Theistic and Scientific Multiverses: Conflict or Concord?

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Abstract

I examine the claim that theistic and scientific multiverses conflict: the former require that only universes above a certain threshold of value exist, while the latter make no such stipulations. I explore several avenues of reconciliation: appealing to *ceteris peribus* conditions ostensibly inherent within scientific theories, redefining 'universe' in the philosophical context, advocating skeptical theism, contending that God and gratuitous evil are compatible, and adjusting the relevant scientific theories. I conclude that only the last strategy is viable, as long as we grant the coherence of a Molinist account of divine providence. If successful, it would entail that scientific and theistic models conflict only superficially. If not, however, then the theistic multiverse is inconsistent with its scientific counterparts.

Keywords: problem of no best world, problem of evil, inflationary multiverse, miracles, skeptical theism, gratuitous evil.

1. Introduction

Several philosophers, inspired by recent developments in cosmology, offer models of a theistic multiverse (TM) with the hope of undermining longstanding objections to theism. Despite serving as their source of inspiration, there is no discussion about how these theological proposals relate to modern science. Are scientific models of the multiverse at odds with their theistic counterparts? I will argue that they are - but only superficially.

Reflection on scientific and philosophical multiverses contributes at least three things to wider disputes. First, it offers insight on the relationship between science and philosophy. Like attempts to explain the beginning of the universe or the fine-tuning of nature's constants, determining what a multiverse might be like is by its nature interdisciplinary. Second, it illuminates how theism and science relate generally. An adjacent concern to the one I pursue here, for instance, is whether the (scientific) multiverse makes the problem of evil for theism worse. My analysis implies that the answer is yes in a technical sense, but no in a substantive one. Third, it proves a testing ground for one's views on several adjacent issues: methodological naturalism, the

(in)compatibility of God and gratuitous evil, skeptical theism, philosophical analysis of miracles, Molinism, how confirmation of a theory relates to a theory's individual conjuncts, and so on.

In Sec. 2, I outline extant accounts of scientific and philosophical multiverses. In Sec. 3, I state the argument for incompatibility between them, zeroing in on horrific evil as the differing implication. In Sec. 4, I explore the first strategy for resolving the conflict: denying that the relevant scientific theories entail that horrific evil obtains. In Sec. 5, I explore the other side of that coin: arguing that TM is consistent with horrific evil. Finally, in Sec. 5, I contend that if we can reasonably deny that the relevant scientific theories are true in their entirety, then we have a viable means of reconciling the two multiverse paradigms. I then show how a Molinist account of divine providence provides us with those reasonable grounds.

2. Multiverses: Scientific and Theistic

2.1 Scientific Accounts of the Multiverse

Turn first to multiverses featuring in journals of cosmology and physics. Tegmark (2008) outlines an intuitive four-level classification, each subsequent level allowing for greater variation among universes.[1]

Level I is mundane, as far as multiverses go: an infinite spatial expanse wherein every possible arrangement of matter and energy exists somewhere. It arises if three conditions obtain: (i) space is infinite, (ii) the distribution of matter is homogeneous throughout, and (iii) there are only a finite number of ways to arrange matter in any given volume of space. It is universally acknowledged that space continues on beyond the edge of our observable universe (the total region of the cosmos that we here on Earth can observe, given light from objects further out has not yet had time to reach us), and the specific stipulation that space continues on infinitely is a common viewpoint among cosmologists. Condition (ii) stipulates that 'island' models of the universe, wherein all matter concentrates around the observable universe with nothing but empty space further out, are false. Tegmark (2007) writes that it "is possible that space is infinite, but with matter confined to a finite region around us," adding, however, that "recent observations of the 3-dimensional galaxy distribution and the microwave background have shown that the arrangement of matter gives way to dull uniformity on large scales, with no coherent structures larger than about 10^{24} meters. Assuming that this pattern continues, space beyond our observable universe teems with galaxies, stars and planets" (p. 103). The rough idea behind (iii) is that if you randomly rearrange ten letters an infinite number of times, for instance, then every possible string of those letters will eventually come up. Given these conditions, every possible combination of matter and every will crop up somewhere in the infinite domain: a duplicate of Earth save where humans have twelve fingers instead of ten, a universe where everyone watches nothing but *Seinfeld*, a possible history where dinosaurs didn't go extinct, and so on. Indeed, there will be an infinite number of *duplicates* of every possibility, including every detail of your life on Earth; out there, somewhere, is your cosmic clone. Notice that in this kind of multiverse, the distributions of mat-

[1] Greene (2011, p. 355) distills nine types of multiverses and Vilenkin and Perlov (2017, p. 346-7) propose a three-tiered classification. Nothing of significance hangs on how we choose to carve up the conceptual space.

ter and energy differ from region to region, but the constants of physics (the speed of light, the masses of fundamental particles, and so on) and the mathematical structure of natural laws remain fixed.

Level II consists in variations, not only in matter/energy arrangements, but also in the physical constants, those parameters within the laws of physics that determine the relative masses of fundamental particles like the quark or the electron, and the strength of fundamental forces like gravity, the electromagnetic force, and so on.

The inflationary multiverse is a good illustration. Suppose that near the Big Bang, an 'inflaton field' permeates the universe that (i) causes space to expand at an enormous rate and (ii) is well above its minimum energy value (in a 'false' vacuum state). Next, suppose that quantum fluctuations occasionally kick small patches of this field down to various minimum energy levels ('true' vacuum states). These patches or bubbles then expand as well, but at a slower rate than the surrounding false vacuum. As times goes on, bubble universes proliferate into existence, but because the false vacuum between them grows faster still, there will always be more room for bubbles of true vacuum to form. Each minimum energy level corresponds to a different set of fundamental particle masses, forces strengths, and so on. Vilenkin & Perlov (2017) explain that the "values of the [fundamental fields] vary from one vacuum to another, and as a result particle masses and interactions vary as well. One vacuum state in the energy landscape should correspond to our world, but others are likely to be very different" (p. 283).[2]

The combination of inflationary theory with string theory yields what Greene (2011) calls the landscape multiverse: an inflating domain that realizes all possible solutions to string theory's equations. Guth (2007) explains that "[t]he role of eternal inflation in scientific thinking...was greatly boosted by the realization that string theory has no preferred vacuum, but instead has perhaps 10^{1000} metastable vacuum-like states" (p. 6818), with inflation's value being that it provides a physical mechanism whereby all those vacuum states are realized somewhere in the broader cosmos.

Level III captures the multiverse of the many worlds interpretation of quantum mechanics. Under this framework, we can think of a particle's location as described by a probability wave, with spikes designating where the particle is most likely to be located upon observation. Per Everett's many worlds interpretation, every time you measure the position of a particle, reality splits into all the distinct possible outcomes you could have measured. If there are three possible outcomes, reality will evolve into three worlds, one where each 'you' measures a particular particle position (Greene, 2011, p. 242).[3]

Level IV constitutes the most expansive vision: the contention that all possible mathematical structures correspond to physically real universes. This level is Tegmark's 'ultimate ensemble theory', a proposal that "casts the so-called modal realism of David Lewis in mathematical terms" (p. 118). While such models, whether of the mathematical or modal variety, might strike one as metaphysical rather than scientific, Read &

[2] A bit more detail: the reason that differing energy levels correspond to different types of particles and interactions is that each energy level is a particular value of one or more Higgs fields, and in the Standard Model of particle physics, it is this collection of fields that "determine the particle properties" (Vilenkin & Perlov, 2017, p. 282).

[3] This gloss on Everettian mechanics is only correct in a general and generous sense. For one thing, if there are infinite degrees of freedom for any physical system, then the universe branches infinitely upon particle measurement. Moreover, it is not measurement, strictly speaking, that brings about world-splitting, but rather decoherence, the process whereby a physical system becomes entangled with the surrounding environment.

