Splitting the (In)Difference: Why Fine-Tuning Supports Design*

Chris Dorst and Kevin Dorst†

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Abstract

Given the laws of our universe, the initial conditions and cosmological constants had to be "fine-tuned" to result in life. Is this evidence for design? We argue that we should be uncertain whether an ideal agent would take it to be so—but that given such uncertainty, *we* should react to fine-tuning by boosting our confidence in design. The degree to which we should do so depends on our opinions about controversial metaphysical issues.

Some old news: life exists.

Some new news: the old news was surprising—it turns out the laws of our universe are *stringent*, in the sense that the initial conditions and cosmological constants had to be "fine-tuned" to result in life.

The *fine-tuning argument* claims that the new news is evidence for a designer: when we learn that the laws are stringent—even already knowing that life exists—this provides further evidence for design.

There are *many* different takes on the argument—far too many for us to discuss in detail.[1] Instead, we'll take as our starting point a recent exchange between Weisberg (2010, 2012) and White (2011).

We'll argue that the fine-tuning argument is right—but for subtle reasons. Weisberg (2010, 2012) offers a seemingly compelling argument that it's not, while White (2011) offers a seemingly compelling argument that it is. We'll show how their arguments are motivated by two different indifference assumptions, each of which has strong considerations in its favor. As a result, we should be unsure which assumption is correct. But here's the catch: when we should be uncertain which is correct, it follows that we *should* take stringency to be (further) evidence for design. How much we should do so depends

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†Authors contributed equally and are listed alphabetically.

[1] E.g. McMullin (1993); White (2000); McGrew et al. (2001); Bostrom (2002); Holder (2002); Swinburne (2004); Sober (2004); Colyvan et al. (2005); Weisberg (2005); Sober (2009); Roberts (2012); Hawthorne and Isaacs (2018); Halvorson (2018). See Manson (2009) and Friederich (2018) for summaries.

on how much credence we should lend White's indifference assumption—which in turn is tied to metaphysical questions about the nature of the physical laws, time, and the designer.

All right, buckle up.

Let P be the (initial) credences of an ideally rational agent, D be the claim that there's a *D*esigner, L be the claim that *L*ife exists (in this universe[2]), and S be the claim that the laws are *S*tringent. The question we are trying to answer is whether, given life, an ideal agent would take stringency to be evidence for design: whether $P(D|LS) > P(D|L)$.

Let's start with what all sides can agree on.

The sort of designer we have in mind is one that's both capable of and intent on making life. (If you don't think the traditional God has these features, read 'Designer' as 'God who's intent on making life'.) Given that, our first premise, formulated by Weisberg (2012), comes for free:

> **Divine Intent:** $P(L|D) = 1$.
> Given a designer, it's certain that there'll be life.

White (2011) would be happy to accept this too.

Our second not-extremely-controversial premise is that knowing only that there's life and no designer, an ideal agent would be indifferent over life-worlds:

> **Blind Indifference:** $P(\cdot|L\overline{D})$ is uniform over life-worlds.
> Given that life exists and there's no designer, each life-world should be treated as equally likely.

Both Weisberg and White are happy to accept Blind Indifference. The motivating thought is that absent a designer, it's a matter of "blind chance" which world comes about—thus $P(\cdot|\overline{D})$ is plausibly uniform over all worlds, and so $P(\cdot|L\overline{D})$ is uniform over life-worlds (Weisberg, 2012).

Of course, you might worry about this sort of premise because it relies on the principle of indifference. For example, whether (or in what sense) it's correct presumably depends on how an ideally rational agent would parameterize the space of possibilities (e.g. Van Fraassen, 1989). Perhaps because of this, you're inclined to question whether our Bayesian modeling assumption even makes sense in this context (e.g. Norton, 2008). Fair enough. But rather that get bogged down in such debates, we think it's more illuminating to proceed without worrying over-much about the choice of parameterization, as doing so will let us precisely formulate what we think is the heart of the disagreement over fine-tuning. Later on, we'll consider the consequences of relaxing the indifference assumptions, and explain why our argument is relatively insensitive to these parameterization worries (see page 8).

