Every Possible World Exists, and Each is Necessarily a Loop

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Abstract

Why is there something rather than nothing? In "Why Anything? Why This?", Derek Parfit canvasses several ultimate explanations for existence and their pitfalls, conceding that the possibility for any cogent answer to the question is unlikely. However, by shifting our intuitions on nothingness, a plausible explanation can be given. I provide such an explanation first by giving a model of reality common to most explanations, focusing on simplicity as an ultimate explanation. Then, by developing an account against the coherence of Absolute Nothingness, I critique the view that the simplest reality is one devoid of anything. In so doing, I provide a modal argument against the possibility of Absolute Nothingness. Thereafter, I underscore the difference between ontological and explanatory simplicity, showing that though a finite reality (in either number of worlds or scope) is ontologically simpler than an infinite one (in both number and scope), such a finitude is explanatorily more complex and arbitrary. I then argue that an unbounded Maximality of infinitely many, causally disconnected worlds (the opposite of Absolute Nothingness) is the simplest ground (or default state) for our existence, requiring no explanation whatsoever. As a corollary, I also show how such a maximality requires that all possible worlds, including ours, be causally circular.

Keywords

Modal realism, grounding, possible worlds, nothingness, global metaphysical theories

1. Introduction

Why is there something rather than nothing? In "Why Anything? Why This?", Derek Parfit canvasses several ultimate explanations for existence and their pitfalls, conceding that the possibility for any cogent answer to the question is unlikely [1]. Though this perennial problem is seemingly intractable, I believe that many explanations fail due to foundational assumptions regarding the nature of nothingness. By shifting our intuitions on nothingness, a plausible explanation can be given. In this paper, I provide such an explanation first by giving a model of reality common to most explanations, focusing on simplicity as an ultimate explanation. Then, by developing an account against the coherence of Absolute Nothingness, I critique the view that the simplest reality is one devoid of anything. Thereafter, I underscore the difference between ontological and explanatory simplicity and argue that an unbounded Maximality (the opposite of Absolute Nothingness) is the simplest explanation for existence. I conclude by addressing objections to Maximality and highlighting areas for further research.

2. Reality, Simplicity, and Nothingness

To begin, there are two kinds of realities that I wish to describe: *Local reality* and *global reality*. A local reality is a world much like our own – a universe full of (un)observable physical phenomena. Were we to discover, say, that phenomena exist(ed) outside of what we know to be the observable universe, we would need to redefine the boundaries of our observable universe to include such phenomena. Anything that is truly outside of our local reality cannot interact with those inside since every local reality is causally isolated from everything outside of it [2]. Other names for local reality are "possible world", "local possibility", "universe", or just "world".

Global reality is the collection of all local realities that obtain. If each local reality is a kind of set-theoretical element, a global reality is the universal class containing all the elements (that is, those local realities that obtain) as members. There is only one global reality, and it may either have no local realities, some finite number, or infinitely many. Again, no local reality within a global reality may interact with another local reality. Were they to interact, they would not be separate realities but rather part of the same. Perhaps it goes without saying, but since it is rather difficult to argue against the apparent fact that we exist in some local reality (namely, our universe), we know that at least one local reality obtains in a global reality. Other names for global reality are "Universe", "World", or "cosmic possibility".

There are presumably infinitely many local realities that could obtain in global reality, but which ones in fact obtain? In answering this question, Derek Parfit suggests that we consider the explanatory merits of various Selectors that select which local realities obtain based on some feature(s) of those local realities [1]. One such Selector might select based on goodness: Every local reality that meets some threshold of goodness obtains. Another Selector might select based on likeness to our local reality: Every local reality that has the same initial conditions as, but different quantum outcomes than, our local reality obtains. So, Selectors explain why one set of local realities obtains rather than some other by positing some set of features required for inclusion in global reality. Importantly, selection does not necessarily involve a literal selection of some local realities over others. Rather, a Selector simply describes some feature present in local realities that explains their existence.