Bihan (2021) point out that "the claim that spacetime is not fundamental within our actual world threatens modal realism" (p. 7767) because the latter entails that spacetime *is* fundamental - a point that suggests that even Lewis' multiverse may be empirically falsifiable. Still, given the strong inclination that we are dealing in metaphysics rather than physics at this level, I will largely set Level IV aside in our discussion to follow.

2.2 Theistic Multiverses

With this four-fold schematic in the background, consider an objection to theism known as 'the problem of no best world' (Kraay, 2010a; W. L. Rowe, 1993). We begin with the following claim:

1. If God exists, He must create an unsurpassable world.

The idea is that if God is morally perfect and unsurpassable, it is impossible for anyone to improve upon God's choices. By definition, no one can engage in a morally superior action to God. Thus, if God creates a world, it has to be the very best; otherwise, someone could have come along and created a better world, thereby engaging in a morally superior action. Unfortunately, however, another claim is equally plausible:

2. There is no unsurpassable world.

For any possible way reality could have been, one can always make it better: add more more sunsets, Mozarts, long walks on the beach, or worthwhile lives. From those two premises, it follows that God does not exist. If there is no best, unsurpassable world, we know automatically that there can be no morally unsurpassable God.

In response, advocates of TM take seriously the intuition that while there may be no best possible universe, nevertheless if we group together all universes above some value cut-off, the entire collection of such universes might constitute a world or multiverse that is the best possible (Hudson, 2005; Kraay, 2010b; O'Connor, 2008; Turner, 2003, 2015). The basic idea, with Kraay (2010b), is that "God creates and sustains all and only those universes which are worth creating and sustaining" (p. 363). While 'worth creating' is an opaque notion (a point I return to below), we can think of it here as 'more good than bad', or net-positive, for short. The result is a collection of universes, all of them above some value-threshold. The final claim is then that every other possible world could only differ from TM by either (1) including an overall bad universe, or (2) failing to include a good universe. In either case, such a possible world would be less valuable than TM. Thus, TM is the best possible world, the best way that reality could have been.[4] Premise (2) in the above argument against theism is therefore false.

3. The Problem, Stated

My concern is not with whether TM resolves the problem of no best world, but with the independent question of how these philosophical models relate to modern cosmology and physics. If the two conflict, then any empirical evidence for scientific multiverses will give us reason to think that TM does not exist. The source of potential

[4] O'Connor (2008) and Hudson (2005) also defend a multiverse, but instead of claiming that such a world is more valuable than any other possible world, they allow that there are an infinite array of possible worlds that are all tied for best. On these models, TM is unsurpassable, but not uniquely so. This distinction need not detain us.

conflict is not hard to identify: no part of any theory featuring in Tegmark's four-level schematic restricts the scope of universes in the way TM proposes. Vilenkin & Perlov (2017) write that "in quantum mechanics all processes that are not strictly forbidden by conservation laws do occur with a nonzero probability" (p. 281). Consider the Level I multiverse: as we saw, this scenario entails that all possibilities, even truly horrific ones well below any plausible axiological threshold, will find realization somewhere in the infinite expanse - and do so an infinite number of times. If we roll a six-sided dice a thousand times, we can be confident that every side will show - and if we roll the dice an infinite number of times, we can be certain every side will come up an infinite number of times. Now, this implication holds only if there are a finite number of possible states of matter and energy. If, for instance, one had a bag with an infinite number of coins, each one numbered from '1' up to infinity, there would be no guarantee that even if one drew from this bag forever, one would eventually draw every number. While the assumption of finitude is not obvious, Greene (2011, p. 35) points out that Heisenberg's uncertainty principle suggests that there is a lower limit to how finely grained we can distinguish between two states, such that for any region of space, there are only a finite number of measurably distinct ways to arrange matter within that region. Thus, the 'finite states' assumption is reasonable. The same implication holds for the inflationary, quantum mechanical, and Level IV multiverse: collections of universes like these, by realizing every possibility, multiply evil and suffering unimaginably.[5]

All models of TM, however, entail that God has created only those universes above a certain threshold of value. But consider β, a universe whose sole denizen - a Boltzmann Brain, perhaps - fluctuates into existence amid the endless black expanse, experiences unfathomable mental torment for ten billion years with no reprieve nor shred of happiness, and then ceases to exist. While paying due consideration to the limitations of our moral and modal intuitions, most would agree that wherever the relevant axiological threshold is for inclusion in God's multiverse, β falls below that threshold and so will not exist in TM. But if our comments above are correct, then extant scientific theories of the multiverse entail that β exists somewhere in the cosmic tapestry. As Zimmerman (2017) succinctly puts it, "the many-worlds interpretation of quantum physicist Hugh Everett III and the modal realism of cosmologist Max Tegmark include worlds that no sane, good God would ever tolerate. The theories are very different, but each predicts the existence of worlds filled with horror and misery." Therein lies the conflict.

Taking TM, scientific models of the multiverse (SMM), and β in hand, the argument goes as follows:

1. If the actual world is TM, β does not exist.

2. If at least one SMM is true, β exists.

3. Therefore, if at least one SMM is true, the actual world is not TM.

If we then think that empirical evidence makes it likely that a particular scientific account of the multiverse is correct, we might then reason to a stronger conclusion:

4. At least one SMM is true.

[5] However, Chen & Rubio (forthcoming) contend that the problem of evil facing theism is no worse in the many worlds of quantum mechanics than it is in a single-universe scenario. I am skeptical of their argument for this claim, but I acknowledge that if they are correct, my contention about the multiplication of evil would have to be restricted to other kinds of multiverses.

5. Therefore, the actual world is not TM.[6]

I will look at three ways a defender of TM might respond.

4. Option #1: Deny Premise (2)

Consider first attempts to undermine premise (2). One could deny the finite states assumption, but a subtler move would be to contend that scientific theories of any kind, those of the multiverse included, contain within them 'all things being equal clauses' - *ceteris peribus* conditions - such that they show us, not how reality is *per se*, but how it would be were only natural forces operative. If that is the case, then TM, because it postulates *super*natural forces, is not in conflict with scientific models. The defender of TM could heartily agree that if inflation, for instance, were left to its own devices, all manner of horrific universes would populate the multiverse. They would simply maintain that God has not in fact left the inflationary process to its own devices, and that it is not part of contemporary science to claim that God has. In this sense, an advocate of TM could have their cake and eat it too.

Compare God's superintending universe-creation with philosophical analysis of miracles in relation to the laws of nature (Hughes & Adams, 1992; Pritchard, 2011). A standard view in the literature is that miracles are not violations of natural laws because those laws have a limited domain of application – in particular, they do not apply to the actions of a supernatural agent and therefore such actions cannot violate them. In the same vein, perhaps God's restriction on which universes might result from quantum mechanical processes, or decay of an inflating false vacuum into true vacuum bubble universes, is a recurring miracle and therefore does not violate the corresponding scientific theory.