[2]For simplicity we'll set aside complications arising from the possibility of multiple universes. Some think this is no limitation, since our relevant evidence is that life exists in *this* universe, and *that* is no more likely given a multiverse than not (White, 2000). But this is controversial (e.g. Bradley, 2009), and we don't mean to take a strong stand on it here.

Onward, then. Granting Divine Intent and Blind Indiference, what White and Weisberg disagree on is what an ideal agent would be indifferent over given only the information that there is a designer: Weisberg thinks they would be indifferent over life-worlds, while White thinks they would be indifferent over levels of stringency.

To see the intuition behind Weisberg's argument, imagine the space of possible worlds arranged on a continuum, with the stringency of the laws increasing toward the left (Weisberg, 2012):

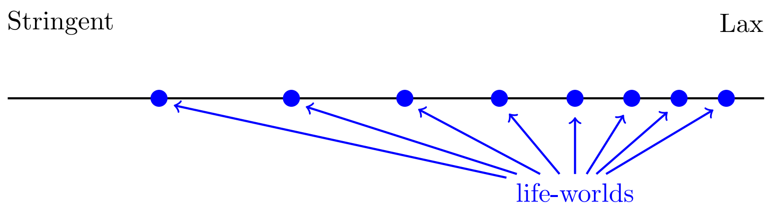

Figure 1: The Stringency Continuum

The dots on the line represent life-worlds. They become more common toward the right because as the laws become less stringent (more lax), there are more settings of the constants and initial conditions that will result in life.

Now our question: given (only) that there's a designer, how would an ideal agent distribute their credences? (What is $P(\cdot|D)$?) The picture suggests a natural answer: they'd treat each life-world as equally likely. After all, the only thing that's known about the designer is that she'll create life—so although she may well favor some life-worlds over others, there seems no basis for guessing how this favoring might go. This motivates Weisberg's crucial premise:

> **Life-Indifference:** $P(\cdot|D)$ is uniform over life-worlds.
> Given a designer, each life-world should be treated as equally likely.

It follows from these three premises that an ideal agent would *not* treat stringency as any further evidence of design: $P(D|LS) = P(D|L)$. After all, since both Blind Indifference and Life-Indifference treat each life-world as equally likely, learning that we're in a particular class of life-worlds (the stringent ones) doesn't tell in favor of either design or no-design.[3]

Does this mean that the fine-tuning argument simply fails? We don't think so: there's a different way of looking at things that makes the argument work. Notice that there's something misleading about the above picture. At any given level of stringency, there are many different worlds—some of which contain life, others of which do not. Stringency measures the *proportion* of worlds with a given set of laws (but perhaps differing initial conditions or fundamental constants) that contain life (Weisberg, 2012).

So a more perspicuous diagram would be not a one-dimensional stringency continuum, but a two-dimensional stringency *space*, where the horizontal axis again arranges

[3]More precisely: $P(D|LS) = P(D|L)$ iff $P(S|LD) = P(S|L)$, iff $P(S|LD) = P(S|L\overline{D})$. But Divine Intent implies that $P(\cdot|LD) = P(\cdot|D)$, and Life-Indifference says that this latter distribution is the same uniform distribution as Blind Indifference says $P(\cdot|L\overline{D})$ is. Thus $P(S|LD) = P(S|L\overline{D})$.

worlds according to stringency, and the vertical axis represents different settings of their fundamental constants and initial conditions (Figure 2). Every point in this diagram represents a world, and any vertical line represents an equivalence class of worlds at equal stringency. Intuitively, worlds with the same x-value have equally stringent laws, but different constants or initial conditions so that some of them are life-worlds, and others are not. Note that the proportion of life-worlds increases as the laws get less stringent.[4]