Simplicity as a Selector selects the set of local realities constituting global reality that has the simplest explanation. For example, a set of local realities with simple laws and simple entities would be selected over a set with complex laws and complex entities. And though our local reality might seem complex, it is relatively simple when described as a set of supposedly fundamental laws governing the interactions of the supposedly fundamental particles within it. Simpler still would arguably be a global reality whose local realities have no entities, let alone one with no local realities. That is, it seems simplest that nothing be selected and that global reality be empty (call this simplest possibility "Absolute Nothingness").

So, compared to the potential complexity inherent in an explanation for existence, the obtaining of Absolute Nothingness requires a relatively simple explanation: None. There are fewer things in Absolute Nothingness, namely none, that require an explanation for their existence. Moreover, there are fewer positive facts (again, none), facts involving the possession rather than absence of some property (for example, "humans are mortal" rather than "humans are not immortal"). Conversely, global realities with anything in them are necessarily more explanatorily complex than Absolute Nothingness. For example, there are facts grounding a

person's existence, ordinarily their birth, lineage, and an entire causal history of events arguably going back to the Big Bang. Any explanation would need to account for why that complex causal chain obtained. And were there no explanation for a person's existence, then their existence would be a random, brute fact (that is, an inexplicable, chancy outcome). But absolute nothingness is not something for which any explanation seems necessary – you need nothing to ground nothing(ness). So, the nonexistence of everything has more explanatory simplicity than the existence of anything.

The trouble with endorsing Simplicity as a Selector is that if Absolute Nothingness does not obtain, then it seems that Simplicity cannot be the Selector. And again, as evidenced by our existence, Absolute Nothingness did not obtain. Moreover, even if Absolute Nothingness were somehow proved to be impossible, our local reality appears far more complex than necessary (we can envision far simpler local realities with, say, just one singular particle suspended in space). So, how can there be such a comparatively complex local reality if Simplicity is the Selector?

A more troublesome worry is the emergence of an explanatory trilemma. Eschewing brute facts, explanation will either result in an infinite regress, circularity, or supposedly self-evident but arbitrary first principles. And because we have something in need of explanation, namely existence itself, we will likely end with one of these rather unsatisfactory results. So, because Absolute Nothingness did not obtain, we appear to be forced to accept one of the horns of this Münchhausen trilemma.

3. A modal argument against Absolute Nothingness

In showing how we can avoid the trilemma, I will first give a modal argument against the possibility of Absolute Nothingness. Consider the following past modal: "It could have been the case that absolute nothingness obtained." In possible world semantics, if something is possible, then there is at least one possible world where it obtains. For example, if I say, "It is possible that it is raining in Manhattan", I am asserting that it is possible that our local reality is the local reality in which it is raining in Manhattan at the time of the assertion. It may however turn out otherwise. Either is possible (from the perspective of the uncertain asserter), and we can, in principle, observe which of the two local realities corresponds to ours by checking the weather report, going there in-person, and so on. We might even rule out the existence of one of the local realities if it is somehow found to result in an impossible state of affairs. So, had Absolute Nothingness been a genuine possibility, there would have to have been a correspondent local reality where Absolute Nothingness obtained. But Absolute Nothingness is a global concept – it is a complete absence of local realities, the very constituents of possibility. For anything to be possible, there must be a correspondent local reality where that possibility obtains. And because it is impossible for there to be a correspondent local reality where no local realities exist, it could not have been the case that Absolute Nothingness obtained. Absolute Nothingness is, modally speaking, impossible.

The modal argument opponent might suggest that the modal argument begs the question by presupposing the existence of local realities by which to make absolute nothingness impossible. But the modal argument opponent posits the possibility of absolute nothingness on modal

grounds.

Modal argument opponents might also claim that to ask whether absolute nothingness was possible is really to ask whether the existence of at least one local reality is necessary. In so doing, we avoid presupposing the contradiction-invoking possibility of impossibility. But to ask whether the existence of at least one local reality is necessary is just to ask whether it was impossible for there to be no local realities.

