

The Failure of the Multiverse Hypothesis as a Solution to the Problem of No Best World

Abstract: The multiverse hypothesis is growing in popularity among theistic philosophers because some view it as the preferable way to solve certain difficulties presented by theistic belief. In this paper, I am concerned specifically with its application to Rowe's *problem of no best world*, which suggests God's existence is impossible given the fact that the world God actualizes must be unsurpassable, yet for any given possible world, there is one greater. I will argue that, as a solution to *the problem of no best world*, the multiverse hypothesis fails. To defend my thesis I will first define the multiverse hypothesis, articulate *the problem of no best world* and how the multiverse hypothesis is thought to solve it. I will then show that the solution fails by articulating two problems that have been mentioned, but not developed, in the literature—what I call *the problem of no highest standard* and *the problem of multiverse cardinality*. In each case, after articulating the problem, I will offer possible responses to the problem, and show why those responses are inadequate.

Key Words: Multiverse, the multiverse hypothesis, William Rowe, Klaas Kraay, greatest possible world, greatest possible universe, problem of no best world, the problem of no highest standard, cardinality, the problem of multiverse cardinality, Georg Cantor, cardinality of the multiverse, proper classes

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The multiverse hypothesis—the suggestion that there exists more than one universe—is as old as the ancient Greeks.¹ Recently, it has been growing in popularity within the community of scientists² and philosophers.³ Specifically, the multiverse hypothesis is growing in popularity among theistic philosophers who view it as the preferable way to solve certain difficulties presented by theistic belief.⁴ (One need not be a theist to think the multiverse solves those difficulties, but for ease of reference, I will refer to philosophers who do as “multiverse theists.”) One such difficulty is the seeming impossibility of

¹ Although, because their conception of creation was considerably different, the ancients (and others who considered the hypothesis, such as the medievals) formed their hypothesis in a different way than we do now. The ancients wondered if there were other “geocentric systems” (with orbiting sun, moon and stars). For the history of the multiverse hypothesis see Munitz (1951).

² For a very straightforward and concise list of scientists who espouse the multiverse hypothesis, and an articulation of their motivations, see Dawkins (2006) pp. 145-147.

³ Philosophers who adhere to the multiverse hypothesis include Smith (1986), Whitaker (1988), Leslie (1989), Smart (1989), Clifton (1991), van Inwagen (1993), Parfit (1998) and McGrath (1998). Many do so because they find the “fine tuning” of our universe evidence for the existence of a multiverse. White (2000) has very convincingly argued that this is a mistake.

⁴ See McHarry (1978), Forrest (1981), Coughlan (1987), Parfit (1991, 1992), Stewart (1993), Forrest (1996), Turner (2002), Draper (2004), Hudson (2005), O'Connor (2008, Ch 5) and Kraay (2005, 2008, 2010, and 2012).

God's existence given the fact that the possible world that God actualizes must be unsurpassable if he is to be the greatest possible being, yet it seems that for any given possible world he could actualize, there is one greater. This problem has been dubbed *the problem of no best world*.

The problem of no best world has received much attention in the literature, as has the multiverse hypothesis and its viability as a response to this problem. But, I will argue, the multiverse hypothesis definitively fails to solve *the problem of no best world* for reasons that have been mentioned in the literature but have not been fully developed. One reason is that the multiverse hypothesis seems to give rise to a problem parallel to the one it was introduced to solve—what I will call *the problem of no highest standard*. The second reason is that yet-unanswered questions about the cardinality of the proposed multiverse give rise to the very same problem the multiverse hypothesis was introduced to solve—that there is no best possible world. For those unfamiliar with the literature, I will first define the multiverse hypothesis, articulate *the problem of no best world* and the way the multiverse hypothesis supposedly solves it. I will then articulate *the problem of no highest standard*, possible responses to the problem and why they fail. Subsequently, I will do the same with what I have dubbed *the problem of multiverse cardinality*.

I. The Multiverse Hypothesis

If “universe” is simply defined as “all there is,” then the multiverse hypothesis is false by definition; there cannot be multiple collections of everything that exists. But this is not the definition that those who defend the multiverse hypothesis have in mind. A universe—or what could be called a “simple universe”—is a collection of matter that is causally interrelated but causally closed; i.e., for any given piece of matter in a simple universe it can, necessarily, only causally interact with different matter in that same universe. Thus, interactions between simple universes are impossible.

A multiverse is a collection of simple universes. However, it is important to note that simple universes are not the same as *logically possible worlds*. One logically possible world may contain many

universes, another may contain one, another none. The multiverse hypothesis suggests that the logically possible world which is the actual one contains a number of simple universes; i.e., it suggests that the actual world is a multiverse. How could a logically possible world contain multiple universes—i.e., how could interaction between multiple collections of matter in the same possible world be impossible? I know of no explicit consensus among theists on this point. One suggestion belongs to Hudson (2005): they exist on different dimensional planes. But this may be problematic. Monton (2010) has argued that such a multiverse would not be able to house all the universes the theistic multiverse would likely contain. Regardless, as long as the simple universes in the collection co-exist, the collection is said to be a multiverse.