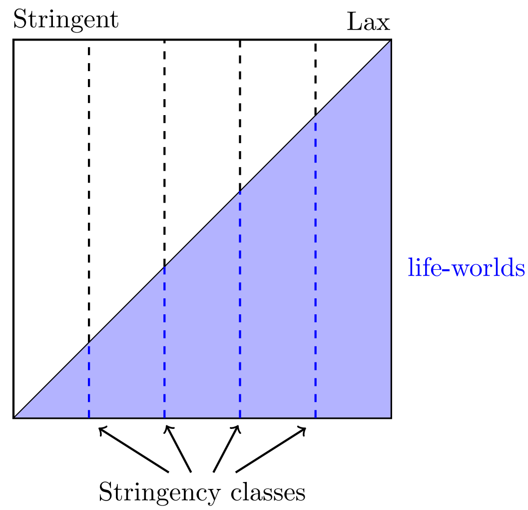

Figure 2: The Stringency Space

This picture highlights something hidden in the previous one: whatever level of stringency the designer picks, she can adjust ("fine-tune") the initial conditions and constants to make it a life-world.

Now return to our crucial question: given (only) that there's a designer, how would an ideally rational agent distribute their credences? (What is $P(\cdot|D)$?) This picture suggests that they might well treat each *stringency-class* as equally likely, knowing that the designer would simply adjust the initial conditions and constants to guarantee the emergence of life, regardless. This is especially intuitive if our rational agent thinks the designer will be primarily concerned with the fundamental structure of the universe, knowing that she can go on to "fill in the details" as she sees fit.

Consider an analogy: a novelist is intent on writing a story in which—amongst many other things—a hero overcomes a challenge. Knowing only this, should we think it substantially more likely that the challenge will be easy to overcome? Plausibly not—since the novelist has complete control over the story, the difficulty of the challenge is a non-issue when it comes to ensuring that the hero *does* overcome it; thus the difficulty

[4] It's not important to our argument that the proportion of life-worlds varies linearly with stringency, nor that it approaches anywhere near 100%. All that matters is that this proportion is monotonically increasing with laxity—though the precise rule given in footnote 7 will change if it increases non-linearly, as will the precise value calculated for $\lambda(S)$ (though not $\sigma(S)$) below.

of the challenge will be fully determined by other goals the novelist has, and we have no idea what those are. Likewise: since the designer has complete control over the world, a set of laws which makes life difficult to create is a non-issue when it comes to ensuring that life *is* created; thus the difficulty of creating life will be fully determined by other goals the designer has, and we have no idea what those are.

This, we think, is a perfectly intuitive picture—one that captures the "fine-tuning" intuition behind the original argument. It motivates our version of White's premise[5]:

> **Stringency-Indifference:** $P(\cdot|D)$ is uniform over stringency-classes.
> Given a designer, each level of stringency should be treated as equally likely.

It follows from Divine Intent, Blind Indifference, and Stringency-Indifference that an ideal agent *would* treat stringency as further evidence of design: $P(D|LS) > P(D|L)$.

To establish this, it suffices to show that Stringency-Indifference makes stringency more likely given life-and-design than given life-and-no-design: $P(S|LD) > P(S|L\overline{D})$. (Since then, by total probability, $P(S|LD) > P(S|L)$; so by the symmetry of probabilistic support, $P(D|LS) > P(D|L)$.)

To see why Stringency-Indifference makes stringency more to be expected given life-and-design than given life-and-no-design, consider Figure 3 (page 6). Given life-and-no-design, the rational credence in various levels of stringency increases with laxity (green line), since there are more life-worlds in the lax regions.[6] Thus given life-and-no-design, the rational credence in stringency is low. In contrast (assuming Stringency-Indifference), given life-and-design the rational credence is *uniform* over stringency levels (blue line): a rational agent will think the designer is equally likely to create a (life-)world at any level of stringency. Thus the rational credence in stringency given life-and-design is *not* terribly low. As a result, stringency is more to be expected given life-and-design than given life-and-no-design (the blue line is higher than the green line in the orange stringent region): $P(S|LD) > P(S|L\overline{D})$.[7] By the above reasoning, this establishes that stringency is evidence for design: $P(D|LS) > P(D|L)$.