4. Maximality as the default state

So, the possibility of Absolute Nothingness seems quite impossible. And supposing then that it is impossible, we are left with two options: Either some finite number of local realities exist or infinitely many local realities exist.

It would be far simpler if a finite number of local realities were to exist, especially if there was only one. But Selectors which privilege the existence of some local realities over others cannot explain away their arbitrariness, much less give a coherent explanation. If it is only contingent that some local realities are selected over others, then there seems to be no compelling reason why we should favor a finite global reality (in either scope or number) as opposed to an infinite one. And finitude, both in number and scope, does not entail (explanatory) simplicity – quite the contrary. For if there are a finite number of local realities, there must be a reason for some number over another. But giving an explanation for a finite number of local realities is no small endeavor. And if we narrow the scope of local realities to only one set, say, the set of local realities that have physics identical to our local reality, we again encounter a difficulty in giving a simple explanation for why any other set of local realities is ruled out. Thus, finitude does not entail simplicity.

Moreover, nearly all views that posit a finitude or the primacy of Absolute Nothingness suffer from the kind of ontological inegalitarianism of which Robert Nozick warns in *Philosophical Explanations*:

> "The question 'why is there something rather than nothing?' is posed against the background of an assumed inegalitarian theory [...] To ask 'why there is something rather than nothing?' assumes that nothing(ness) is that natural state that does not need to be explained, while deviations or divergences from nothingness have to be explained by the introduction of special causal factors. There is, so to speak, a presumption in favor of nothingness" [3].

And though Absolute Nothingness was the assumed *default state* (that is, the simplest state of global reality) given its ontological simplicity, it has proven rather impossible to assume. Many theories start with the presumption of this deceptively incoherent nothingness and then try selecting bits of reality to add to it, resulting in complex explanations with arbitrarily deflated ontologies.

So, rather than assume Absolute Nothingness, it will perhaps prove more useful to explore the potential explanatory simplicity of Absolute Nothingness's opposite: *Maximality*. Maximality is the obtaining of a global reality consisting in all local realities. Virtually nothing is precluded, perhaps even those local realities that would appear impossible to us (that is, realities that

contravene logic as we understand it). So, if Simplicity truly were the Selector (that is, if simplicity of explanation was the feature possessed by every local reality that obtains), and if the default state is Maximality, then our local reality's existence obtains because it is one of an infinity of local realities. That is, defaulting to Maximality requires no additional explanation for the obtaining of our local reality since our local reality is already included in it.

Paradoxically, the simplest explanation when defaulting to Maximality is that there is no need for selection, no need for Selectors, and therefore, every local reality always was and always will be a member of the universal class of all local realities. Thus, our local reality's existence is not a brute fact, and because we need not explain its existence, we avoid the inevitability of explanations resulting in circularity, infinite regress, or arbitrary, supposedly self-evident first principles.

But if every local reality has always been, then is every local reality without a beginning? Is it not possible that some local realities are finite in their duration? As simple as Maximality was made out to be, it seems that the eternality of every local reality requires a worryingly complex explanation.

Such objections result again, I believe, due to the unfortunate but intuitive metaphor of global reality as a container. It might be better to think of each local reality as a causally isolated, self-contained, n-dimensional spacetime block. To understand the shape of such blocks, consider the path of a photon in a 4-dimensional spacetime block: Three dimensions of space and one dimension of time. This photon might find its origin as light emitted in the formation of a star and travel outwards until it gets sucked into a black hole or potentially undergoes photon decay, breaking up into smaller, more fundamental entities. So, looking at our 4-dimensional block, we might zoom in on the path of the photon, and it should resemble something like a long, thin line representing every moment of its existence from its inception to its termination. Now, do this for every entity (as a line) in local reality, each bending with gravity and colliding with others. This maximal collection of lines as well as the extension of the space containing them describes our universe as a four-dimensional block.