II. The problem of No Best World, and the Multiverse Response

What I have been calling *the problem of no best world* was first raised by Rowe in 1993, and was defended at length in his 2004 book. Crucial to his argument is Principle B:

If an omniscient being creates a world when there is a better world that it could have created, then it is possible that there exists a being morally better than it. (2004, p.112)

This seems clear enough. And since God (classically conceived) is the greatest possible being, and thus there can be no possible being who is morally better than him, it follows that God cannot actualize a given world if there is a better world that he could have actualized (i.e., he cannot actualize a surpassable world). But this becomes problematic for theists when one realizes that there is no possible world that is unsurpassable. For any given possible world, no matter how good it is (by whatever standard of good and evil you choose), something could be changed to make it better. (For example, even if every evil could be eliminated leaving only good, no matter how many goods there are in a world, more could always be added as an improvement.)⁵ Thus it seems that there is an Infinite

⁵ Many theists endorse this view, such as Plantinga (1974, p. 33-34), Swinburne (1998, p. 8-9) and O'Connor (p. 113). Others disagree—like Leibniz who not only insists that there is a best possible world, but that the actual world is identical to it. To

Hierarchy of Possible Worlds, each being better than the last, but none being the best of all. (Let us call this the “IHPW.”) So, for any given possible being who chose to actualize a possible world, that being could be outdone by a possible being who chose to actualize a greater possible world in the IHPW. So the existence of God—the greatest possible being—is impossible.⁶

Although not in reply to *the problem of no best world* specifically, William Wainwright (1988) has argued that God cannot be faulted for creating a world that is inferior to another if not doing so can't be avoided (as it couldn't be if there is an IHPW):

The critic complains that God could have created a better order. But even if God had created a better order, He would be exposed to the possibility of a similar complaint. Indeed, no created order better than our own is such that God would not be exposed to the possibility of a complaint of this sort. The complaint is thus inappropriate. Even though there are an infinite number of created orders better than our own, God can't be faulted simply because He created an order inferior to other orders that He might have created in their place (p. 90).

One may think this could be an adequate response to the problem Rowe has raised, but Rowe clarifies his argument by showing why it does not:

There is something forceful and right about this reasoning. If, no matter what world and omnipotent being creates, there is a morally better world that being can create, then, provided that the omnipotent being creates a significantly good world, it cannot be morally at fault for not having created a morally better world. But our question is whether a being in such a situation can be an absolutely perfect being. And for reasons I have already uncovered, I think the answer is no. A being is necessarily an absolutely perfect being only if it is not possible for there to be a being morally better than it. If a being creates a world when there is some morally better world that it could have created, then it is possible that there be a being morally better than it. (1993, p. 230).

support this idea, one might point out that thinking you can simply add “good things” to a world to make it better is a bit utilitarian; other ethical theories might suggest that there are other things to consider. For example, maybe “unity” or “balance” is an intrinsic good, and there is a possible world that is perfectly balanced, and adding any good to it would make it unbalanced and worse. Philosophers making such arguments would have to worry about the fact that the actual world does not seem to be “the best” by any ethical theory, but since I am instead worried about how philosophers who do think there is no best possible world deal with the problem Rowe has raised, I will not explore this issue further.

⁶ It is important to realize that this not a “divine paralysis” problem. Some have wondered how God could choose one thing among many when there clearly is no best choice, given that God must always act with a reason. Since there is no reason to choose one over the others, wouldn't God be forever flummoxed, scratching his head, unable to make a choice? Theists avoid this problem by suggesting that God can realize that making some choice is better than none, and then choose one at random. Whether or not this is actually possible is debatable (see Kraay, 2008), but this is not the same problem. To see this, notice that one could raise the divine paralysis problem even if God could create an unsurpassable world—say by creating one of many worlds tied for the title of greatest world.

In short, even though such a being can't be morally faulted for not actualizing a better world, it still can't be an absolutely perfect being (a being who is the greatest possible) since there is a possible being who is superior—one that would actualize a better world. The fact that there is no best possible world doesn't mean the greatest possible being need not actualize the greatest possible world; it means that the very concept of a greatest possible being is problematic—that the existence of the greatest possible being is impossible.⁷ After realizing that a property clearly required for perfection is impossible to possess, one might say, the correct deduction is to conclude that perfection is unattainable—not to conclude that perfection doesn't really require that property.

Nevertheless, some theists have granted the existence of the IHPW, but argued that it does not preclude the existence of a greatest possible being. These include Langtry (1996, 2006), Leftow (2005a, 2005b), the Howard-Snyders (1995, 1996), Morris (1993) and Hasker (2004, 2005). (For criticisms of their arguments, see Kraay (2010b)). But others have avoided, rather than resisted Rowe's argument, by denying the existence of an IHPW. There being no greatest possible world would, they grant, seem to be problematic—but fortunately, such theists suggest, *there is* a best possible world. It is through the multiverse hypothesis that theists often defend this claim, and so it is to the multiverse solution to *the problem of no best world* that I shall now turn.

The theists' multiverse solution to *the problem of no best world* begins with the following observation: The supposition that God is the greatest possible being does entail that the possible world he actualized must be unsurpassable. But *the problem of no best world* arises because of the assumption that possible worlds consist of only one universe. Let us grant, they suggest, that for any given possible *universe*, no matter how good it is, improvements could be made. So there is an Infinite Hierarchy of Possible Universes (IHPU). However, there are possible worlds that contain multiple universes. In other

⁷ One also might derive from this that a perfect being would not create any universes. After all, if all that exists is a perfect being, and nothing else, everything is perfect. If that were true, then the very existence of the universe would be evidence against the existence of God—since creating it is exactly what you would expect God not to do. This would be equally problematic for the theist, but it is not the problem I am considering here. This problem is raised, however, by Schellenberg (2007, pp. 198-199) and addressed by O'Connor (2008) at the beginning of his fifth chapter, which is on the multiverse hypothesis.

words, some possible worlds are multiverses. God wouldn't have to just create one universe, but could create a multiverse, and in doing so God could actualize the greatest possible world.

One is immediately inclined to wonder: Wouldn't certain multiverses be better than others, and wouldn't there be—like there is with universes—an infinite list of multiverses where improvement would always be possible (where each one is better than the next but no one is the best)? In other words, since there is an Infinite Hierarchy of Possible Multiverses (IHPM), is there not still an IHPW, and thus don't we just find ourselves with the same problem?

