

# Cosmos and Coincidence

## Intelligent Design Theory Fails to Account for Sub-optimal Design

A V I T A L P I L P E L

THE UNIVERSE'S BASIC CONSTANTS APPEAR fine-tuned for life. For example, if the ratio between the strong and weak nuclear force were only slightly different, life would have been impossible. Many such coincidences exist.<sup>1</sup> Therefore, say theists, God (or some unspecified intelligent designer) carefully created the universe for life. This argument is known as the "fine-tuning argument," and is part of the larger set of arguments termed the "anthropic principle."

This argument has been countered in many ways. Our universe might be only one of an infinite number of universes, each with its own constants; naturally we find ourselves in one of the few that can support life.<sup>2</sup> The number of possible arrangements of the universe's constants might be severely limited (possibly to one set of values) by a more fundamental theory, such as string theory, in which case it cannot be said to have been improbable in any meaningful sense.<sup>3</sup> Indeed, many view probability itself as meaningful only when an event (such as a coin toss) is, or at least could be, repeated—but universes, Charles Peirce noted, are not "as common as blackberries."<sup>4</sup> Or it might be simply that there are far more arrangements of the universe's constants that allow life than we usually suspect.<sup>5</sup> Finally, one might simply deny that there is the need of any special explanation even if one accepts the *a priori* low probability of a universe allowing life: after all, we must exist if we are to wonder about the improbability of our existence in the first place.<sup>6</sup> As the poet Piet Hein noted:<sup>7</sup>

*The universe may  
be as great as they say  
but it wouldn't be missed  
if it didn't exist.*

### An Argument From Imperfection Against the Fine-Tuning Argument

Such objections to the theistic argument are well known, but I wish to make the case for an underused objection. I assume, in Leibnizian

fashion, the following premise: *if an omnipotent, perfect being created only one universe whose purpose is life, then the universe's design must be the best possible one for life.* It is precisely this, however, that undermines the fine-tuning argument.

The fine-tuning argument's intuitive force comes from the fact that it is a new and more scientific rendition of the much older argument from design. While that argument goes back to antiquity, its most popular formulation comes from William Paley's 1802 work, *Natural Theology*: if we stumble across a watch on a heath we would know it had a creator because of its intricate structure and fitness for its purpose; design implies a designer.<sup>8</sup> With its constants finely-tuned for life, the universe must have been designed, and such design implies a designer as well.

Paley was right: finding a watch *would* imply an intelligent creator of the watch who designed it for a certain purpose. The problem is that the analogy between the watch and the universe falls short. While an observer would be justified in believing a watch he found was designed, he would not be justified in concluding that the watch was a miraculously perfect creation by an omnipotent God. Defects in workmanship, being made of corruptible materials, telling less than perfect time, and so on, would argue strongly for human authorship.

The same problem arises with the anthropic principle: if the purpose of the universe is life, while such life is *possible* in the universe (and not in most other possible universes with different physical constants), life as we know it is only possible in a limited time span of cosmic evolution—from the time the universe is old enough to contain heavy elements created by previous-generation stars, to the time all stars burn out. (I am excluding here the interesting but highly speculative hypotheses that exotic types of physics-based consciousness could exist indefinitely into the future.) Also, during this limited time, it

seems that life (or at least complex life) can only evolve in rare circumstances: on a planet with a stable orbit, not too close or far from the galactic center, with a gas giant in its star system to help minimize impacts from comets and other space debris.<sup>9</sup> An even stronger case for suboptimality can be made if one supposes that the purpose of the universe is not just life itself, but intelligent, self-conscious, or religiously devout life. All these forms of life (on Earth, at least) did not exist until what is, relatively speaking, a blink of an eye compared to the time all other life forms existed. And intelligent/religious life is confined to one (or a few) new species among millions.