But does no block have a beginning? Suppose that a local reality had a beginning. If a local reality had a beginning, then nothing preceded its beginning. That is, it came from nothingness. But nothing comes from nothingness. So, local reality cannot have a beginning. Suppose, however, that it does not have a beginning. Then, for any time t_i in that local reality, there is a time t_{i-n} before it. But this results in an infinite regress, and we would be without an explanation for our existence. For if we exist now, but there was an infinite amount of time before our existence, then it would have taken an infinite amount of time to reach the present [4]. That is, local reality would have never reached the present. So, local reality cannot be without a beginning. We appear to be at an impasse whether we admit of a beginning.

The solution, proposed variously throughout history (for example, by Pythagoras in [5], with eternal recurrence in [6] and [4], conformal cyclic cosmology in [7]) is that the shape of local reality is a loop. We avoid the bruteness and arbitrariness of a beginning preceded by nothing, and we avoid a causal chain that descends into infinity with no determinable length. And though we do have causal circularity, it need not be vicious. We can avoid explanatory circularity by explaining it as one of an infinity of such circularities whose existence is guaranteed by Maximality.

But if Maximality is unbounded, then would not impossible local realities exist? In fact, if

logically impossible local realities exist, then the very arguments for the necessity of the default state of Maximality would paradoxically be undermined by Maximality. For if nothing, not even the laws of logic, constrain Maximality, then the so-called laws of logic used in everyday reasoning would be a mere artifact of convention and not of truth. Thus, whatever theory one might posit to account for existence would be true, false, both, and neither. But if this conclusion is unacceptable, then one would need to explain why something like the laws of logic necessarily preclude Maximality from entailing the existence of logically inconsistent local realities. However, grounding the scope of Maximality on the laws of logic would be grounding existence on inexplicable, self-evident first principles, one of the three horns of the Münchhausen trilemma that we were trying to avoid by positing the necessity of Maximality.

This is probably the most serious objection to a Maximality that cannot demonstrate the necessity of a minimal set of first principles including the most fundamental law of logic, The Law of Noncontradiction (something and its negation cannot both be true). Perhaps we are forced to accept one horn of the trilemma: The grounding of explanation in first principles, primarily the Law of Noncontradiction. So, despite our best efforts to avoid having to explain the existence of Selectors or Filters by shifting our intuitions to a default state of Maximality, this new default state would be minimally constrained by the Law of Noncontradiction, a merely self-evident first principle without any possibility for explanation [8].

One tentative response to this objection is that the Law of Noncontradiction and other laws of logic might simply be a feature of some but not all local realities [9]; our local reality appears to be one of them. That there could exist causally disconnected impossible local realities does not threaten the existence of our plausibly consistent local reality.

And though Maximality might not be bound by the laws of logic, that fact does not necessarily undermine the thesis of this paper. From the position of our logical law-abiding local reality, Maximality is the default state. At another local reality with different laws, some other theory might be true. But what matters to us is what is true at our local, (probably) logically consistent reality, not what is true at some causally disconnected, irrelevant, and inconsistent one. And what at least appears to be true at our local reality is that Maximality is the default state that grounds our existence. So, truth, at a local level, is preserved.

5. Conclusion

In sum, I provided a modal argument against the possibility of Absolute Nothingness. Additionally, I gave reasons against a global reality that is finite in either its scope or number of local realities. Given the impossibility of Absolute Nothingness and the arbitrariness of finite global realities, I then argued against the presumption of Absolute Nothingness as the most natural, default state of global reality and propounded Maximality as the default state. Assuming Maximality as the default state, I then dispensed with Selectors entirely as Maximality alone provides the simplest and most coherent explanation for existence. I concluded by addressing objections to Maximality and noting troublesome implications. And though it remains an open question as to whether the laws of logic are necessarily true (that is, abided by all local realities), our local reality would nevertheless exist, and Maximality would nevertheless be (locally) true.

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