even if fine-tuning sceptics are moral realists of some sort, there are still serious questions about exactly what feature or features bear the weight of objective value in the fine-tuning argument. Is it materiality/physicality that makes some possible creations better than others? It is hard to see how mere physicality could set one possible creation apart from the rest. A universe that re-collapsed a microsecond after the Big Bang would be physical, but that alone does not make it worth creating. Is it physical life that is intrinsically valuable? Bacteria are physical life forms, but being a reality such that bacteria might arise in it does not seem to be a particularly good-making feature of a possible creation. Is it intelligent or conscious physical life that is particularly worthy of creation? In that case, though, it seems that it is intelligence or consciousness, not physicality or animation, that is doing the heavy lifting. Why think intelligence is only morally valuable if it is embodied?

The problem here for proponents of the fine-tuning argument is that, if God does exist, then clearly it is possible for there to be a non-physical intelligence. After all, God is supposed to be just such an intelligence. Why think God would prefer to create other intelligent, conscious beings by creating a life-permitting physical universe? God had other, seemingly much more efficient and sensible,

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options. For example, God could make Berkeley right. So even if they grant that God has a preference function over possible creations, fine-tuning sceptics are going to need to hear a lot more before they agree that that function favours the creation of a life-permitting physical universe – and favours it enough to make the fine-tuning argument persuasive.

Given all of this, it will seem to fine-tuning sceptics that, even conditionalizing on theism, the possible realities forbidding embodied life might very well vastly outnumber the possible realities permitting life. Given that God's preference function for possible realities is inscrutable to them, they say PLUG is also inscrutable to them.

How should proponents of the fine-tuning argument respond? Perhaps the smart thing is just to give up on fine-tuning sceptics – to dismiss them as people who cannot be reasoned with. Alternatively, proponents of the fine-tuning argument might do a lot more in the way of explaining why, exactly, we should expect God to create a life-permitting physical universe. If they did that, proponents of the fine-tuning argument actually would be acting charitably – and hence generously – to fine-tuning sceptics.[7]

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Notes

1. A notable exception can be found in the work of Richard Swinburne (2003, 107–114), who gives an extensive case for thinking that PLUG is quite high; he argues that, if God exists, it is quite probable that God creates a world with embodied humans.
2. As they make clear, this judgement is conditional on several other factors, including the falsity of the multiverse hypothesis and the falsity of 'quasi-theistic' rivals to theism such as the neoplatonism of John Leslie (1989).
3. Here 'inscrutable' is used in the same sense that Alvin Plantinga uses the term in his evolutionary argument against naturalism; it is 'such that we cannot make an estimate of it' (Plantinga (2002), 5).
4. In talking about watches and vertebrate eyes it may seem Sober is talking exclusively about the biological design argument, but clearly he intends his point to apply as well to the design argument from cosmic fine-tuning for life, as his reference to 'the putative maker of universes' indicates.
5. I thank Yoaav Isaacs and Lydia McGrew for raising this worry.
6. I thank Nevin Climenhaga for suggesting this option.
7. I thank Nevin Climenhaga, John Hawthorne, Daniel Howard-Snyder, Hud Hudson, Yoaav Isaacs, Lydia McGrew, Michael Rota, Steven Skultety, Robert Westmoreland, and especially Donovan Wishon for conversations leading to this article.