What does this show us? While the number of life-supporting compositions of the universe's basic constants is small (relative to those which do not support life), it is very likely, greater than one. If the universe is fine-tuned for life, it is not *as* fine-tuned as it could be. There is no good reason to suppose that our universe is the one that allows the longest time for life to exist (from among all of the life-supporting compositions of its basic constants), or the one that allows conscious life the longest time to do so, or allows for the maximal amount of biomass (or intelligent brains/minds, etc.) among all life-supporting possible universes. Nor is it likely that it has the most elegant mathematical representation, or smallest number of elementary particles, or any other plausible criteria for a universe that is not only tolerably well designed to allow life, but has the *best design* for life.

#### Why Bad Things Happen to Good Animals

In addition to the argument from imperfection being an effective foil against the anthropic principle, Darwin added a related argument: why would an omniscient, omnipotent, and omnibenevolent God create, for instance, the parasitic wasp *ichneumonidae*, "feeding within

the living bodies of caterpillars"?<sup>10</sup> Indeed, for those who consider suffering and evil to be a kind of imperfection (as Darwin did), the argument from evil is one type of argument from imperfection.

Nevertheless they are not the same. Even if all evil is a kind of imperfection, not all imperfection is a kind of evil. The argument from imperfection might apply where the argument of evil does not: the human appendix, for instance, might be evidence for imperfection (having no discernable purpose) without being particularly relevant to the argument from evil.

In my opinion, the argument from imperfection in general, and the argument from evil in particular, have been underused against the fine-tuning argument. In fact, the whole point of the fine-tuning argument seems to be to provide an argument from design for God's existence that would not be vulnerable to the problem of evil. This is done in two ways by those who employ it: first, the purpose of the universe is broadly defined as being for the existence of life (or perhaps conscious life, or religious life, etc.), but it does not include any requirement that such life not suffer pain or injustice. Second, by concerning itself with the fine-tuning of the universe's basic constants, it allows for a concept of God who perfectly designed the constants but then (for whatever reason) did not interfere in the universe beyond its very creation, and thus cannot be held responsible for later suffering.

But even if the designer merely wished to create the best universe for life's existence, regardless of how much it will suffer, it seems very likely that it did not succeed in so doing. In this case, it seems that the argument from imperfection succeeds even when the argument from evil fails. If the universe was designed for life, it was not perfectly designed; so it cannot be used to argue for a perfect designer. ▼

#### References

1. Swinburne, R. 1990. "The Argument from the Fine-Tuning of the Universe." In Leslie, J. (ed.), *Physical Cosmology and Philosophy*. New York: Macmillan.
2. Rees, Martin. 1997. *Before the Beginning*. Reading, MA: Helix Books.
3. Hurben, M. "On Universes and Firing Squads." Online article: [http://www.infidels.org/library/modern/michael\\_hurben/univ.html](http://www.infidels.org/library/modern/michael_hurben/univ.html)
4. Peirce, Charles S. 1931-1958. *The Collected Papers of Charles Sanders Peirce*, eds. C. Hartshorne, P. Weiss (Vols. 1-6) and A. Burks (Vols. 7-8). Cambridge, MA: Harvard University Press, 2: 684.
5. Stenger, Victor. 1999. "The Anthropic Coincidences: A Natural Explanation". *Skeptical Intelligence*, vol. 3, No. 3, July.
6. Barrow, John D. and Tipler, Frank J. 1986. *The Anthropic Cosmological Principle*. New York: Oxford University Press.
7. Hein, P. 1968. "Nothing is Indispensable: A Grook to Warn the Universe Against Megalomania." In *Grooks 2*. New York: Doubleday.
8. Paley, William. 1802. *Natural Theology; or, Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature*. Whitefish, MT: Reprint, Kessinger Publishing.
9. Ward, Peter and Brownlee, Don. 2000. *Rare Earth: Why Complex Life is Uncommon in the Universe*. New York: Springer-Verlag.
10. Darwin, Charles. 1859. *On the Origin of Species by Means of Natural Selection*. London: John Murray.

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