The multiverse theist answers by pointing out that there is an infinite number of universes to choose from, and thus God could actualize a possible world with infinite value by creating an infinite multiverse—a possible world that contains an infinite number of universes. The aggregate value of such a world would be the sum of the value of all the universes in it,⁸ and thus would be infinite; and since no value is greater than infinity, such an infinite multiverse would be unsurpassable—it would be the best possible world.⁹

This is a bit simplistic, however, because the multiverse theist recognizes that not all infinite collections of universes are on par; some infinite multiverses would not be the greatest possible world even if they all had the highest aggregate value (i.e., an infinite value).¹⁰ Why? Because some universes would be exceptionally bad and their creation¹¹ would not be worthwhile, and any multiverse that included even one of them would not be the best possible world. As Kraay (2010a) puts it, “If a being creates any universe that is unworthy of creation, then that being is surpassable.” (p. 359) Which universes would be worthy of creation? O'Connor (2008) suggests that the threshold of worthiness could

⁸ There are other things that might be relevant to a multiverse's value: variety, the presence or absence of non-spatiotemporal contingent entities. But the aggregate value of the set of universes that make up a multiverse is usually what multiverse theists speak of, so for simplicity I will restrict myself to that notion.

⁹ Monton (2010), has raised some interesting problems regarding the possibility of aggregating values of universes, but I will leave such objections aside for the sake of argument.

¹⁰ The idea that there is a highest aggregate value will be challenged later.

¹¹ To be precise, I perhaps should say their “creation *and* *sustenance*” would not be worthwhile, but for simplicity I will forego mentioning the latter.

be vague,¹² but there are a number of specific suggestions regarding where it would lie. Monton (2010) mentions (and criticizes) a number of options. Perhaps only universes with more good than evil are worth creating—or perhaps only universes with at least as much good as evil. Perhaps Open Theism is true, and God only actualizes worlds where there is no chance that free creatures could make decisions that create more overall evil than good; maybe he only creates universes where it is as least as likely as not that such a thing would happen.

Regardless, despite the fact that the aggregate value of a multiverse with every worthwhile universe but also some unworthy universes would still be infinite (since the collection contains an infinite number of worthwhile universes and only a finite number of unworthy ones)¹³ the collection could be made qualitatively better by subtracting the unworthy universes. In other words, the “quality” of a multiverse (that is, whether or not it is the best) is not merely a result of the sum of its parts (i.e., its aggregate value); the best possible world could not contain unworthy universes.

However, the multiverse theist argues, the possible world that contains all¹⁴ and only the infinite number of universes *worth creating* would be the greatest possible world. It’s important to note that theists admit that not every universe in this multiverse would be perfect, but they do maintain that since

¹² Chapter 5, endnote 10 (p. 158). I will return to this suggestion later.

¹³ The sum of any finite collection of negative numbers, and infinity, is still infinity.

¹⁴ It is worth noting that, although he develops his view further, O’Connor (2008) does not think that the greatest possible world must contain *all* of the worthy universes. He suggests that there are many best possible worlds; any infinite collection of worthwhile universes (even if some worthwhile universes are left out) will have the same aggregate value (and the same, to use my term, “quality”). As O’Connor put it, “... [God] could also avoid the unwanted consequence by creating every other [worthwhile] universe, or every third universe, or every *n*th universe, for all finite values of *n*. So, at least as far as our puzzle is concerned, God retains an infinity of adequate choices among the super-universes [i.e., multiverses]... [As] we go up the scale of super universes (unlike universes), eventually the values become infinite, in such a way that the hierarchy seems to ‘flatten out.’ The super universe God creates is one of these equally top valued members...” (p. 177) In other words, there is a maximal aggregate value shared by all infinitely-membered multiverses that are made up of universes above the worthiness threshold, and God could create any of them and still create the greatest possible world. One problem, similar to one realized by Monton (2010), is that if God can leave out worthy universes because only maximal aggregate value matters, God could also include any finite number of unworthy universe too, since such a multiverse would still have an infinite aggregate value. In O’Connor’s defense, he does develop his view further and suggests that maximal aggregate value would not actually be of concern to a perfect being. But since he does his in response to a concern I raise in the last section, I will save my commentary on that development for later. But, ultimately, most multiverse defending theists seem to disagree with O’Connor and assume that there is only one unsurpassable possible world—the one that contains all and only the worthwhile universes. Kraay (2010a) is an example. It doesn’t matter for the point I am making here, so I will assume the greatest possible multiverse has all the worthy universes, for the sake of simplicity, and save further discussion of this topic until later.

the collection has the maximum aggregate value possible, and it contains no unworthy universes, it is unsurpassable—nothing could be added or subtracted to make it better. Thus there is a greatest possible world, after all.

III. The Problem of No Highest Standard

A new problem, however, arises from the solution itself. Recall, *the problem of no best world* suggested that there is no greatest possible world for God to actualize. The multiverse theist solved the problem by suggesting that a possible world comprised of an infinite number of universes can be the greatest possible world. Although an infinite multiverse that included “unworthy” universes would not be the greatest possible world, the multiverse that included all and only the universes that are “worthwhile” would be—thus *the problem of no best world* is supposedly solved. But a new problem arises—one that is mentioned by Kraay (2012, p. 149) but not developed anywhere in the literature—given that it seems there would be no best criterion for delineating worthiness. I will lay out this problem, and then consider and reject possible solutions.