So we have two plausible—but incompatible—hypotheses for how an ideal agent would distribute their credence given that there's a designer: Weisberg's Life-Indifference and White's Stringency-Indifference. Despite White and Weisberg's own confidence in their respective premises, we think it is pretty clear that non-ideal agents like us should be

[5]We're deviating from White's (2011) formulation in ways that we think are natural (and that White would accept) given Weisberg's (2012) illuminating discussion. White's explicit premise is that stringency is not evidence against design: $P(D|S) \geq P(D|\overline{S})$, but his motivation for it is that we have no reason to suspect the designer will prefer stringent or lax laws, which suggests the stronger $P(D|S) = P(D)$—a version of our Stringency-Indifference.

[6]Likewise given life-and-design *if* we assume Life-Indifference. That's why Weisberg's argument works, since those assumptions induce the same distribution given life-and-design as life-and-no-design.

[7]More precisely: let S be the proposition that we're in one of a set of stringency-classes centered on the left half of Figure 2. Given Blind Indifference, $P(S|L\overline{D})$ will equal the proportion of the *area* of the life-triangle that SL takes up. Meanwhile, given Stringency-Indifference, $P(S|LD) = P(S|D)$ will equal the proportion of the *width* of the life-triangle that SL spans. Whenever S is centered on the smaller half of the life-triangle, the latter proportion will be larger than the former proportion, so $P(S|LD) > P(S|L\overline{D})$.

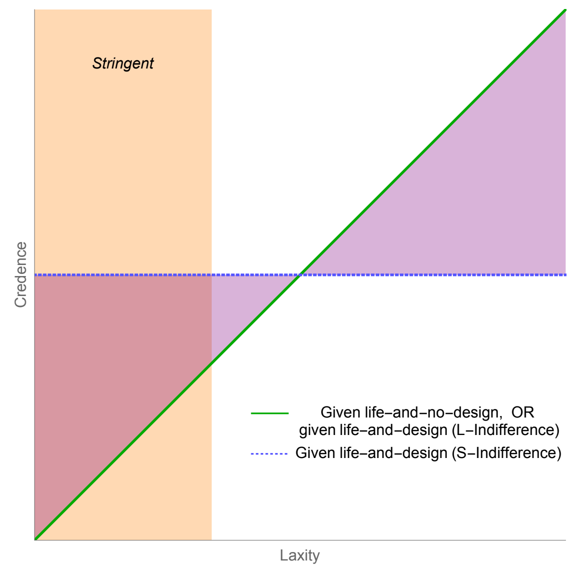

Figure 3: Credence in stringency-levels, given various hypotheses

unsure which, if either, is correct (compare Roberts, 2012, p. 300). What should we do, given that uncertainty?

We should do what Bayesians always do: divide our credence amongst the various open hypotheses, consider how likely the possibilities are conditional on each hypothesis, and determine our overall opinion by averaging these conditional opinions. So, let C be a reasonable (but not necessarily ideal) initial credence function. We introduce it because we want to think about what people like *us*—who are uncertain what the ideal initial credence function P is—should think about the fine-tuning argument. We assume that C will defer to hypotheses about P.[8]

We want to know whether stringency should boost our confidence in design, given life—whether $C(D|LS) > C(D|L)$. This depends on whether we think that stringency is more likely given life-and-design than it is given life-and-no-design—whether $C(S|LD) > C(S|L\overline{D})$.

