Timothy Brown

What Are the Chances That This Paper Makes Any Sense? A Teleological Argument for God from Reason

Overview:

What are the chances that our world should be a rational one? To put the question more concretely, in the terms of physics: is it likely for a universe evolve from state to state, such that past states dictate future ones? Is the apparent rationality of our world evidence for a designer?

Attempting to answer the last question has not been a common avenue for developing teleological arguments for the existence of God. In some respects, the reason is obvious. This is a difficult question to analyze; it involves probing at the borders of a conceptual space where our tools of analysis begin to lose their purchase. How can one analyze the irrational? Such endeavors seem likely to simply retread the well-worn tracks of past arguments: Decartes' evil demon, brains in vats, etc.— i.e., the territory of radical skepticism, which philosophy has learned to comfortably live with, if not wholly resolve.

Yet, it is also strange that this line of reasoning has not been more thoroughly investigated. After all, the identification of the Logos— universal animating reason— with both the creative force that generates the world, and God, is as old as philosophy. It appears in Heraclitus, is taken up by the Stoics, and becomes a pillar of theology for Christians, for whom Christ is the Logos.

In this paper, I will argue that, using the same mathematical and epistemic principles commonly employed in the sciences, we can shed some light on this question. This analysis will show that, given a few assumptions, there are more “possible universes” that lack “natural laws” than those which exhibit law-like behavior. That is, “rational universes” (i.e., those with “natural laws”) are combinatorially very unlikely, implying that, if our universe is rational (as it appears to be), it is unlikely to exist by chance. Further, this analysis presents a problem for advocates of the position that “multiverse cosmologies,” i.e., those that predict a large number of universes with different physical laws, resolve the “Fine-Tuning Problem.”

The Parameters of Our Analysis:

For the purposes of this paper we shall define a "rational universe," as one whose states— full descriptions of everything in the universe at some moment— evolve such that past states dictate future states. That our universe is such a place is a key tenant of naturalism, and a necessary assumption for the sciences. Most people accept that the past dictates the future and that there are causal relationships between prior events and future ones (although they may disagree one how best to define these). That some interpretations of quantum mechanics specify that past states only entail a range of future states probabilistically is no problem for our definition. All that is required is that states progress with some form of law-like regularity.

Our question then is: "*is it likely that our universe should be a rational one, with law-like behavior*?"

Given that we have no evidence with which to determine the likelihood of our universe being a rational one, we can invoke the Principle of Indifference. This principle simply states that, if we do not have evidence relevant to a problem, a rational agent should assign probabilities equally amongst all possible outcomes.[1] Of course, this analysis requires that universes, even ones whose states do not progress in a law-like manner, are describable, so that we can enumerate them. This assumption does not seem like much to ask however; our universe seems describable, as is every toy universe ever created by physicists.

Here we face our first problem: how can we enumerate the number of possible universes? Isn't this number infinite? Likely, the answer to the second question is "yes."[2] However, this does not doom our analysis. If we can still show that there are far more universes of one type (i.e., rational versus irrational/non-law-like), or that the two types exist in equal proportions, then we can get some idea of the likelihood of either type of universe occurring if "selected at random."

Why There Are More Ways for Universes to Be "Irrational"

Consider Max Tegmark's "Mathematical Universe Hypothesis," (MUH), which claims that the universe *is* a mathematical object.[3] Per MUH, the universe exists, necessarily, because all mathematical

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1 Although often employed in the sciences, the Principle of Indifference is not without its detractors. For our purposes, it is enough to note that the assignment paradoxes that undermine the justification for using the principle do not appear to apply to this analysis.

2 There are infinitely many describable models of universes, but it is possible that we may discover a reason why these cannot exist.

3 See: Tegmark, Max (2007) "The Mathematical Universe." ARIXV. 0704.0646.pdf (arxiv.org) or (2014) "Our Mathematical Universe: My Quest for the Ultimate Nature of Reality."

objects do. While Tegmark's work is in many ways unique, he is in line with many other eminent physicists in claiming that our universe must be discrete, containing a finite amount of information. Continua contain an infinite amount of information, because they can only be described with real numbers, which take an infinite amount of information to describe. Such numbers are uncomputable however, there can be no effective method for carrying out computations with them.[4]

For a number of reasons that cannot be summarized in a paper of this length, a veritable "who's who" list of eminent physicists have concluded that the evolution of our universe from state to state is likely a computable process (and thus that the universe is a computable object), although this fact is still awaiting empirical confirmation.[5] The relevance of this point to our analysis is that the computable numbers, and hence the number of possible computable universes, is, by definition, finite. To be sure, there are indeed unimaginably many possible computable universes, but this amount is still finite, while there are an infinite number of mathematically describable uncomputable universe models involving the real numbers. Thus, if we accept that a rational universe *must* be a computable one, we accept that there are infinitely fewer rational possible universes than irrational ones.