The Problem:

Let us grant for the sake of argument the multiverse theist’s supposition that there is an objective criterion for evaluating universes and thus “ranking” them, in turn creating the IHPU.¹⁵ According to the multiverse theist, when evaluating possible worlds for actualization, God chooses all the universes he deems worth creating, and rejects the others because they are not—in short, God draws a *line-of-worthiness* in the IHPU and actualizes a possible world that contains all and only universes above that line. However, because the IHPU is infinite, for anywhere God drew that line there would be an infinite number of higher places to do so. Yet doing so would clearly be setting a higher standard. Thus, no matter where God set his standard of worthiness, there would be an infinite number of possible beings

¹⁵ Once again, since I am not defending the multiverse hypothesis, dealing with the objections raised by this suggestion is not my burden to bear.

each with a higher standard than God. Yet, any being with a higher standard of worthiness is (all other things being equal) clearly a greater (higher, more perfect) being; any being who finds a certain level of evil permissible or “allowable” is, at the least, morally inferior to one that does not—inferior to one that does find that level of evil morally impermissible.¹⁶ So, since there is no highest criterion for delineating worthiness, and any being with a higher standard than another is a greater being, a greatest possible being is (still) impossible.

Let us now look at various possible solutions to this problem and why they fail.

Solution 1: God is not required to do the impossible

One might be tempted to respond by suggesting that, because the inability to do that which is logically impossible (e.g., create square circles) does not detract from God’s perfection, employing the best criterion for worthiness—when there is none—is not required for perfection. Thus, one might conclude, since no matter where God draws his line of worthiness there would be a higher line, God can’t be morally blamed because he drew a line that is lower than another.

Notice, however, that this line of reasoning parallels, precisely, the line of reasoning given by Wainwright (1988) that I considered as a response to the original *problem of no best world*. Consequently, not only does it fall prey to the same objections as that original response¹⁷ but the multiverse theist cannot embrace this solution. It was their rejection of this line of reasoning that led them to embrace the multiverse solution in the first place. If they find this line of reasoning convincing, they should have embraced it as the solution to *the problem of no best world* and been done with it. In other words, embracing this solution would be inconsistent with their motivations for proposing the

¹⁶ Although not in the context of a discussion about the multiverse, Rowe (2004, p. 155) defends the idea that beings with higher standards are “better” in terms of being G1 and G2, where G2 is better than G1 because G2 is unwilling to create W1 yet G1 is, and W1 is a worse world than the world G2 is willing to create (W2).

¹⁷ Notice also that this solution entails that God could embrace any criterion of worthiness and still be perfect. If so, God could chose a criterion that deemed a universe that is worse than hell as worthy of creation. But clearly he could not do so and be the greatest conceivable being. One might suggest that he would only choose a criterion worthy of selection, but this would simply raise the same problem all over again.

multiverse hypothesis. All in all, if the fact “there is no best criterion of worthiness” is not a threat to God’s perfection, then neither is the fact “there is no best possible world.” So, even if others find this solution convincing, the multiverse theist cannot. (And if one does find this objection convincing, one must agree with my overall point that embracing the multiverse hypothesis as a response to *the problem of no best world* is a mistake. One should have, instead, embraced this response to begin with.) Thus, this first response is inadequate as a reply to *the problem of no highest standard*.

Solution 2: God’s standard is the best; there is an objectively best standard of worthiness

One might be inclined to object by insisting that a being having a higher standard than God does not entail the former is a superior being. After all, it seems that if a being leaves out worthwhile universes, that being’s multiverse would be made better by the inclusion of those universes, even if those universes are worse than all the universes in that being’s collection. So any being with a higher standard than God would create a worse multiverse.¹⁸ Notice, however, that the being with the higher standard would conclude that God had created a worse multiverse by including universes that, by its standard, are unworthy of creation. Only in conjunction with an argument that there is an objective criterion for determining universe worthiness—an objective fact about universe worthiness—does this objection hold any weight. If there were such a criterion, one could say that by employing it God would choose the best possible world and that any being employing any other criterion is inferior.

Does such a criterion exist? The Howard-Snyders (1996) suggest it does (in the context of a different discussion), but as Kraay (2005) points out, they present no positive defense of their suggestion. Further, in the context of *this* discussion, it seems clear that there is good reason to think that there is no best criterion—given that this discussion deals with an infinite hierarchy of better and better universes, and there are an infinite number of places, each further up on the hierarchy, where one could

¹⁸ Kraay (2010a) suggests something similar in his 35th footnote. Since (as I discussed above) O’Connor thinks leaving out worthwhile universes is compatible with the actualization of the greatest possible world, I don’t think that O’Connor can rely on this objection to save the multiverse solution.

draw a worthiness line on that hierarchy. To make clear why, imagine an infinite hierarchy of artwork and an infinite number of collectors talking about what the greatest possible art collection would include. Everything above children's refrigerator drawings? Above student art work? Above amateur artwork? No matter where a collector drew their "worthy of collecting" line, another collector could always declare that the collection could be made better by eliminating its worst piece; thus there is no greatest possible collection. In the same way, any given multiverse could be improved by simply dropping its least valuable member; thus there is no greatest multiverse. After all, any given universe is just below the worst universe in some infinite collection, and including that universe in that collection would just make that collection worse.

Some may challenge this notion, however, using arguments that have appeared in discussions about how well the multiverse can help solve the problem of evil. But understanding why such a challenge would fail actually helps us understand why this solution fails. Some theists think the multiverse can explain why God would create a universe with as much evil as ours has because our universe seems to be worth creating and thus would belong to an infinite collection of worthwhile universes that has maximal aggregate value. Others disagree given that God could have created a multiverse with maximal aggregate value that only includes universes that are 100 times greater than ours. Wouldn't that have been a better thing to have done? But Kraay (2012) (inspired by arguments given by Vallentyne and Kagan (1997), Monton (2010) and Almeida (2008) in response to a problem originally raised by Perkins (1980)) offers a principle that suggests the answer is no.

If multiverse m_1 includes infinitely-many threshold-surpassing universes, (and no other universes), and multiverse m_2 includes all the universes that m_1 includes, and also includes threshold-surpassing universes that m_1 lacks, (and no other universes) then, *ceteris paribus*, m_2 is better than m_1 . (p. 155)

If this is right, m_2 would be better than m_1 , even if the only difference between the two was that m_2 had a worse universe than m_1 did—a single worthy universe that m_1 did not have that is worse than all

others in m_1 . And if this principle is right, then a multiverse can't be made better by simply subtracting the least worthwhile universe from it.

