Fine-tuning notes

PHIL 735 Week 13
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December 6, 2023

Big question: Which hypotheses about the origins of the Universe, if any, does the fine-tuning evidence provide support for?

The fine-tuning evidence

- There are several examples in §1 of the SEP article. We'll focus on the strength of gravity example, but there's nothing special about that one.

- Worry: what is life? And might we be underestimating the variety of circumstances in which life could arise?

    – Response: Most ways for the universe to be would involve much less structure and complexity, which would make life impossible on any understanding of "life"

Answer 1: None

- Improbable things happen all the time, and yet often they're no evidence for anything interesting

    – It was very unlikely that a golf ball would land on the particular blade of grass it actually landed on
    – It was very unlikely that the stars would come to be arranged in just the way that they actually are
    – The gravitational constant having a life-sustaining value is "just another unlikely thing"
        * Hence, it's no evidence for anything interesting about the origins of the Universe

- Worry: this looks to prove too much

  - We can *always* just say "Improbable things happen all the time!"
  - But some improbable events really are good evidence for some hypothesis about the causal history of that event
    * Stars spelling out the first chapter of Genesis
    * Stones arranged in a stick-figure shape
    * Mary winning the lottery five weeks in a row
    * Golf ball landing on the one red blade of grass

Answer 2: Intelligent Design

- Let F be the fine-tuning evidence. Let D be the hypothesis that an intelligent designer created the universe. Let $\neg D$ be the hypothesis that the universe came into being through mindless natural processes.

- Argument: $p(F|D) > p(F|\neg D)$. So F supports D over $\neg D$.

  - Anthropic objection: We wouldn't be around to even ask this question, if the gravitational constant weren't life-sustaining
    * Observing a pre-condition for your own existence can't be any evidence for anything: given that you exist, you were *guaranteed* to make that observation
    * Letting E be the proposition that observers exist in the universe, the more relevant question is whether $p(F|D \wedge E) > p(F|\neg D \wedge E)$. But both sides of that inequality are identically 1.
  - Response to the anthropic objection: just because you couldn't have observed anything other than X, it doesn't seem to follow that X can't be evidence for anything
    * Leslie: A Firing Squad of 20 sharpshooters fire at me, and I remain alive. That's evidence that they were firing blanks, or that they deliberately missed me, even though I couldn't possibly observe my own non-aliveness.
    * Plainly my existence can be evidence for various propositions *for you*, since you could have observed my non-existence. So the claim that my existence can't be evidence for anything *for me* looks to introduce a fundamental epistemic distinction between first-person and third-person evidence.
  - Divine psychology objection: how could we have any basis for thinking that $p(F|D)$ is high, or even that $p(F|D) > p(F|\neg D)$? You'd have to have some kind of insight into divine psychology to know that the Designer would be likely (or more likely than mindless natural processes) to create a life-friendly universe.

– Response to divine psychology objection: This proves too much.

  * A booming voice from the clouds predicting future events, or a "Made By God" stamp on all of the atoms, would be presumably be at least *some* evidence for Design
  * But in order for that to be true, we have to think that a Designer is psychologically constituted so as to be somewhat likely to make booming accurate predictions, or to "sign His work"

Answer 3: Multiple Universes

- Idea: If you hit just one golf ball, it's very unlikely that it would happen to land on the one red blade of grass. But if you hit lots and lots of golf balls, it's not that unlikely that one (or more) of them would land on the one red blade of grass.

  – Similarly, if there is only one Universe, and the constants are set by mindless natural processes, it's very unlikely that that Universe would happen to have life-sustaining constants. But, if there are lots and lots of Universes, it's not that unlikely that one (or more) of them would have life-sustaining constants. And it's not at all unlikely that we'd find ourselves in one of the life-sustaining Universes.

- More formally, letting M be the hypothesis that there are multiple universes and $\neg M$ be the hypothesis that there is only one universe, $p(F|M) > p(F|\neg M)$. So F supports M over $\neg M$.

- Question: When is the observation of an unlikely event evidence for Multiplicity?

  – Raffle: The fact that John won the raffle is some evidence that he bought lots of tickets, since more tickets would give him a higher chance of winning
  – Dice: But rolling double-sixes in your office is no evidence that there are lots of other people throwing dice in their offices
  – So, the question seems to be: is the observation that our Universe is life-sustaining more like the Raffle or the Dice?

    * If more like the Raffle, then we do have evidence for M
    * If more like the Dice, then we don't have evidence for M

- One idea:

  – In the Raffle case, our evidence is that *some ticket or other of John's* is a winner

    * It is more likely that *one or another* of John's tickets will be a winner if he buys lots of tickets than if he buys only one

* So, John winning is evidence that he bought lots of tickets
  – In the Dice case, our evidence is not that *someone* rolled double-sixes, but that *I* did
    * *I'm* no more likely to roll double-sixs if we suppose that there are lots of other rollers than I am if we suppose that I'm the only roller
    * So, my rolling double-sixes is no evidence that there are lots of rollers

- If that's right, then the lesson is that it matters whether the evidence is **there is a life-sustaining universe** (like the Raffle case: evidence for *M*) or ***this* universe is life-sustaining universe** (like the Dice case: not evidence for *M*)

  – White 2000: "it is not as though we were disembodied spirits waiting for a big bang to produce some universe which could accommodate us"
  – Epstein 2017: "it is also not as though we were disembodied spirits keenly observing [the universe] α—our designated potential home—and hoping that it, in particular, would be able to accommodate us."

- One final thought: Perhaps, even though *F* isn't evidence for *M*, the independently-established truth of *M* could serve as a defeater for the evidence that *F* provides for *D*

  – So, perhaps, even if it's true that $p(F|D) > p(F|\neg D)$, it's false that $p(F|D \wedge M) > p(F|\neg D \wedge M)$