What should our credence be in stringency given life-and-no-design? (What is $C(S|L\overline{D})$?) Since we defer to P, this is determined by our credence in the various hypotheses about the ideal agent's distribution given life-and-no-design, i.e. $P(\cdot|L\overline{D})$. We take it that we can be sure (or sure enough) that Blind Indifference is true—that given life-and-no-design, an ideal agent would be uniform over life-worlds. Thus by deference, we should be too: $C(\cdot|L\overline{D})$ is uniform over life-worlds. (Again, we'll relax this

[8] Precisely, where 'δ' is a rigid designator for a given probability function: $C(p|P = \delta) = \delta(p)$. It follows (by total probability) that $C(p|q \wedge P(p|q) = t) = t$. Allowing C to be uncertain about P is consistent with the "fixed-point thesis" (Titelbaum, 2015; Littlejohn, 2015) and other denials of the possibility of higher-order uncertainty (Skipper, 2020): perhaps to be reasonable you must know what's reasonable (C knows what C is), and to be ideal you must know what's ideal (P knows what P is); still, so long as you can be reasonable without being ideal, C can be uncertain about P.

below.)

What about our credence in stringency given life-and-*design*? (What is $C(\cdot|LD)$?) By deference, again, this is determined by our credence in the various hypotheses about the rational agent's credence distribution given life-and-design. We can put those hypotheses in three boxes: 'Life-Indifference' ('I_L'), 'Stringency-Indifference' ('I_S'), and 'something Else' ('E'). By total probability, $C(\cdot|LD)$ will be an average of its opinions conditional on each of these three hypotheses:

$$C(S|LD) \ = \ C\big(I_L|LD\big)\cdot C(S|LDI_L) \ + \ C\big(I_S|LD\big)\cdot C(S|LDI_S) \ + \ C\big(E|LD\big)\cdot C(S|LDE)$$

Letting λ and σ be the distributions posited by Life- and Stringency-Indifference, respectively (such that, by Divine Intent, $\lambda(L) = \sigma(L) = 1$), deference then implies that your credence is an average of λ, σ, and your credence given that neither of them is ideal:

Split the Indifference:
$$C(S|LD) \ = \ C\big(I_L|LD\big)\cdot\lambda(S) \ + \ C\big(I_S|LD\big)\cdot\sigma(S) \ + \ C\big(E|LD\big)\cdot C(S|LDE)$$

Our claim is that given reasonable assignments in Split the Indifference, it follows that $C(S|LD) > C(S|L\overline{D})$.

To see this, suppose for a moment that we're certain that one of I_L or I_S is right, but unsure which. Then the third term in Split the Indifference drops out, and $C(S|LD)$ is a weighted average of $\lambda(S)$ and $\sigma(S)$. Since we can't be sure which is right, this average will assign positive weight to both terms. Graphically, this means that the likelihood of various levels of stringency is an average of the blue and green lines in Figure 3 (page 6)—i.e. a line that splits the (weighted) difference between the two indifference distributions, passing through the purple region. Any such line assigns higher credence to the Stringent region than the green life-and-no-design line does, and therefore makes stringency more likely given design than given no design.[9]

Of course, we shouldn't be *certain* that one of Life- or Stringency-Indifference is right, meaning we can't pretend the $C(S|LDE)$ term isn't there. And its being there might be significant: it could end up lowering the overall average given by Split the Indifference, since the denial of both Life- and Stringency-Indifference (i.e. E) might make stringency even less likely.

But as it turns out, this doesn't matter. For given *how* stringent we've learned the laws are, so long as we accord a tiny amount of credence to Stringency-Indifference, it follows that stringency is more to be expected given life-and-design than given life-and-no-design, regardless of the value of $C(S|LDE)$ (cf. Hawthorne and Isaacs, 2018).