Notice, however, that this principle assumes an objectively best standard of worthiness—an objective fact about which universes are worthy and which are not. I agree that if there were such a standard, missing worthy universes would make a multiverse less than perfect (and so it would be false that any given multiverse could be improved by simply dropping its least valuable member). But the objection I am considering here suggests that there is no best standard; as a response to this problem, therefore, this line of argumentation would simply beg the question. After all, as Kraay and Monton acknowledge (and I pointed out above), if I do assume an objective standard, a multiverse that includes all and only worthy universes would be made worse by adding an unworthy universe to it—even if it were the top-valued unworthy universe and even though it would not change the multiverse's aggregate value. But notice that, *without* an objective standard of worthiness, every possible being would declare that using a standard beneath theirs would do just that—add an unworthy universe—and thus result in a multiverse worse than theirs. (Likewise, using a higher standard would leave out worthy universes, and thus also result in a multiverse worse than theirs.) Without an objective standard, the supposition that any given multiverse could be improved by simply dropping its least valuable member seems to be on solid ground.

The problem of where to draw an objective line of worthiness in the IHPU is related to other issues in metaphysics. For example, how much physical or psychological similarity is required to preserve personal identity over time? Drawing the line anywhere is problematic. Just one less atom, or one less memory, and the original person is gone and a new one is created? It doesn't seem that such a small physical or psychological difference could make just a large metaphysical difference. For similar reasons, any given line of worthiness would seem to be problematic. Some think it should be drawn where universes go from having negative to positive value—that is, where their amount of evil is first outweighed, by the slightest degree, by the amount of good in them. But then subtract just one modicum

of goodness, say one nanosecond of happiness, so that good and evil now balance out, and all of a sudden that universe is no longer worthy of creation? It doesn't seem that such a small difference could have such a grandiose consequence.

But no matter where you tried to argue the objective "sweet spot" is, the same argument would apply—to suggest that it is an objective fact that the line of worthiness should be drawn in any specific place would entail that one nanosecond of happiness makes a kind of difference that it cannot. Thus, not only does any argument for the existence of such specific "sweet spot" seem problematic, but the position that there even is such a spot seems indefensible. Thus, this reply fails as a response to *the problem of no highest standard*.

Solution 3: The standard is vague

As noted earlier, O'Connor (2008) suggests that the worthiness threshold might be vague. The failure of the last solution might make one think *the problem no highest standard* could be solved by embracing this suggestion. But there are a couple of reasons it won't work. First, it is still the case that vague thresholds can be set higher. For any being who decided that some group of universes fell in "the gray area" of worthiness, there is another possible being who thinks those universes are clearly unworthy, and that a higher set of universes is in the gray area. Thus, the mere notion that the worthiness threshold is vague does nothing at all to avoid *the problem of no highest standard*.

Of course, one might suggest that there is an objectively accurate vague threshold—some collection of objective facts about which universes are worthy, which ones are not, and which ones fall into the gray area—such that all other vague thresholds are wrong. But, not only do I know of no argument that establishes such facts, but it's not clear that such a notion is coherent because there might be higher-order vagueness. Perhaps the thresholds between such areas would themselves be vague, and whether or not some universes were worthy or "gray" (or were unworthy or "gray") would simply be indeterminate. If so, we are again right back to the same problem we were trying to avoid.

Secondly, even if I stipulated such facts, they would seem to entail a metaphysical vagueness—and metaphysical vagueness is not only philosophically problematic in itself¹⁹ but it does not seem to be something that multiverse theists could embrace about worthiness. For example, if worthiness is a vague notion, there cannot be a collection of all and only the worthy universes because which of the “borderline universes” would belong to that collection would be indeterminate. But if there cannot be a collection of all and only the worthy universes, there is no best multiverse. In other words, if worthiness is a vague notion, there is no greatest possible world, and we are once again right back to the same problem.

Now if one suggests, like O’Connor (2008), that a multiverse could fail to contain all worthwhile universes and still be the greatest possible world, one might be able to avoid the specific consequence just mentioned. One might, for example, also embrace the notion of a vague worthiness threshold (that is objectively correct) and claim that God could actualize an unsurpassable world by creating an infinite number of only (but not all) universes that are clearly worthy of creation (no “gray” universes included). I will show in the last section why O’Connor’s suggestion is problematic. But even if the theist embraces his suggestion, it just doesn’t seem that universe worthiness is something that can be vague for the theist—because either a universe is worthy of creation, or it is not; God is either praiseworthy for creating it, or he is not. After all, it seems most vague properties are admitted to be vague because they do not refer to metaphysically real properties; whether or not something can rightfully be said to possess that property is just a matter of conventional description. But it doesn’t seem that God’s *praiseworthiness* or universe *worthiness* could be admitted by a theist to be such a property. At the least, an argument would be needed from the multiverse theists regarding why a vague worthiness threshold would not lead to metaphysical vagueness, or why such vagueness is not bothersome. I know of no such argument.

¹⁹ See Lewis (1986, p. 212-3) and Sider (2001: 120-139) for a discussion of metaphysical vagueness and its problems.

Solution 4: Too high a standard can be too snooty

Others might object that, at some point, a higher standard stops being superior and simply becomes “snooty” and does not lead to a better collection. This actually is true—when in the real world dealing with finite collections. Real art collectors, for example, dealing with limited funds and a limited amount of artwork could end up with an empty collection, if they set their standard too high. But this could never happen when dealing with the IHPU; every standard would result in an infinite collection of universes. Real-world collectors might also end up with a collection that is deficient in some way, if their standard is too high. The best possible real world art collection would have to include the Mona Lisa, even though it is not necessarily the best piece of art in the world—too high a standard might result in its non-inclusion. But, again, this could never happen when dealing with the IHPU. For any given universe, no matter how good that universe is, there will be another universe in the IHPU that outclasses the first universe in every way, a hundred times over. No universe could ever be essential to the best possible multiverse. Ultimately, without an objective criterion, there would be no way to establish that any standard for choosing from an infinite collection was too high—too “snooty.”