But however plausible these analyses of miracles are in terms of laws, they lose appeal in the context of models. If one insists on the conditional nature of science at every level, then it would seem that young earth creationism - the stipulation that God created the universe 6,000 to 10,000 years ago - is not in conflict with evolutionary theory, archaeology, geology, astrophysics, and cosmology because these disciplines only aim to reveal what the world is like so long as no supernatural forces are at work. I take this to be a *reductio ad absurdum* of the proposal. Or less colorfully, consider Steinhardt and Turok's (2002) cyclical cosmological model, the proposal that the universe undergoes "an endless sequence of cycles of expansion and contraction. By definition, there is neither a beginning nor end of time, nor is there a need to define initial conditions" (p. 1436). If one believes that God created the universe out of nothing a finite time ago, then one must, on pain of inconsistency, contend that the Steinhardt-Turok model is false. Or again, the Standard Model (SM) of particle physics "refers to the sum total of our knowledge of all the forces and particles [in the universe]" (Mann, 2009, p. 18). Crucial for our purposes is Mann's point that "[t]here are infinitely many other models of the same general type that one could construct, but with different particle content

[6] Nothing about the argument hinges on β specifically; it merely serves as an illustration. We could instead talk about γ, a world where "a catastrophe that leaves all human beings utterly miserable but just barely healthy enough to reproduce…actually happens, generation after generation" (Zimmerman, 2017) for any amount of time one might specify, or δ, a world where "at least one version of me…is living the worst possible version of my life allowed by both the initial conditions and the evolution of the universe according to the Schrodinger equation" (Qureshi-Hurst, 2022, Sec. 3.1).

and/or symmetries....[but SM] is the one that describes what we actually observe" (p. 18). If God miraculously created a particle not featuring in SM, or annihilated all the particles that *do* feature there, we ought to conclude that SM is not an accurate representation of the world. The intention behind scientific models is not merely to capture what is naturally possible, but also to capture nature itself - what it is and how it behaves. Bailer-Jones (2002) makes the point that "[w]hile it is clear that models are often simplifications or approximations, there is still an understanding that by developing them and testing them it is possible to get closer and closer to what the 'real thing' is like" (p. 293). Insofar as God's constant supernatural intervention changes the underlying behavior of the natural world, the models in question - the Level I multiverse, the inflationary multiverse, and so on - are just false depictions of nature rather than true in some conditional way.

Now, one might think that products of human technological development, like high frequency lasers, call my analysis into question.[7] The relevant theories of optical physics would, by themselves, lead us to think that high frequency lasers will not exist because it would be naturally impossible for them to arise (or at least, highly improbable). But few of us would conclude that lasers falsify optical physics. Better to say that "no one theory tells the whole story of nature."

I agree with that last claim; but once we distinguish between 'theories' and 'models', my underlying point remains. To be sure, Bailer-Jones (2002) demonstrates that scientists hold a spectrum of views about the relationship between the two concepts:

1. They mean the same thing.
2. Models become theories once they pass a certain level of empirical confirmation.
3. Theories are more accurate than models, the latter containing simplifications and omissions.
4. Theories are more general than models, while models representing the application of theories to specific situations.

I suspect that there is no single concept that unifies all uses of the term 'model' in scientific discourse but instead a family of conceptions, each valid in different contexts. In particular, Frigg & Hartmann (2024) make the point that "the inner workings of a model are often driven by a number of different theories working cooperatively. In contemporary climate modeling, for instance, elements of different theories — among them fluid dynamics, thermodynamics, electromagnetism — are put to work cooperatively. What delivers the results is not the stringent application of one theory, but the voices of different theories when put to use in chorus with each other in one model" (Sec. 4.2). That insight provides the means for understanding the case of optical physics and high frequency lasers; the theories themselves make no predictions one way or the other about the development of lasers (just like geology makes no predictions about Mount Rushmore or electromagnetism about the climate). To get a specific prediction, one has to account for all the relevant factors, including the activity of human agents, in terms of a specific model. But then the point will be that when it comes to scientific multiverses, these represent models of the world, based upon underlying theories. Our

[7] Thank you for an anonymous reviewer for suggesting this response. The quotation here is from the reviewer.

quest, therefore, concerns the compatibility of two models - theological and scientific - rather than two theories *per se*. Thus, I agree that if β does not exist, then string theory might still be true; but the landscape model of the multiverse could not be an accurate model of the world.

5. Option #2: Deny Premise (1)

The most straight-forward move would be to deny premise (1) by arguing that β is, despite appearances, compatible with TM. There are at least three ways to do that.

5.1 Redefine 'Universe'

Maybe the 'multiverse' as these scientific theories envision it is a single universe as TM defines the term 'universe'. Even if one universe as understood in the context of the relevant cosmological theory is below the 'worthwhile' threshold, nevertheless the entire spatio-temporal structure of which that universe is a part may still be above that threshold - and in the context of TM, this structure would only count as one universe. The move, then, is to deny that β counts as a universe because it is part of a broader spacetime, and it is only the axiological status of the latter that counts in the context of TM.[8]

Advocates of TM do in fact define 'universe' as an entire contiguous spacetime.[9] The interesting question will then be what scientists mean when they discuss a universe versus a multiverse. Ellis (2007) points out that these terms are not used consistently, with some theorists "refer[ing] to the separate expanding regions in chaotic inflation as 'universes', even though they...are all part of the same single spacetime" (p. 387). By contrast, Vilenkin & Perlov (2017), outlining what they term the multiverse of quantum cosmology, explain that "[e]ach universe...has its very own space and time, and is completely disconnected from all the others" (p. 339). Still, more mainstream theories restrict themselves to positing different regions within one spacetime: a Level I multiverse illustrates the point, but so does an inflationary collection of bubble universes wherein all such bubbles are part of the same original inflating false vacuum, and even the Everettian multiverse does not entail that worlds split into separate spacetimes.[10] Thus, Carroll (2019b) writes that the "cosmological multiverse is really just a collection of regions of space, generally far away from one another, where local conditions look very different" (p. 122). So, while Tegmark's Level IV or Vilenkin's quantum multiverse posit separate spacetimes, for most theories of the multiverse discussed in journals of cosmology and physics, it is possible to encompass them within one spatiotemporal framework such that this framework is only one universe within TM.

Evaluating this strategy requires reflection on what defenders of TM mean by 'worthwhile'. Once we have moved to such large-scale structures as contiguous spacetimes, what does it mean for such a universe to qualify for inclusion in the best possible world? Proponents of TM offer only vague gestures towards a response.[11] The question is: in

[8] Thank you to James Read for suggesting this response.

[9] Cf. Turner (2003) writing that a universe is "a maximal spatio-temporal aggregate" (p. 145), a definition basically equivalent to how other authors define the term.

[10] Chen & Rubio (forthcoming) state explicitly that "[t]hose parallel worlds are not spatiotemporally disconnected from us. In fact, they are in the same space-time as our world" (Sec. 1).

[11] O'Connor (2008) writes that "presumably there is some goodness threshold τ below which God

crafting a multiverse, is God a consequentialist or a deontologist? On one extreme, maybe God "is justified in creating any universe whose total value is expected to be positive" (Pittard, 2023, p. 956). If 'preponderance of good over evil' were the only criterion of entry into TM, then it may be that β is compatible with TM, so long as it is embedded in a wider, net-positive spacetime.

But I think we need to supplement consequentialist considerations with deontological restrictions. I suggest a few such impermissible scenarios:

1. A person suffering eternal damnation without deserving it.
2. A person's existence being a net-negative, through no fault of their own, purely for the benefit of someone else.
3. Justice for any particular person ultimately failing to prevail.
4. A person remaining in systematic deception forever.

These cases are extreme enough that most people will probably agree that a perfectly good being could not allow them to obtain, however much good is otherwise realized in the relevant universe. Consider (4): Pittard (2023, pp. 961-2) argues that there is no plausible deontic constraint that bars God from creating 'epistemically inhospitable' universes, those where the inhabitants therein suffer from systematic deception concerning a large share (majority?) of their beliefs. I have no issue with this contention as a general point, but it does seem to me that God could not possibly permit someone to remain in utter deception *forever*, trapped in a solipsistic world where everyone this person thinks they love and commune with does not exist. That strikes me as a tragedy that a perfectly good being would never allow. Given these reflections, I suggest that a universe is 'worthwhile' insofar as it is (i) net-positive in value, and (ii) does not include deontologically impermissible states of affairs. I offer that analysis only as a plausible possibility - but until someone argues for a better one, I will proceed with it.