An extremely generous (to the possibility of life) estimate is that our universe is one in which around 1 in 10^{53} random settings of the parameters would result in life (Collins, 2003). However you slice it, we are scrunched down at the *very* bottom left of Figure 2. So suppose that S is the claim that we are in a stringency-region of width $\epsilon > 0$, centered

[9]More formally, we know from our exposition of the argument from Stringency-Indifference that $\sigma(S) > \lambda(S)$, and we know that $C(S|L\overline{D}) = \lambda(S)$; therefore if $C(S|LD)$ is an average of $\sigma(S)$ and $\lambda(S)$, it is higher than $\lambda(S) = C(S|L\overline{D})$.

on a point where the green line has height $\frac{1}{10^{53}}$. Then what we need to evaluate is how the probability of S compares on both Stringency-Indifference and Life-Indifference—i.e. we need to evaluate $\sigma(S)$ and $\lambda(S)$. Since σ treats each vertical line in Figure 2 as equally likely, $\sigma(S)$ is the *width* of SL divided by the *width* of L: $\sigma(S) = {}^{\epsilon}/_{1} = \epsilon$. Meanwhile, since λ treats each point in the L-region of Figure 2 as equally likely, $\lambda(S)$ is the *area* of SL divided by the *area* of L. The area of L is $\frac{1}{2}$, and the area of SL is simply equal to the height of the life-region at the center of S (i.e. $\frac{1}{10^{53}}$) multiplied by the width of S (i.e. ϵ)—so $\lambda(S) = \frac{1/10^{53} \cdot \epsilon}{1/2} = \frac{2}{10^{53}} \cdot \epsilon$.

So although the probability of S is small given either Stringency-Indifference or Life-Indifference, it is more than *50 orders of magnitude larger* given the former: $\sigma(S) = \epsilon$ while $\lambda(S) = \frac{2}{10^{53}}\epsilon$, so $\sigma(S) > 10^{50} \cdot \lambda(S)$. (Similar calculations would go through varying the structure of the diagram—the point is simply that when you are in a very stringent region, the proportional width of the SL-region is much larger than its proportional area.) Moreover, recall that $\lambda(S)$ equals how confident you should be in S absent a designer: $\lambda(S) = C(S|L\overline{D})$. You should therefore think that, given life-and-no-design, it is monumentally unlikely that the universe would be this stringent. The question is whether it is any more likely given design.

To answer that, return to Split the Indifference. Since all of the terms are non-negative, any one of them—and in particular the Stringency-Indifference one—gives us a lower-bound on $C(S|LD)$. It follows from the above calculations that so long as you have credence greater than $\frac{2}{10^{53}}$ in Stringency-Indifference given life-and-design (i.e. if $C(I_S|LD) > \frac{2}{10^{53}}$), you should (given life) take stringency to be more probable given design than not:

$$C(S|LD) \;\geq\; C(I_S|LD) \cdot \sigma(S) \;>\; \frac{2}{10^{53}} \cdot \sigma(S) \;=\; \frac{2}{10^{53}} \cdot \epsilon \;=\; \lambda(S) \;=\; C(S|L\overline{D}).$$

Upshot: given how stringent we've learned the laws are, assigning even a minuscule credence to Stringency-Indifference suffices for the fine-tuning argument to work, regardless of what other hypotheses about the ideal prior distribution $P(\cdot|D)$ you leave open. The reason this works, again, is that while the Stringency-Indifferent probability of S is low, the Life-Indifferent probability is far lower. And since the latter equals your credence in S given life-and-no-design, it does not take much credence in Stringency-Indifference to push the probability assigned by Split the Indifference higher.

Summing up: to block the fine-tuning argument, it's not enough to merely think that Life-Indifference is right and Stringency-Indifference is wrong. Instead, you must think that Stringency-Indifference is so obviously wrong that you assign almost credence *0* to it—for example, you must prefer to bet that this fair coin will land heads 175 times in a row than that Stringency-Indifference is right (since $1/2^{175} > 2/10^{53}$).

This fact is what makes our argument robust to the choice of parameterization and worries about the principle of indifference, as mentioned above. For one thing that is definitely true is that $C(S|L\overline{D})$ should be *very* low: given no designer and the existence of life, you should strongly expect that the laws are not such as to make life astronomically unlikely. As a result, even if you are massively unsure which parameterization of the space an ideal agent would use, so long as you give a *tiny* credence to the version of Stringency-Indifference which parameterizes stringency as we have (in terms of "proportion of life-worlds"), that'll suffice for $C(S|LD)$ to be higher than $C(S|L\overline{D})$, as required.