Solution 5: It can be better to prefer the worse

One might object that it can be defensible, morally or rationally, to prefer the worse to the better on some occasions. For example, a movie buff might love and delight in lousy action films and go see one instead of some Oscar-winning film, even though he recognizes that the Oscar winning film is aesthetically superior; and there may be nothing wrong with doing so. In the same way, perhaps God could find worthy of creation some universe that some other being does not, even though he recognizes that it is worse, and yet not be morally or rationally blameworthy for doing so.

But even if he is not morally or rationally blameworthy for doing so, God would still be “less perfect” than the being who does not consider the worse universe worthy. Like Rowe suggested in response to Wainwright above, if there is no best option available, it is true that God can’t be *morally*

blamed for not taking the best option—but he still can't be a perfect being. Likewise, even if God can't be morally blamed for preferring the worse universe, it would seem he still can't be the perfect being if he does so. After all, there may be nothing *morally* wrong with preferring lousy action films, but the film buff who prefers *Schindler's List* to *Death Wish V: The Face of Death* is still a better film buff.

But let us develop the analogy further. Imagine one film buff who only watched and appreciated films of high aesthetic quality, and another who did the same but also watched and appreciated lousy action films (perhaps on an ironic level, or simply for the entertainment they provided). Although he might not choose *Schindler's List* over *Death Wish V*, he deems both worthy of watching and can appreciate both. Might the latter be a better film buff? In the same way, might a being deeming lesser worlds worthy of creation make him a better being?

I think not; the analogy breaks down in two ways. First, movie watching and appreciation is generally an amoral non-rational activity. No one is going to suffer if you choose to watch and appreciate *Death Wish V*. But, when dealing with universe creation, real moral and rational issues—real suffering, real lives, real consequences—are being dealt with. Even if I would watch *Death Wish V*, I would still think Steven Spielberg (director of *Schindler's List*) to be a better director if he avoided creating movies like *Death Wish*—yet movies, although they do exist, don't even “actually happen.” Even more so, wouldn't a being be a better being if he always steered clear of creating worse universes, given that the events in the universes he creates (unlike movies) actually do happen? After all, it hardly seems defensible to excuse the creation of a worse universe, with lots of actual suffering, in the name of ironic appreciation or entertainment value.

Second, making the thought experiment more directly analogous makes its failure more apparent. Imagine, instead, a film buff with an infinite amount of time and an infinite collection of movies arranged in ascending order of quality. He will select one movie to start with and work his way up. Not only is it clearly impossible for him to be the best possible film buff in this situation (no matter where he starts, any being who starts above him in the collection will always be watching a better film than him),

but starting with *Death Wish V* is clearly inexcusable; there are too many better movies to watch. The same is true for universes. When there are so many better options to choose from, choosing the worse can't be better.

This may bring up the issue of “universe types.” Perhaps the perfect movie buff would make sure to watch movies of all types (even lousy action films), and the perfect being would wish to create universes of all types. I will discuss this more below, when I discuss O'Connor (2008). But for now, I think it safe to conclude that the multiverse theists are stuck with a very similar problem as they were before: no matter where God draws his line-of-worthiness, there will always be a possible being who could draw one higher, and such a being would be a better being, because it has a higher standard. Thus, theists' multiverse solution to *the problem of no best world* simply sticks them with a problem exactly parallel to it: *the problem of no highest standard*. Thus, the concept of a “greatest possible being” still seems impossible, and consequently so does God's existence.

But perhaps you have not found my arguments persuasive. Perhaps you think that there is an objective standard, or that progressively higher standards can get too snooty, or that it can be best to prefer the worse. Even so, there is still another problem that plagues the multiverse theist's solution to *the problem of no best world* that renders it useless—one that seems to be the very same problem they were aiming to solve in the first place.

IV. The Problem of Multiverse Cardinality

The proposed solution to *the problem of no best world* suggested that God could actualize the greatest possible world by actualizing a possible world with infinite value; God can do so by creating an infinite multiverse—a possible world that contains an infinite number of universes. But once I consider one simple question, it is clear that the multiverse hypothesis gives rise to the very same problem it was introduced to solve: “What is the cardinality of the infinite multiverse that makes up the greatest possible world?”

Georg Cantor showed the cardinality of the set of natural numbers is countably infinite, but the cardinality of the real numbers is larger—uncountably infinite. He even proved that for every cardinal number— \aleph_0 (aleph-0) for example, the cardinal number that represents the cardinality of the natural numbers—there is a cardinal number that is greater. In other words, there are a countably infinite number of higher magnitudes of infinity. The theist who employs the multiverse hypothesis as a defense against *the problem of no best world* suggests that the multiverse that is the greatest possible world is infinite; but what magnitude of infinity describes the cardinality of the multiverse that is the greatest possible world? \aleph_0 \aleph_1 ? \aleph_{100} ? It doesn't matter how the theist answers this question. No matter what he chooses (\aleph_x), there is a possible being who could have chosen a multiverse with a greater cardinality (\aleph_{x+1}).²⁰ And because the existence of \aleph_{x+1} worthwhile universes is clearly superior to the existence of only \aleph_x worthwhile universes—such a possible world's aggregate value would not only be greater, but be of a higher order, a greater cardinality—the possible world with the greater cardinality of worthwhile universes would be the superior possible world. And because there is always a higher cardinal number, once again there is no best possible world. Thus the IHPW rears its ugly head once again and renders the theist's position problematic. The theist's multiverse solution to *the problem of no best world* simply sticks us with the exact same problem again: there is no greatest possible world. Once again, the concept of a “greatest possible being” seems impossible, and consequently so does God's existence.