But suppose we consider that rational universes do not have to be computable? Our answer shall remain the same. There are obviously more ways for a universe to progress in a law-like manner for a period, even billions of years, and then begin progressing randomly, then there are ways for it to stick to a single set of law-like behaviors vis-à-vis state progression for any arbitrary length of time. This is for the same reason that, while there are very many ways to organize the text on this page into coherent text, there will always be vastly more ways to create random incoherence. Law-like behavior is necessarily a *constraint* on the possibility space of possible universes.

Consider a random universe that exhibits law-like behavior by chance, such that it is similar to our own and produces observers. Such a universe would produce empirical observations from within that universe which are *identical* to those produced by a law-like universe. Yet there are far more ways for a random process to *just happen to* mimic a law-like for some finite duration before diverging from it than there are actual law-like processes. That is, there will always be very many more irrational universes that just happen to be *observably identical* with any given rational universe up to some arbitrary point through pure chance (a point we shall return to).

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[4] See: Turing, Alan. (1936) "On Computable Numbers, with an Application to the Entscheidungsproblem." for the canonical proof.

[5] For examples that claim the universe is computable and how this claim is justified see: Paul Davies' "Information and the Nature of Reality;" Vlatko Vedral's "Decoding Reality," David Deutsch's interview "Is the Cosmos and Computer," Max Tegmark's "Our Mathematical Universe," or Seth Loyd's "The Computational Universe."

This is important, because it allows us to make an argument that is analogous to Cantor's Diagonal Argument for why there are uncountably more real numbers than natural numbers.[6] Every combination of digits used to describe *all* of the infinite natural numbers is itself just the decimal expansion of a single unique real number. Likewise, every series of states describing some rational universe is itself just a series of states that will exist in some irrational universe that has happened to evolve in a way identical to a law-like universe by coincidence until some point. Thus, there is no bijection between the two sets; there are uncountably many more irrational universes than rational ones.

The Problems Posed by Irrationality: Why the Multiverse Will Not Solve the Fine Tuning Problem

The "Fine-Tuning Problem" springs from the observation that, in several respects, the universe is 'fine-tuned' for life". For example, if we should expect that the initial conditions of the universe should be subject to the Principle of Indifference, with each possible outcome being equally likely, then the extremely low entropy of the early universe is an absolutely astonishing fact. The same is true of the fact that free parameters in physics have exactly the values that are conducive to life. Advocates of multiverse theories argue that these theories resolve the Fine-Tuning Problem. If all (or some large set) of possible universes come to exist, then it is unsurprising that observers come to exist in any individual universe. Indeed, universes that produce observers would occur by necessity, since they are included in the universes produced by whatever "multiverse production mechanism" is posited.

This view is increasingly popular. For example, consider is this excerpt from an article in the Guardian:

> "*Even strongly atheistic physicists seem to believe the choice is unavoidable. Steven Weinberg, the closest physics comes to a Richard Dawkins, told the eminent biologist: "If you discovered a really impressive fine-tuning ... I think you'd really be left with only two explanations: a benevolent designer or a multiverse.*"'[7]

However, our analysis shows why this solution does not work. By moving to considering a multiverse, we have simply swapped out the problem of one set of observed variables appearing to be

[6] For an overview of Cantor's argument see: Honner, Patrick. (2022). "How Big is Infinity?" Quanta Magazine. How Big Is Infinity? | Quanta Magazine

[7] Vernon, Mark. (2008). "God or a Multiverse?" The Guardian. God or a multiverse? | Mark Vernon | The Guardian

incredibly unlikely (i.e., "fine-tuned") for the problem of our universe's law-like behavior being even more unlikely. If multiverse theorists are to counter this problem, they must explain why a their theories' only allow certain types of universes to be produced, such that random universes don't vastly outnumber law-like ones.

Additionally, there are also many more ways that a universe can be irrational and then snap into the picture of a rational universe—all constituent parts being rearranged such that they appear to have developed according to laws—then there are actual law-like universes that always evolve according to one set of rules. Thus, any scientific description of the universe will always be empirically undetermined.[8] Indeed, if there is no limit on the sorts of universes that can be produced within a multiverse, then it seems that it will always be more likely that we are in an irrational universe than a rational one, for *any* set of empirical observations. Further, there is no apparent reason to think that any one universe, or any "multiverse production process" that creates numerous universes, should be necessary while others are not.

However, if we *were* in an irrational universe, we should expect the universe to start progressing from state to state randomly at any moment, with it being extremely unlikely for it to continue to evolve according to any law-like behavior. Given this problem, it appears that we are back to another version of the Fine-Tuning Problem, even if we are willing to accept a multiverse.

Of course, one possible explanation for the unlikely rationality of our universe is the existence of some benevolent creator or some sort of teleological process at work in the world. Or, perhaps reason and intelligibility, *logos*, is in some sense essential to being in a way we do not fully understand. Of course, such an explanation does not require that the God of classical theism exists (although other arguments could be mustered by theists here to support this solution). The sort of "natural teleology" proposed by Thomas Nagel in his "Mind and Cosmos," would also suffice.*

[8] The problem posed here is akin to that of the "Boltzmann Brain," in many respects. However, we do not have space to explore the interesting parallels between the two problems here.