But now, given condition (ii), it should be clear that merely expanding the scope of what qualifies as a universe given TM does nothing to allay our suspicions that God would not allow β as a state of affairs, even if it were embedded in a net-positive spatio-temporal structure: it is inconsistent with God's perfectly good nature to subject created persons to unrelenting suffering over gargantuan amounts of time. For those struggling to secure the relevant intuition, keep increasing the time specified in β, or the intensity of the suffering therein, until it seems that God would surely not allow *that* much catastrophe to befall someone. Insofar as extant theories of the multiverse entail that such a state of affairs exists, they conflict with TM whether we redefine 'universe' or not.

5.2 Challenge β's Perceived Value

Kraay has suggested that "scientific appearances to the contrary, the universes at issue are not, so far as we can tell, below some defensible threshold."[12] Here one might appeal to skeptical theism, the view that the evidential problem of evil fails because we cannot

would not create" (p. 117), adding that "[p]erhaps it is a vague threshold, but if the subsequent reasoning in the text is correct, this will be of no significance" (p. 158, n. 10).

[12] Kraay to author, 25th March 2024.

rationally assess the likelihood of the evil we observe conditional on God's existence.[13] Though the details differ, Bergmann (2009), Wykstra (1984), van Inwagen (1991), and Hendricks (2023), among others, contend that our inability to come up with a reason x that might justify God in permitting an evil e is no reason to think that there is no such x. For any e, we are not in the right epistemic position to judge whether it is necessary for attaining some greater good, or preventing a greater evil. Incomprehensible tragedy visits people every day - so why not β? Of course, perhaps proponents of the problem of evil are right and events well within our universe are evidence against God's existence. Still, does skeptical theism, if granted, undercut our grounds for affirming that God would not allow β in TM?

The answer is yes - but that implication points to a problem for skeptical theism. Consider Rowe's (2001) objection that "if human life were nothing more than a series of agonizing moments from birth to death, [the skeptical theistic] position would still require them to say that we cannot reasonably infer that it is even likely that God does not exist" (p. 298). Skeptical theism admits of no obvious limiting principle to its stipulation that we are not in a position to gauge whether God might have reasons for permitting this or that evil. No matter how extreme or horrific an evil we might contemplate, the skeptical framework entails that, were we to witness that evil, we could not know if God would or would not permit it. But that unrestricted implication is untenable; at some level of imaginable horror, the intuition that a morally perfect God could not allow it is overwhelming.

Now, on behalf of skeptical theism, Bergmann (2009) replies that "a perfectly good God would not permit suffering unless the sufferer's life is on the whole a good one" (p. 390). Much like with what makes a universe worthwhile, we must add in deontological considerations. God would not permit the scenario Rowe envisions because such would be impermissible. But a Bergmannian response faces a dilemma: either 'the sufferer's life' refers only to their life this side of the grave, or to their existence both here and in the hereafter. If the former, then Bergmann agrees with me that God could not permit β and we are left with contradictory implications of natural and theistic multiverses. If the latter, then the relevant restriction is too weak. Imagine that in β after this poor chap dies, he goes to Heaven, thus ensuring that his existence is, on the whole, a good one. Does this fact permit God to create a universe with β? Not obviously. Even if God graces a person with eternal life, His moral perfection and love prohibit Him from allowing them to languish in unrelenting torment for billions of years. If one insists that we cannot make this claim, it is no longer clear what it means to claim that God is perfectly loving. Again, for those unconvinced, consider that instead of ten billion years, this conscious, isolated individual suffers unceasing torture for a googol years: 1×10^{100}. Insofar as skeptical theism entails that we cannot know that a loving God would *not* allow this incomprehensible terror, then skeptical theism has gone wrong somewhere.[14] So, we are still left with a conflict between TM and scientific multiverse models.

[13] I owe this perspicuous statement of ST to Draper (2016).

[14] For an illuminating presentation of similar reasoning, see Kirk-Giannini (2019).

5.3 Lower the Bar

Kraay also suggests that "the threshold is lower than we might have initially supposed."[15] Perhaps, for instance, God can allow gratuitous evil, where an evil is 'gratuitous' if "the occurrence of [it] is not necessary for the occurrence of some greater good" (Kraay, 2016b, p. 913). Now, the contention that a perfectly good God could allow evil so-defined is counter-intuitive, and the burden of proof rests with those who want to defend it.

Consider a few attempts at that defense. Almeida (2012) contends that if God exists necessarily, it follows that God and gratuitous evil both obtain in some possible world and are therefore compatible. Notice first that God cannot by necessity actualize the best possible world, because if a necessary God *necessarily* creates a particular world η, then η is in fact the only possible world. But various features of the best possible world entail that other worlds are metaphysically possible (Almeida cites morally significant freedom as such a feature - that is, the best possible world includes morally significant freedom, and a procondition for that freedom is the existence of other metaphysically possible worlds). But then, God cannot actualize the best possible world necessarily, from which it follows that there are worlds with evils that could have been eliminated without reducing the amount of good that obtains (i.e., those worlds worse that the best possible), and, given God's necessity, God will exist in those worlds. Thus, 'God' and 'gratuitous evil' are logically consistent after all.

Almeida's reasoning, however, begs the question. Let us grant that God cannot necessarily create the best possible world (if such there be). It does not follow that God's moral perfection is compatible with gratuitous evil. We can agree that

1. If God exists in all possible worlds, and there are possible worlds with gratuitous evil, then there are possible worlds featuring God and gratuitous evil.

But it does not follow that therefore God and gratuitous evil obtain in some possible world, for the atheist could grant (1) and then assert that therefore,

2. God does not exist necessarily.

That is, God does not exist in those worlds in which gratuitous evil obtains. Almeida, in assuming that

2'. God exists necessarily.

is true rather than (2), begs the question by implicitly assuming the compatibility of God and gratuitous evil. For if they are not, in the end, compatible, then God cannot exist in all possible worlds. So, Almeida's argument cannot help the advocate of TM here.

But there are other defenses of the compatibility of theism with gratuitous evil. van Inwagen (2006), for instance, contends that there is no precise amount of evil that is sufficient for God's purposes, such that for any particular evil, God could do away with it without jeopardizing His purpose for the world. Nevertheless, if He eradicated *all* evils, that certainly would thwart His good ends. van Inwagen compares God to a judge sentencing a criminal. If the judge orders an incarceration time of exactly ten years, the

[15] Kraay to author, 25th March 2024.

defendant might object that, surely, ten years minus a day would be equally sufficient for meeting the demands of justice (and ten years minus two days, and ten years minus three days, and...). For any particular length of time in the neighborhood of ten years, all seem sufficient for the purposes of justice. God, similarly, may face a vague range of evil sufficient for His aims, and there is no precise minimum quantity that will bring about the greater goods God has in mind. Therefore, for some specific instance of evil, it may well be the case that God could eradicate it without thereby sequestering some greater good, much like the judge could decrease the defendant's sentence by one day without contravening the demands of justice. The particular evil, like the extra day, is therefore gratuitous, but not inconsistent with God's perfect goodness and power - because, after all, God had to draw the line somewhere.