There are three possible ways to respond, but I believe they all fall short.

Solution 1: The Collection of Worthy Universes is a Proper Class

Those familiar with advanced set theory may think that an answer to this problem lies in von Neumann-Bernay-Godel set theory (NBG), which includes “proper classes.” In NBG, a “class” is a

²⁰ Morton (2010) points out that one could do so simply by creating duplicates. If there are n worthy universes, God could create a multiverse of a higher cardinality by creating 2^n duplicates of those universes. Although, as will be seen later, I don't think this is the only reason to think that there could always be larger multiverses. I will discuss Morton again later in the text.

collection of sets (and something is a set *if and only if* it is a member of a class), and a “proper class” is a class that is not itself a set (i.e., that is not itself a member of class). In other words, a “proper class” is a collection of sets that is not itself a set. For example, since it is logically impossible for there to be a set of all sets, “all sets” is a proper class (called the “universal class”). Now, in NBG, it is provable that, for any given cardinal number ($\aleph_0, \aleph_1 \dots \aleph_x \dots$), there is a set that size. (For example, the ordinal numbers is an ordered sequence of sets, and there is a set in the sequence of every aleph size.) But it is also provable that every proper class is larger than any given set, and that each proper class has the same size as the universal class. Consequently, in NBG, there is an upper limit to how large collections can be; nothing can be larger than all proper classes are. (The cardinality of proper classes is said to be “inaccessible,” although it is odd to refer to its size as a “cardinality”, since no cardinal number ($\aleph_0, \aleph_1 \dots \aleph_x \dots$) accurately describes it.)

The supposed solution comes after realizing that if the collection of worthwhile universe were a proper class, then by creating all worthwhile universes, God could not be outdone; no being could create more worthwhile universes since the cardinality of the multiverse God created would be inaccessible, and no collection can be larger than that. Thus, there would be a best possible world—the multiverse with an inaccessible number of worthwhile universes—and *the problem of no best world* would be avoided.

Although initially promising, this way out of the problem presents some difficulties. First, as Monton (2010) argues, given that one can’t judge the value of a multiverse merely by its aggregate value, a multiverse the size of a proper class could still be improved by simply adding more worthwhile universes, even though doing so does not increase its size (and thus its aggregate value). Second, the burden would be on the theist to show that the collection of worthwhile universes is a proper class and thus has an inaccessible (and thus unsurpassable) size. But I know of no such argument. There are discussions about the size of the collection of all *possible worlds*. For example, Peter Forrest and D.M. Armstrong (1984) have argued against David Lewis’s modal realism suggesting that considering the

cardinality of the set of all possible worlds gives rise to a contradiction (which may be a reason to think it is a proper class); Alexander Pruss (2001) has offered a clever reply. But, as I pointed out before, possible worlds are not universes; so it's not clear at all what relevance such discussions have regarding the size of the collection of all universes, much less the size of the collection of all worthwhile universes. In any event, it seems the burden would be on the theist to show how arguments about collections of possible worlds would also apply to collections of universes, and how the relevant objections could be avoided.

Third, such arguments would be doomed to fail because the collection of all worthwhile universes can't be a proper class. Recall that God would not create all universes, but only those worth creating; the collection of all worthwhile universes (Call it W) would be a part of the collection of all possible universes (call it A). But, by definition, proper classes cannot belong to other classes; thus W cannot be a proper class. That is—since W would belong to A, but proper classes by definition can't belong to any collection (they are by definition not sets, but sets are by definition anything that belongs to a class), W can't be a proper class.

Or, in case that was confusing, here is another line of reasoning to the same conclusion. Again, the collection of all worthwhile universes is obviously a part of the collection of all possible universes; i.e., W is a member of A. But that means, if W is a proper class, then A must be a proper class (the collection of universes that God selects to create cannot be larger than the collection he chose them from). But, if A is a proper class, since a proper class just is a collection of sets and W is a member of A, then W is a set. But if W is a set, then it cannot be a proper class; by definition, proper classes are not sets. So If W is a proper class, then it is not. Clearly, W cannot be a proper class.

Solution 2: An Upper Limit on Size

As a second way to avoid the problem of multiverse cardinality, the theist might suggest that there is a logical maximum to how big a collection of worthwhile universes can be because the

collection of all worthwhile universes has a specific cardinality. Perhaps there are collections of other things that are larger (like the collection of all sets), but it is logically impossible for the collection of all worthwhile universes to be those sizes. If there is such an upper limit to the size of the collection of all worthwhile universes, then God could not be outdone if the number of worthwhile universes he created was that size. A multiverse, consisting of only worthwhile universes, that is as large as such a collection could be, would be the greatest possible world.

The challenges this solution faces are numerous. Morton (2010) has shown that, even if the collection of all unique worthwhile universes has a specific cardinality, God could always have created a larger multiverse by duplicating them. If there are n unique worthy universes, creating 2^n duplicates of those universes would result in a multiverse of a large cardinality.²¹ One might think the Principle of the Identity of Indiscernibles prevents such duplication (that two indiscernible duplicate universes are actually numerically identical) but Morton gives good reasons to think this line of argument is faulty. Those who propose this principle and apply it to universes merely assume it, and there are also some reasons to think that the principle is false. (One such argument, rooted in quantum mechanics, suggests that the principle is not necessarily true, and thus could not restrict God's creative ability.) Lastly, even if you take exact duplicates off the table, God could create (what Morton calls) "near-duplicates" and accomplish the same thing.