This leads to a broader point. As we've seen, each of the three arguments we've considered (Weisberg's, White's, and our own) depends on strong indifference assumptions. You might think their exactness provides reason for skepticism about all of them: perhaps even if the basic idea of one of these principles is right, other considerations would cause the ideal agent to deviate somewhat from them.

This seems fair enough. Interestingly, however, the different arguments have very different sensitivities to relaxation of the indifference assumptions. Suppose that we change all of these "exact" indifferences to "rough" indifferences, so that Stringency-Indifference says the ideal distribution is *roughly* uniform over stringency classes, and both Blind Indifference and Life-Indifference say that it's *roughly* uniform over life-worlds.

White's argument and our own are insensitive to this change. This is because—again, given how stringent we've learned the laws are—Stringency-Indifference makes stringency *so* much more likely than Blind Indifference that even significant deviations from each would render the comparison between the two unchanged. (In the left-most part of Figure 3, large fluctuations in the blue and green lines would still leave the former much higher than the latter.) For White's argument, all that matters is that that the value of $\sigma(S)$ is higher than the value of $\lambda(S)$. For us, so long as the value of $\sigma(S)$ is *substantially* higher than the value of $\lambda(S)$—as surely it still will be—we only need to accord the former a minimal credence to ensure that $C(S|LD) > C(S|L\overline{D})$.

Weisberg's argument, by contrast, relies on an *exact* match between the distribution posited by Blind Indifference and that posited by Life-Indifference. If the (rough) Life-Indifference distribution ends up according even slightly higher probability to stringency than the (rough) Blind Indifference distribution does, the conclusion that stringency is irrelevant to design no longer goes through. In contrast to this fragility, the robustness of our argument strikes us as an advantage.

Given this result, it's natural to raise another worry about our argument. We've assumed Blind Indifference—that given life-and-no-design, an ideal agent would think each life-world is equally likely. But once we see that there are different indifference assumptions that seem reasonable given a designer, it is natural to wonder: Are there also different versions of *Blind* Indifference? And might those differences matter?

There are, but they don't. Translating Life- and Stringency-Indifference to the no-designer case would yield these two principles:

Blind Life-Indifference: $P(\cdot|\overline{D})$ is uniform over life-worlds.

Blind Stringency-Indifference: $P(\cdot|\overline{D})$ is uniform over stringency-classes.

But *both* of these principles are plausibly true. For, as we've said, a natural hypothesis is that $P(\cdot|\overline{D})$ should be uniform over the entire stringency space (Figure 2): given only the information that there's no designer, an ideal agent wouldn't think that any level of stringency or life-(un)friendly settings of the conditions are more or less likely than any other.[10] This implies all three versions of Blind Indifference, and therefore that $C(\cdot|L\overline{D}) = \lambda(\cdot)$; our above argument goes through. In other words, it is only in the presence of Divine Intent that Life- and Stringency-Indifference become incompatible. Since no parallel premise is plausible given no design (i.e. since $P(L|\overline{D}) < 1$), a parallel distinction amongst types of Blind Indifference makes no difference.

Lastly, our discussion also helps defuse a fairly standard objection to the fine-tuning argument. According to the objection, if the laws had been *lax*, we would've taken *that* to be evidence of design, claiming that there must've been a designer to ensure that the world was so hospitable to life. In other words, the objection charges the advocate of the fine-tuning argument with penciling in the result they want from the beginning.

This can't ultimately be right. After all, on any coherent setup of the problem (including ours), if stringency is evidence *for* design given life, then laxity (non-stringency) is evidence *against* design given life: $P(D|LS) > P(D|L)$ iff $P(D|L\overline{S}) < P(D|L)$. So why does the charge have any intuitive force?