But this defense will not accomplish much in the present context because even if God could permit certain gratuitous evils, He could not permit any and every possible gratuitous evil. In particular, He could not bring about deontologically impermissible states of affairs, regardless of His ability to bring about gratuitous evil more generally. Given that β plausibly qualifies as impermissible in this sense, God could not bring it about, even if He might justifiably bring about gratuitous evil in general.[16]

In short, the general problem facing such attempts is they either (1) do not succeed in showing that God and gratuitous evil are compatible, or (2) are often irrelevant to the kinds of evil at issue between cosmological and theistic multiverses. Perhaps there is a way of avoiding both horns of the dilemma, but I do not have high hopes.[17]

6. Option #3: Deny Premise (4)

The most effective way of resolving the conflict would be to assert that all the relevant scientific theories that lead to a multiverse are false, wholesale. These cosmological models represent the edge of empirical investigation into the natural world, and much of their internal dynamics are speculative and sketchy. But I want to consider what follows if we grant that there is empirical evidence for these models such that we cannot dismiss them *in toto*.

I will therefore pursue a subtler strategy: take these scientific theories and tack on the claim that God restricts the domain of actualized universes to those that are above a certain value threshold. These explicitly theistic theories, one might argue, are empirically equivalent to their unqualified, mainstream counterparts. There is no scientific experiment that could differentiate, for instance, between an inflationary multiverse partially constrained by God and one proceeding of its own accord. In this way, a defender of TM might argue that TM conflicts with cosmological multiverses in a technical way, but not in a substantive one. Though speaking about evolutionary accounts of the origin of religious belief, we might with Plantinga (2011) claim that TM conflicts with science in the same way that "a theory that results from conjoining Newtonian physics with atheism does: the theory conflicts with [TM], alright, but it certainly doesn't constitute a serious...conflict" (p. 143).

Consider that most theists believe that scientific inference fails us in at least one way: prediction of the long-term fate of the universe. Physical eschatology predicts an abysmal endgame for the cosmos (Adams & Laughlin, 1997). But most Christians,

[16] For further critical analysis of van Inwagen's proposal, see Fischer & Tognazzini (2007) and Trakakis (2007).

[17] For a fuller survey of attempts to defend 'God + gratuitous evil', see Kraay (2016a, 2016b).

for instance, hold that Jesus will return and "we who are still alive and are left will be caught up together...in the clouds to meet the Lord in the air. And so we will be with the Lord forever" (1 Thes. 4:17). Craig (2010) writes that Christian belief entails that God "will not allow events predicted on the basis of present trends in even the relatively near future, including the extinction of the human race, to occur, much less events in the unfathomably distant future such as stellar extinction or proton decay" (p. 705). Is there a conflict between science and religion here? Hardly. It is plausible, as Craig argues, that current physics are valid guides to the universe's future only under the assumption that agents, whether human or divine, do not intervene in those processes - and of course, Christians believe that an Agent will intervene. That is, we have to say that these models arising from physical eschatology are inaccurate (insofar as we agree with Craig's theological views[18]) such that there is a conflict between science and theology here, but it is superficial because our current observations are compatible with either a naturalistic or a theistic projection into the cosmic future. God's future intervention wouldn't make a difference to empirical observations today, after all.

These reflections lead to a simple question: would empirical evidence for scientific models of the multiverse give us reason to think β exists, and therefore that TM does not exist? To get at that question, we will have to answer two further ones: (i) What is the possible evidence for a scientifically-explicable multiverse?, and (ii) Is TM compatible with that evidence? If the answer to the last question is 'yes', then we have no reason to think that β exists *even if* we have evidence for the inflationary multiverse, the many worlds of quantum mechanics, and so on.

6.1 Is there empirical evidence for a multiverse?

Consider two instances of (purported) evidence for scientific multiverses: (1) anthropic arguments, and (2) arguments from the empirical success of underlying theories.

The first kind concerns verified predictions from various multiverse models. Some claim that the inflationary multiverse, when combined with the principle of mediocrity, predicts the observed value of the cosmological constant (Vilenkin & Perlov, 2017, pp. 314–319). The principle of mediocrity states that "[s]ince we have no *a priori* reason to believe that the values of the constants in our region are unusually large or small, or otherwise very special, it makes sense to assume that we are typical, or unexceptional observers" (p. 315). The idea is that, with such a principle in hand, the inflationary multiverse entails that we are typical observers and will therefore likely exist in regions that possess values for the constants and initial conditions that maximize the number of observers within a universe - simply because, by definition, most observers in a multiverse inhabit those regions. Using this principle, Martel et al. (1998) calculated that the cosmological constant Λ should have a small, positive value because it is this value that allows for maximal galaxy formation, and more galaxies is a good proxy for more observers. The logic is similar to being asked to guess which country a randomly selected person is from; China is a better bet than the Vatican City because there are more people in the former than the latter. Similarly, in an inflationary multiverse, there are more people that observe the specified value of Λ than a value that only

[18] There are other theological possibilities besides Craig's - it may be that God creates a new universe, and lets this one expire just as physical eschatology projects. My point in bringing Craig up is merely illustrative: just as theological views according to which the present universe is transformed into something new conflict with physical eschatology in a superficial way, so too do TM and science (or so I will argue).

allows for a few observers. Remarkably, later that same year a team of astronomers discovered that the universe is accelerating in its expansion, and that therefore the value of the cosmological constant is right where Martel et al. predicted it would be (Riess et al., 1998). In this case, we obviously "didn't observe other universes directly, but we observed something about our universe that boosted the likelihood that a multiverse provides the best explanation for what we see" (Carroll, 2019a, p. 309).

The second kind concerns independent reason we might have for affirming theories that lead to a multiverse as a consequence. If evidence continues to accumulate indicating that space is flat, then that will lend credence to the conclusion that space is infinite in extent, one of the conditions for obtaining a Level I multiverse. Moreover, Greene (2011) maintains that the success of inflationary theory provides indirect evidence for a Level II multiverse, writing that "since a great many versions of inflation are eternal, yielding an ever-growing number of bubble universes, theory and observation combine to make an indirect yet compelling case for this...version of parallel worlds" (p. 71). Or again, one might contend that the many-worlds interpretation of quantum mechanics is explanatorily superior to rival interpretations because it better resolves various paradoxes (Vaidman, 2022), or that our failure to find unitarity violations supports Everett's interpretation (Tegmark, 2007, p. 113). One might even argue that "[s]ince quantum mechanics is a theory of striking empirical success, and since [Everettian mechanics] purports to take quantum mechanics 'at face value'...an advocate of this approach may argue that we have good indirect evidence" for this variety of multiverse (Read & Bihan, 2021, p. 7758). The general point is that "parallel universes are not a theory, but a prediction of certain theories" (Tegmark, 2007, p. 100), and insofar as those underlying theories receive support, our confidence in their unobservable consequences also increases.

My point is not that evidence has vindicated scientific multiverses, but rather that it is epistemically possible that future investigation will prove fortunate for these models.[19] TM may then find itself falsified in the near future – *if* TM is inconsistent with those empirical results.