But even ignoring the possibility of duplication and near duplication, the burden would still be on the theist to show that such a logical maximum exists; and I know of no such argument. David Lewis (2001) has observed that there is a logical *minimum* to the cardinality of the collection of all *logically possible worlds* (beth-2).²² But showing that there is a minimum of something is totally different than showing that there is a maximum. And, once again, possible worlds are not universes; so it's not clear at all what relevance such an argument would have regarding the size of the collection of all universes,

²¹ Almeida (2010) makes a similar point on page 302.

²² P. 90 (footnote). Beth-2 is the size of the power set of the power set of any countably infinite set. It is at least as large as (and may be bigger than) a set with size aleph-2.

much less the size of the collection of all worthwhile universes. The burden would be on the theist would have to advance an entirely new line of argumentation.

Solution 3: God doesn't care about maximum aggregate value

The only attempt I have found in the literature to deal with *the problem of multiverse cardinality* directly belongs to O'Connor (2008). Unsatisfied with both of the solutions I have so far considered—assuming “there is an intrinsic upper limit, inscrutable to us, to the size of multiverses” or supposing that “God may create a proper class of universes,” (p.119)—he suggests that maximal aggregate value would not be a goal of a perfect being. Mere duplication of universes to attain maximal aggregate value would be of little concern to the perfect being. After all, nothing but God can really be maximally valuable anyway. A perfect being would simply desire to actualize any infinitely membered multiverse made up only of universes worth creating (even if it did not contain them all), where every kind of good was instantiated at least once.

It is doubtful that a perfect being would desire to pursue maximal aggregate value at all. Why should a master artesian, even one of maximal goodness and without limitations, pursue mere duplication, much less unlimited duplication, of similar objects and systems? What clearly will be of concern, it seems to me, is not to place arbitrary limits on the intensive value of whatever natural objects, and organic value of whatever overall systems, He contemplates. We've already seen that, plausibly, neither of these could attain infinite value. (God alone, who is uncreated independent being [sic] and the source of every possibility, is an infinitely valuable individual.) If both these claims are right, then worry about finding an upper limit on the cardinality of the value of [multiverses] is circumvented. The natural object of a perfect creator's consideration will be any infinitely membered, partially ordered [multiverse] for which there is no finite upper bound on the organic value of its members (and perhaps intensive value of its members constituent objects), all of which exceed [the worthiness] threshold...[and where] every significant kind of goodness capable of creaturely realization would be instantiated somewhere or other in the created order. (pp. 119-120, 123)

There a few things to say about this. First, the notion that God would only be concerned with instantiating types (and not tokens) of good is questionable. As Monton (2010) points out, it would be quite odd for the leader of the community to declare that no more marriages are needed given that a particular couple has already attained marital bliss and only one type of that good is needed. After all,

duplication is seen as a good by most; wouldn't you think it a good if there were duplicates of you in other universes? And even though God clearly would be concerned about instantiating every type of good possible, why wouldn't God not also be concerned about aggregate value? As Almeida (2010) points out, "there would be no obvious cost" in also attaining such a good (p. 304). If he's perfect, God should desire to attain it, and could do so effortlessly.

Secondly, O'Connor's argument requires his assumption that the best possible multiverse need not include *all* worthwhile universes, but merely an infinite number of them. But most multiverse theists (McHarry (1978, p.134), Parfit (1991, p.5; 1992, p.423), Turner (2003, p.149), Hudson (2005, p.167) and Kraay (2010a, pp.361-3) agree that the greatest possible world would contain *all* and only the worthy universes; in fact, O'Connor is the only one to explicitly endorse his contrary view. Of course, that doesn't mean his argument is wrong; but it does seem that most theists would not be comfortable making or endorsing it. Besides, why wouldn't God also be concerned about creating all worthwhile universes? Again, "there would be no obvious cost" in doing so, for an omnipotent being. And suggesting otherwise would require one to deny the previously mentioned intuitive principle, developed by Kraay (2012), which suggests that an infinite multiverse can always be improved by adding another worthwhile universe.

Third, it seems that O'Connor has shifted the problem a bit, by talking about what God would be "concerned" about—almost as if to suggest that God has better things to worry about than "mere duplication" of already existing universes. But that is not the issue. What is of concern is what is logically required of a being if it is to be the greatest possible being. And a perfect being would not only want to avoid limiting the value of what he contemplates, but would actualize the possible world with the greatest aggregate value. This is why the fact that only God can be "infinitely valuable" is irrelevant. Yes, nothing could be as valuable as the perfect being, but that is not an excuse for the perfect being to desire anything short of the best possible world. As Monton (2010) points out,

God isn't just pursuing duplication... God creates instances of every significant kind of goodness, as O'Connor suggests, but God recognizes that he can add to the goodness of reality by creating more. This isn't a pursuit of mere duplication; this is a pursuit of goodness, which has duplication as a byproduct. (p. 129)

Lastly, it's unclear that creating a larger cardinality or a proper class of universes would actually require duplication. We often prove such cardinalities in mathematics with duplications—power sets and so forth—but that does not mean that all collections of those sizes necessarily contain duplicates. Each collection of worthy universes with a higher cardinality may have unique members; certainly they could be added without implying a logical contradiction. At the least, an argument is needed that duplication is required to reach higher cardinalities of universes.

In my estimation, O'Connor's argument falls just as short as a response to *the problem of multiverse cardinality*, as do the previous two responses.

Conclusion

I have argued that the multiverse solution to *the problem of no best world* leaves the theist no better off than when s/he started. It gives rise not only to a parallel problem of equal severity—*the problem of no highest standard*—but also to the exact problem it was introduced to solve: *the problem of no best world*. Of course some theists do not feel threatened by *the problem of no best world* in the first place—they think God being unable to actualize an unsurpassable world does not detract from his perfection since doing so is impossible given that there is no best possible world. But those theists who disagree, and do feel threatened by *the problem of no best world*, will not find a viable way out by turning to the multiverse solution.

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