We think the reason is that it forgets to track whether or not we're conditioning on life. Given our setup, it *is* true that if we don't condition on life existing, then laxity is evidence for design.[11] This is as it should be: both design and laxity are correlated with life, so before we condition on life, we should take laxity to be evidence for design. However, once we *do* condition on life, as we've seen, this pattern is reversed, and it's *stringency* that's now evidence for design. Thus our setup explains away the intuitive appeal of this objection: it gets its apparent plausibility by forgetting whether we are assuming the existence of life.

Summing up: for non-ideal agents like us—who should be unsure whether Stringency-Indifference is true—the fine-tuning argument succeeds: upon learning the laws are stringent, we should (further) boost our confidence in design.

Okay—but *how much*? (What's the *ratio* between $C(S|LD)$ and $C(S|L\overline{D})$?)

The answer, we think, hinges on how confident we expect an ideally-rational version of ourselves would be in a variety of controversial metaphysical theses about a designer, about time, and about laws. Theses that make Stringency-Indifference more plausible increase its weight in Split the Indifference, boosting the probability of stringency given life-and-design further above its probability given life-and-no-design; theses that tell against Stringency-Indifference do the opposite.

First, the designer. If our ideally-rational counterparts would incline toward a theistic picture of a designer—who not only creates the universe, but also intervenes to make

[10] More carefully: each equally-sized region of stringency space is assigned the same probability. This is compatible with thinking some types of worlds are a priori more probable than others; it just means that we don't have reason to suspect that such worlds are unevenly spread throughout stringency space.

[11] To see this, note that conditional on no design, you should treat any level of stringency as equally likely: $C(\cdot|\overline{D})$ is uniform over the stringency space, and therefore uniform over levels of stringency. Meanwhile, conditional on design, you are unsure whether Life- or Stringency-Indifference is true—and, therefore, the likelihoods you assign to various levels of stringency are captured by some (monotonically increasing) line through the purple region of Figure 3. Thus $C(\cdot|D)$ assigns higher likelihood to the lax-region than $C(\cdot|\overline{D})$ does.

sure things go according to plan—this would appear to motivate Stringency-Indifference. For on that picture, no matter what laws the universe has and no matter how it started, the designer would tweak the particular facts to ensure life ends up arising. In contrast, a deistic picture of a designer—who simply creates the universe and steps back—lends support to Life-Indifference (and so takes it away from Stringency-Indifference). For on that picture, the designer picks a world based on whether, unaltered, it'll play out to contain life.

Second, time. If our ideally-rational counterparts would lean toward eternalism, then it is hard to motivate the distinction between creating the universe and intervening on it as it plays out, telling in favor of Life-Indifference. But if they incline toward either presentism or the growing block view, then that distinction is perfectly coherent—supporting Stringency-Indifference.

Finally, laws. On a governing conception of laws, they are ontologically prior to the rest of the goings-on in the universe. If our ideally-rational counterparts would lean toward such a picture, it seems quite reasonable that they'd think the laws—the fundamentals of the world—would be the designer's primary concern, and that the designer would fine-tune the initial conditions and constants to permit life. Thus the governing conception supports Stringency-Indifference. By contrast, Humeanism about laws would seem to tell against Stringency-Indifference. If our ideally-rational counterparts would think that the laws are merely patterns in the particular facts that obtain throughout the universe, they would be less likely to distribute their credence as if they expect the laws to loom large for the designer—hence less likely to be indifferent over levels of stringency.

These metaphysical debates bear on the fine-tuning argument by motivating different values for the $C(I_S|LD)$ term in Split the Indifference; the larger it is, the more significant the discovery of stringency for the existence of a designer; the smaller it is, the less. No doubt other debates will bear on this weighting as well.

Where does this leave us? Since none of us should be sure of what an ideal agent would think given only the existence of a designer, we all should take stringency to provide some (further) evidence of design—but the how much we should do so depends on our opinions about further metaphysical debates.

Upshot: the fine-tuning argument succeeds. But the *degree* to which it succeeds is a subtle, interesting, and open question.

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