6.2 Does TM square with the evidence?

To understand what TM implies about possible evidence for an inflationary multiverse or the many worlds of quantum mechanics, we have to understand what TM asserts. To summarize the discussion in Sec. 3.3., it seems that TM amounts to the claim that God

[19] I will add that in a survey of 126 cosmologists, 37% stated that multiverse theories either are testable or will be in the near future, 26% said they will never be testable, and 36% preferred an unstated third option (Manson, 2020, pp. 33-4). For a critique of the anthropic argument mentioned above, see Aguirre (2007), and for a critique of the contention that multiverses are an implication of physical theories that are themselves empirically supported, see Ellis (2019, pp. 285-7). A reviewer questions whether the evidence I mention counts as (possible) evidence for a multiverse, making the point that Hawking and Penrose proved in the 1960s that general relativity (GR) entails black holes, but no one would say that light deflection during an eclipse - evidence for GR - was evidence of black holes. Such evidence, we may surmise, came decades later. I disagree. Let's say that general relativity (GR) predicts black holes. Suppose one then learns of several lines of evidence for GR: light deflection during an eclipse, red-shift in light from distant galaxies, the successful explanation for Mercury's perihelion precession, detection of gravitational waves, and so on. One's credence in GR ought to increase considerably. Should one's credence in the existence of black holes also increase, upon learning of these empirical confirmations of GR and that GR predicts them? It seems to me that it should.

has created a multiverse such that (1) all universes therein are causally independent, (2) all universes are above some minimum threshold of value or goodness, and (3) the aggregate value of the multiverse is unsurpassable. That's it. There is no claim one way or the other about the distribution of observers, the underlying physics within each universe, and so on. This omission should come as no surprise: TM is a metaphysical proposal, meant to undercut philosophical objections to theism. It is not intended to provide an empirically fruitful model of the multiverse that a scientist would find satisfying. Because TM largely makes no empirical claims one way or the other, it seems that TM is compatible with the observational consequences of its scientific counterparts. TM does not predict that the cosmological constant will have the value that it does, but it is consistent with that outcome.

To draw out this idea, consider the following two versions of the inflationary multiverse:

THEISTIC INFLATION:	Normal inflationary mechanisms + 'God directs the inflationary decay process to the extent required to prevent universes like β from developing'
NATURAL INFLATION:	Normal inflationary mechanisms left to their own devices.

THEISTIC INFLATION is the inflationary multiverse you would read about in any introduction to cosmology and astrophysics - coupled with precise divine adjustments - and NATURAL INFLATION is the same model but without divine tinkering. I don't mean to suggest, of course, that THEISTIC INFLATION is a *scientific* model. As a philosopher, I have no trouble talking about metaphysical proposals and then comparing them to scientific theories - but I do not thereby mean to imply that divinely orchestrated multiverses should make their way into journals of physics and cosmology.

Fleshing things out in this way provides a means of arguing that the conflict between TM and an inflationary multiverse, say, is real but merely superficial, given that no scientific experiment could distinguish between them. Any differing empirical implications could only arise from TM's stipulation that the really bad universes one would expect to obtain in a natural multiverse do not exist. Here one might press that TM does have some empirical content because it entails that we in our universe will not observe either (i) impermissible states of affairs, or (ii) a net-negative value to the universe, while NATURAL INFLATION makes no such stipulations. As such, the two are not empirically equivalent.

The point is well taken; but notice that those general sorts of implications are not the kinds that scientists draw out from their theories and discuss in the context of multiverses. Rather, they have the kinds of evidence adduced in Sec. 6.1 in view: values for the cosmological constant, failure to find violations of unitarity, failure to detect curvature in spatial topology, and so on, and it seems right that *that* body of evidence is neutral with respect to the two models of the inflationary multiverse considered here. The two are identical, after all, save for the presence or absence of β (and universes like it) from the inflationary expanse. Now, trying to adjudicate whether our universe is net-negative, or whether it includes states of affairs that a morally perfect God could not permit, is just the problem of evil. Maybe that problem is insoluble; the only con-

tention I wish to defend is that the kinds of evidence scientists discuss in the literature cannot adjudicate between theistic and natural inflationary multiverses.

The general point, as Titelbaum (2022) reminds us, is that "[w]hen [a] theory makes a prediction that is borne out by experiment, that experimental result confirms the theory. But it need not confirm the rest of the theory's conjuncts, taken in isolation. In other words, experimental evidence that confirms a theory may not confirm that theory's further predictions" (p. 207). So, even if experimental evidence confirms NATURAL INFLATION taken as a whole, it does not thereby confirm the specific contention that no supernatural agent has interfered in the inflationary process - it does not give us reason to think that β exists because that same evidence also confirms THEISTIC INFLATION. Insofar as we identify the inflationary multiverse with NATURAL INFLATION, it will follow that TM conflicts with the former. But given that a theistically tweaked version thereof is empirically equivalent to its canonical formulation, that conflict is insignificant.[20]

6.3 The Problem

But are we to understand God's direction of the inflationary multiverse, for instance, as mediated by direct supernatural acts, or not?

Take the first option: God prevents β from arising via direct divine action as the multiverse evolves. That claim is consistent with everything that a canonical inflationary theory says about the underlying dynamics of the *natural* forces operative throughout the cosmos.[21]

This proposal, however, drives a wedge between science and reality. Scientific realists, at least, think that empirical investigation connects us to truth. But this account of THEISTIC INFLATION implies that inflationary theory - as expressed in textbooks and debated in professional conferences and journals of physics - is a misrepresentation of the multiverse we inhabit, given that it leaves out of the picture a significant factor shaping the evolution of the multiverse - God's supernatural activity - and as such, leads to a reconstruction of natural reality that is, taken as a *whole*, false. Zimmerman (2017), citing philosopher David Turner, similarly objects that in the context of the Everettian multiverse, divine 'manipulation' of which branches arise and which do not "undermines the Schrödinger equation. If God prevents the worst universes from emerging on the world-tree, then the deterministic law would not truly describe the evolution of the multiverse."

One might reply that methodological naturalism (MN), the stipulation to only appeal to natural explanations and hypotheses (Donahue, 2024), puts a hard limit on science's explanatory abilities such that even if THEISTIC INFLATION were true, science could not evaluate it. The wedge stems, not from a miraculous multiverse, but from MN. But if science is not our only source of truth about the world, we will see scientific

[20] Notice that my analysis entails that the recent discussion about whether the multiverse makes the problem of evil worse (Chen & Rubio, forthcoming; Qureshi-Hurst, 2022; Zimmerman, 2017) is largely beside the point. The crucial question facing the theist is not whether these models make the problem of evil worse - they do - but whether we have any reason to believe that these theoretical proposals are true in their entirety, such they we have reason to think that the pernicious states of affairs predicted by these models obtain. Given the empirical equivalence between those versions of the multiverse that entail these states of affairs and those that do not, we do not have such reasons. The theist, therefore, need not be worried about a worsened problem of evil.

[21] 'Direct divine action' seems coextensive with 'miracle', so I will use either term, but nothing substantial hinges upon that identification.

methodology as one among several sources of knowledge. If we then have independent philosophical warrant for theistically-inclined conclusions about the universe (or multiverse) beyond our observations, we will regard the extension of natural theorizing into those unobservable domains as unwarranted, just as the theist will regard projections from current physics into the far future as unwarranted, even if the scientist will disagree. The existence of a perfectly good God behind the multiverse might lead to diminished applicability for the Schrödinger equation, but perhaps we do not have reason to affirm that equation's universal scope in the first place.

But this reply does not address the real problem. As McDonald & Tro (2009) argue, we have good reason to think that a methodologically natural science is the *correct* tool for studying the natural world. Whether it be Newtonian appeals to God to safeguard the stability of the solar system, vitalistic theories that postulated an immaterial life force inherent in all living things, the attempt to integrate the Genesis flood accounts with geological investigation in the nineteenth and twentieth centuries, and the intuitive but ultimately incorrect Paley-style arguments for the origin of biological complexity, in every case a supernatural explanation proved inferior to a natural one. While this is not a knock-down objection to seeing reality as infused with supernatural activity, it should give us pause before affirming a position as radical as THEISTIC INFLATION under this interpretation, regardless of how we choose to define science and its limits.[22]

7. The Molinist Multiverse

So, let us pursue the other option. Here enters Molinism, a model of God's omniscience that proposes a sublime way of reconciling providential control of the multiverse without resorting to miraculous intervention.[23] The idea is that not only does God know (i) all logically possible states of affairs that *could* obtain, and (ii) all states of affairs that *actually* obtain, but also (iii) all states of affairs that *would* obtain, were something else the case. Crucially, given (iii), God knows what kind of world (or what kind of multiverse) would have developed, given any possible set of initial conditions. God knows, for instance, the exact kind of multiverse that would result from the choice of a particular initial condition and set of natural laws, even if He never elects to bring about that initial state. God knows all hypotheticals.

