

suitable for life are actually pretty good? If we can't detect these universes, a reasonable person might ask why they are a better explanation than a deity. The answer is that we know universes exist — we live in one — but we don't have an example of a deity that we can point to. It's more likely that there are many things that we already know about than that there exists a new, all-powerful something that we do not have evidence for.

It's also important to keep in mind that a universe where the physical constants wouldn't allow us to live would not necessarily be devoid of life. Some physicists and experts in alternative biochemistry calculate that life could exist in some universes drastically different from ours.

So if we're going to calculate odds, odds are that fine tuning really isn't necessary to explain anything.

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IS THE UNIVERSE FINE TUNED?

A Question of Moral Atheism

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make such an assumption. Sure, it could be true, but it might also be true that there is a physical law that determines these constants' values, and if there is such a law, perhaps it only results in universes that could support life — we just don't know. In fact, it's possible that the current values for these constants are the only ones that are physically possible.

Saying that there are only a few allowable values for a constant within a gigantic range of possibilities is another way of making the same logical mistake. One could argue, "Humans could have been an inch tall or five miles tall, but there's only a small range of heights that would have allowed life as we know it, so human height is divinely controlled." We know that this is a ridiculous argument because we know that there are physical reasons why a human can't be super small or super tall. Perhaps when we know more about physics, we'll see that gravity has the same kinds of limits.

Even if the constants are indeed randomly assigned values, no deity is required. What if there is a massive number of universes outside of our own — so many that the odds of at least one having physical constants

IN PHYSICS, THERE ARE MANY PHYSICAL CONSTANTS — the gravitational and cosmological constants, for example — can be used to describe how the universe works. It has been argued that even a small change in some of these constants would make life impossible, so an intelligent supernatural force must have overseen the creation of the universe, fine-tuning these constants for our benefit.

The argument might go something like this: "At the moment of the Big Bang, the gravitational constant could have been any number. But if it were just a small fraction of a percent different than it is now, either gravity would have been too strong to allow life to arise, or gravity would have been too weak to allow stars and planets to form. The odds of the perfect value for this constant arising from chance are inconceivably small, so an intelligence must have assigned the value. That intelligence is God, creator of the universe."

The argument assumes that when the universe came into being physical constants were assigned values in some random way. But the fact is that we don't know nearly enough about how the laws of physics work to

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QUESTIONS OF MORAL ATHEISM: INSTRUCTIONS

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1. Print pages one and two of this document, one on each side of the same piece of paper (if you don't have access to a duplex printer, print page one, put the page back in the paper tray upside down, and print page two — depending on the type of printer, you may have to experiment a bit).
2. Cut the printout in two, using the thin rules across the middle of the page as a guide.
3. Fold the two pieces of paper in half, making a pair of small pamphlets.
4. Keep one of the pamphlets to read, and give the other away to an interested friend or stranger.

That's it! If you have any questions, suggestions, or comments, we invite you to share them by leaving a comment on blog.iamanatheist.org. Thanks!