Molinism gives us a way of reconciling cosmological and theistic multiverses without resorting to miracles: by choosing the precise initial condition of the multiverse and the dynamical laws by which it evolves over time, God can guarantee that even a natural inflationary process unfolds in such a way that only axiologically acceptable universes (or states of affairs) decay from the inflating false vacuum. In this way, God

[22] An anonymous reviewer contends that appeal to methodological naturalism as an argument against TM is question-begging, but I don't think that's right. In any inductive inference from observed to unobserved cases, by the nature of the case we do not know for certain what is true about the unobserved subset. So, for instance, if 99% of people from Detroit hate fish, and I learn that Mark is from Detroit but do not know his tastes for fish, I might form two hypotheses about Mark: he loves fish (L), or he hates fish (H). Appealing to the inductive evidence about the demographics of Detroit fish-preferences isn't question-begging against L; the data cited is evidence *against* L. That seems analogous to the case of the past explanatory failures of supernaturalism and a miraculous multiverse.

[23] The literature on Molinism is huge, but for a classic book-length introduction to the view, see Flint (1998).

need not directly cause inflationary processes to sway this way or that every time they would otherwise unfold into an impermissible universe; rather, God can bring about His multiverse *indirectly*, by setting the initial conditions in place and the dynamical laws that govern their evolution. Under this interpretation, THEISTIC INFLATION requires a scientifically viable model of inflation with an extremely, and perhaps even 'infinitely', fine-tuned set of initial conditions that results in a multiverse free from all the terrible universes inconsistent with theism. That is, given this exquisitely fine-tuned initial condition, coupled with the relevant laws, it will follow that these really nasty pocket universes never develop.

Three claims need to be true for this solution to the incompatibility problem to succeed:

1. Empirical evidence does not rule out the model of inflation required by a Molinist multiverse.

2. We can extend this solution to other scientific multiverse paradigms.

3. Molinism is philosophically tenable.

While I cannot do justice to the complexity surrounding each claim, I can say enough to defend their plausibility.

7.1 Plank #1: Empirical adequacy

If there were some empirical data indicating that the multiverse we inhabit cannot (or probably cannot) be one that evolves from the above-stipulated fine-tuned initial condition, my proposal would be beside the point. But given that (i) "[c]ritics of inflation argue…that its compatibility with the data reflects little more than the enormous flexibility of inflationary model-building" (Smeenk, 2017, p. 206), and that (ii) the initial conditions postulated by the model concern the multiverse as a whole rather than the those of our pocket universe, I take it that (1) obtains.

7.1.1 Objection #1: Everything that can happen, will happen.

But what of Vilenkin and Perlov's claim (2017) that "in quantum mechanics all processes…do occur with a nonzero probability" (p. 281)? Guth (2007) similarly writes that "[i]n an eternally inflating universe, anything that can happen will happen; in fact, it will happen an infinite number of times" (p. 6819). The idea is that the indeterminism of quantum fluctuations guarantees that every possible outcome has a non-zero probability of happening. Given any initial state, there is a non-zero probability, however small, that it will evolve into any arbitrarily selected state later on. But if every possible 'universe history' has a non-zero probability of obtaining via quantum fluctuations, then if we repeat these trials an infinite number of times throughout the inflationary expanse - and we can think of each inflationary bubble as another 'trial' - then every outcome will obtain eventually, somewhere.[24] Consider the oft-cited example of an infinite number of monkeys randomly typing away on a typewriter; somewhere in the

[24] Cf. Linde (2007) writes that "quantum fluctuations generated during eternal chaotic inflation can penetrate through any barriers, even if they have Planckian height, and the Universe after inflation become divided into an indefinitely large number of exponentially large domains. These contain matter in all possible states" (p. 133).

infinite ensemble, there is a monkey that has, by chance alone, typed out Shakespeare's *Hamlet*. In an infinite sequence of trials, if each trial is random and independent, every outcome with a non-zero probability will occur.

These reflections do not undermine my solution. The idea is that God never actualizes an initial condition that would, via quantum fluctuations, lead to β or anything like it. God can select only those initial states that He knows would fluctuate in such a way that they lead to universes above the value threshold were they instantiated, and stich them together into one infinite tapestry. Consider again an infinite series of monkeys, but this time add a Molinist God into the picture. For any monkey, God knows how it would randomly type, were it placed before a typewriter. So, if God wants to prevent *Hamlet* out of a divine distaste for Shakespeare, He can smite any monkey that types it out - *or* He can create only those monkeys He knows would not type out the woes of Prince Hamlet. In general, God can prevent any sequence of letters without interfering with a single monkey's random keystrokes. In an inflationary multiverse, the progression from a particular initial state to a particular bubble universe via quantum fluctuations is on this account truly indeterministic; nevertheless, given His knowledge of the relevant counterfactuals, the epistemic probability for God that any particular state at $t = 0$ will evolve into any other state at some $t > 0$ is either 0 or 1. That's what Molinism affords us: an indeterminate and directed multiverse, just as it affords us a free choice in a world directed by God's providence. I acknowledge that there are difficult questions left unanswered here - in particular, how to relate God's epistemic probability to the objective probability of various outcomes and what it means for those outcomes to be 'independent' of one another in a Molinist scheme - but I trust I've said enough to prop up Molinism as at least a viable response to the incompatibility problem.

7.1.2 Objection #2: God must still roll the dice.

One might still contend that indeterminism undermines my proposal in a different way: there is no way to say of any particular initial condition x that it is 'guaranteed' to lead to a certain cosmic configuration y in the future, such that God could at best get lucky with a multiverse that failed to generate universes like β. But Luis de Molina formulated Molinism to deal with genuine indeterminism in human free action in the first place. If it is a tenable solution in that domain, I see no special difficulties that quantum varieties thereof raise.[25] If there can be counterfactuals of human free choices for any possible person, then there can be counterfactuals of indeterministic outcomes for any possible configuration of matter and energy (or fields or strings or whatever we take the initial state of reality to consist in). If the former is acceptable, so is the latter.

I have spoken freely of an 'initial condition' for the multiverse, so it does seem to me that my proposal's tenability requires that we do not have reason to think that the multiverse is temporally infinite. But at present, the temporal (in)finite of the cosmos is an open question and therefore this condition is met.[26]

[25] For a different attempt to address these concerns, see Harvey et al. (2022).

[26] See Afshordi & Halper (2025) for a popular overview of current cosmology.

7.2 Plank #2: Extension to other multiverses.

My exposition above focuses on the inflationary multiverse. Can we extend the Molinist solution to other levels of Tegmark's scheme?

7.2.1 Level I and Level II

The landscape multiverse that results from a combination of inflationary theory with string theory or the Level I multiverse both seem amenable to the same strategy advanced here. Consider Level I: given that the state of the infinite spatial expanse today is a function of how it began, then by setting the initial conditions of this expanse in the right way, God can indirectly bring about whatever configurations of matter later on that He so pleases. For any finite domain x, x's state at a time t derives from the dynamical laws in place and x's initial condition. Just like in an inflationary multiverse, God can indirectly bring about a Level I multiverse of whatever configuration by setting the initial condition of the infinite multiverse at time $t = 0$ in precisely the right way, such that β's do not arise.

But what about Tegmark's claims that the distribution of matter throughout the universe is homogeneous, ruling out models that posit a non-random ordering of matter/energy? The argument as I understand it for thinking that the infinite multiverse is homogeneous is that at the largest observational scales, we observe homogeneity; we then extrapolate from those observations to the entire infinite cosmos. But for all our observations themselves can tell us, the universe being inhomogeneous just outside our observational limits is consistent with the empirical data. Rather, it will be non-empirical criteria - like simplicity or degree of ad hoc-ness - that would tell against a non-uniform infinite domain. I address this concern below.

7.2.2 Level III

Integrating this framework with the many-worlds of quantum mechanics is not something I can attempt here. Still, success in this context is not all or nothing; maybe TM or theism more broadly is not consistent with Everettian mechanics, but nevertheless consistent with other cosmological models. That would still be an important result.

7.2.3 Level IV

Modal realism or Tegmark's Level IV multiverse are not amenable to my Molinist analysis. But the theist can advance a different resolution to the incompatibility between these more exotic multiverses and TM: hold, with Leftow (2010) and Plantinga (2004) that a necessary God leaves a modal footprint. That is, if such a God exists, then all metaphysically possible worlds are such that God would be morally permitted to actualize them; conversely, if a world is not consistent with a perfectly good God, then that world is metaphysically impossible. Presumably, a world that falls below TM's axiological threshold - say, one that's more bad than good - is not one that God is permitted to actualize. Such worlds, then, are metaphysically impossible. So, the theist can agree with Lewis that all (metaphysically) possible worlds exist as concrete spacetimes, and they can even agree with Tegmark *if* we rephrase his account to concern metaphysically possible mathematical structures rather than the wider range of internally consistent structures; they will simply disagree with these two authors about the *range* of such worlds.

7.3 Plank #3: Molinism's tenability

Finally, if one has knock-down objections to Molinism, then my account will fail. Molinism requires that (i) there are facts about how indeterministic processes would unfold for any given initial condition and dynamical law, and (ii) God can know these facts logically prior to creating any physical reality. We might stumble on either commitment; if the quantum fluctuations determining the decay of the inflationary vacuum are random, one might conclude that there just is no fact of the matter concerning what those fluctuations will be prior to their actually obtaining, and even if there are such facts, it is unclear how could God possibly know them. Now, I think both theses are defensible, but I will reserve their defense for another day. My only contention here is that if Molinism works in the context of indeterministic free choices, then indeterministic quantum processes raise no special concerns.

7.4 Two Objections

While I have defended these assumptions, I am content to rest my case with the conditional conclusion that *if* any of them proves incorrect, then there is no plausible way of harmonizing theistic and scientific multiverses. Still, though they speak about an adjacent project to the present one, Harvey et al. (2022) conclude that "[s]uch a proposal calls for much more work, and much effort to harmonise it with the best available philosophical, theological, and scientific frameworks," adding that "[w]e think this marks out space for an exciting research programme for original future work on Molinism." I agree. While I have closed the door on several attempts to reconcile philosophical and scientific multiverses, I hope to have here opened one, even if only enough to see a bit of light coming through.

While that conclusion is modest, we can reinforce it by replying to two objections one might still press.

7.4.1 *Ad hoc* and Contrived?

One might think that THEISTIC INFLATION, much like Ptolemy's model of a geocentric universe, is *ad hoc*. There is no empirical evidence for the exquisitely fine-tuned initial condition it calls for, so the scientist will naturally disregard it, preferring the simpler NATURAL INFLATION. Carroll (2019a) gives the example of (i) general relativity and (ii) general relativity with the added stipulation that "Newton's constant will suddenly change sign in the year 2100" (p. 307). While acknowledging that both theories have identical empirical consequences, the "second theory would be considered extremely unlikely, as it is unnecessarily complicated without gaining any increase in consistency, scope, or fruitfulness" (p. 307).

But zoom out for a moment. The philosopher investigating these questions, attempting to combine insights from philosophical analysis of God's nature and results of empirical science, need not be overly concerned that he or she is proposing theories that go past what strictly empirical evidence warrants. Science, as I contend above, is committed to methodological naturalism - scientists must propose natural theories of the universe (and multiverse) and investigate their empirical consequences. But fully assessing these models requires taking a philosophical vantage point outside the scientific perspective, one that is at least open to supernatural or theistic alternatives. Model assessment is often an interdisciplinary venture between science and

philosophy. But if this venture is done well, then our philosophical adjustments to scientific theories will be justified and therefore not *ad hoc*. Those extra assumptions may not be justified empirically, but there are more sources of rational belief than science. Carroll's theory (ii) above lacks any legitimate philosophical backing and is therefore rightly ignored. By contrast, if we have reason (a) to believe that God exists, and (b) to believe that God would not allow β to exist, then we have reason to believe THEISTIC INFLATION. Now, the atheistic scientist will disagree at least with (a) - but of course, that is par for the course when it comes to philosophy. My point is that it is these larger worldview concerns that will dictate whether one regards views like THEISTIC INFLATION as *ad hoc* or not, rather than by their scientific credentials alone.

7.4.2 A *Reductio Ad Absurdum*?

Perhaps we can ameliorate any contradiction with modern science, no matter how egregious, merely by adjusting the relevant scientific theory in the way suggested here. Indeed, my proposal seems susceptible to the very *reductio ad absurdum* I lodged against the 'ceteris peribus' response to the incompatibility argument: the young earth creationist could propose theistic versions of paleontology, anthropology, evolutionary theory, cosmology, and so on.

Despite appearances, there is no reason to think that one can resolve all science and religion conflicts in the above way. The young earth creationist, for instance, is free to propose idiosyncratic theistic paleontology, anthropology, etc. - the problem for them is not that they are doing something intrinsically illegitimate, but that we have every reason to think that their revised theories are false. So-called flood geology, or the proposal that light once traveled faster in the past, for example, predict observations contrary to those we have. Now, if the creationist is advocating the radical idea that God has created a world that merely *appears* to be billions of years old, one with fossils of animals that never lived, light from distant galaxies created 'in transit' to generate the illusion of having propagated through the universe for a much longer period of time, and so on, then their hypothesis will face the same objections that any 'maximal skepticism' hypothesis faces. Whatever reason we have for thinking that we are not being deceived by an evil demon, dreaming right now, or subsisting as brains in a vat will function as reason to reject the creationist's 'divine deception' scenario. In short, we can reject a creationist reinterpretation of science either (1) because it makes false predictions, or (2) on the same grounds that we reject Descartes' evil demon hypothesis. The same cannot be said for a divinely superintended inflationary multiverse. We cannot, after all, observe β even in principle, so the proposal under consideration here does not lead to the same kind of illusionism that creation science implies.

I acknowledge, however, that the basic structure of my response may prove fruitful in other areas of claimed 'science and religion' conflict. Craig (2020), for instance, argues that God can guide the evolutionary process without resorting to supernatural intervention because He "could have known that were certain initial conditions in place, then, given the laws of nature, certain life forms would evolve through random mutation and natural selection, and so He put such laws and initial conditions in place" (p. 58), thereby indirectly bringing about whatever kinds of life He pleases. I take this promise of wider applicability to be a virtue rather than a vice.

8. Conclusion

It is now clear that if we are to resolve the conflict between theistic and cosmological multiverses, we have to affirm that the scientific theories in question are false, to one degree or another. We may then either (1) claim that such theories are plain old false *in toto*, (2) affirm these theories in part but supplement them with (i) explicit appeal to divine intervention in nature's course, or (ii) a Molinist account of God's action in the world. If we find all three options unacceptable, then there is not much hope for the otherwise promising theistic multiverse.

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