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GOD AND THE INITIAL COSMOLOGICAL SINGULARITY: A REPLY TO QUENTIN SMITH

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Introduction

"The most efficacious way to prove that God exists is on the supposition that the world is eternal," advised Thomas Aquinas. "For, if the world and motion have a first beginning, some cause must clearly be posited to account for this origin of the world and of motion . . . , since nothing brings itself from potency to act, or from non-being to being."¹ In Thomas's thinking, once it is conceded that the world began to exist, the argument is for all practical purposes over: it is obvious that a First Cause must exist. He therefore sought to prove God's existence on the more neutral presupposition of the eternity of the world; besides, the temporal finitude of the world could be known only by revelation, since the philosophical arguments for a beginning of the universe were, in his opinion, unsound.

The discovery during this century that the universe is in a state of isotropic expansion has led, via a time-reversed extrapolation of the expansion, to the startling conclusion that at a point in the finite past the entire universe was contracted down to a state of infinite density, prior to which it did not exist. The standard Big Bang model, which has become the controlling paradigm for contemporary cosmology, thus drops into the theologian's lap just that crucial premise which, according to Aquinas, makes God's existence practically undeniable.

Quentin Smith disagrees. He argues that the standard model "is actually inconsistent with theism" and that, therefore, an atheistic interpretation of the Big Bang "is in fact better justified than the theistic interpretation."² He claims, indeed, to have established "a coherent and plausible atheistic interpretation" of the origin of the universe.

In support of this remarkable position, Smith presents the following argument:

1. The Big Bang singularity is the earliest state of the universe.
2. The earliest state of the universe is inanimate.
3. No law governs the Big Bang singularity, and consequently there is no guarantee that it will emit a configuration of particles that will evolve into an animate universe.
4. Therefore, the earliest state of the universe is not guaranteed to evolve into an animate state of the universe.
5. If God creates a universe, He creates an animate universe.
6. Therefore, if God created the earliest state of the universe, then He would have ensured that this state is animate or evolves into animate states of the universe.
7. Therefore, God did not create the earliest state of the universe.

Smith takes this argument to be a Big Bang cosmological argument for the non-existence of God.

Critique of Smith's Argument

Smith's argument seems multiply flawed. Consider, for example, premise (1). The premise is patient of two very different interpretations. This fact emerges in the argument's conclusion. From (1) and (7) it follows that

8. God did not create the Big Bang singularity.

This Smith takes to mean

8'. The Big Bang singularity was an actual state uncreated by God,

which is alleged to be inconsistent with classical theism's doctrine of creation. But (8) could be taken to mean

8". God refrained from creating the Big Bang singularity,

that is to say, He, on the pattern of certain contemporary cosmologists, chose to "cut out" the singularity from the space-time manifold and create that manifold without that initial singular point. If this is all that Smith's argument proves, then it is not inconsistent with classical theism. If we take his argument to imply (8"), then by (1) we understand

1". The Big Bang singularity is the earliest state of the universe in the standard model,

whereas Smith takes it to mean

1'. The Big Bang singularity described by the standard model was the actual, earliest state of the universe.

The theist who finds himself convinced by Smith's line of argument could escape inconsistency by denying (1'). Such a move would raise interesting epistemological questions concerning the rationality of belief in *creatio ex nihilo* to which Smith has yet to give attention.³

But (1') is vulnerable on other, more plausible grounds than this. For the question arises as to the ontological status of the singularity. It needs to be emphasized that this is not the same question as the reality of the singularity, as that expression is usually employed in contemporary cosmological theory. Certain singularities in physical theory are merely apparent, resulting

from the coordinate system being used. For example, the Schwarzschild solution to Einstein's field equations in the General Theory of Relativity involves a coordinate singularity when the radius of the body in question equals twice its mass. This singularity results merely from the fact that Schwarzschild chose coordinates for his solution which are not applicable on this surface. By contrast, when the body's radius equals zero, a real, and not merely coordinate, singularity occurs. Now the initial cosmological singularity was certainly a real singularity. But that does not settle the question of its ontological status.

The ontological status of the Big Bang singularity is a metaphysical question concerning which one will be hard-pressed to find a discussion in scientific literature. The singularity does not exist in space and time; therefore it is not an event. Typically it is cryptically said to lie on the boundary of space-time. But the ontological status of this boundary point is virtually never discussed.

For that reason I am not terribly impressed with Smith's statement that "Cosmologists find no difficulty in the concept of a space that has zero dimensions (a spatial point) and that exists for an instant. . . ." ⁴ My own experience is that a question concerning the ontological status of the initial cosmological singularity is likely to be met with bewilderment or disclaimers about not being a philosopher. Mathematical models containing singular points do not carry their metaphysical interpretation on their faces.

Now to my mind, at least, a good case can be made for the assertion that this singular point is ontologically equivalent to nothing. ⁵ Smith attempts a *reductio* of my argument by claiming that a continuous space-time manifold could then not exist, since it is composed of point-events. ⁶ By now I think it is evident that I am dubious whether an ontological continuum does exist; instants and points seem to me to be mathematical fictions. But let that pass, for Smith's *reductio* fails on less controversial grounds than these. For instants of time and points of space are not typically conceived to be themselves intervals of time and of space, but mere boundaries of intervals. And it is consistent to hold that boundary points cannot exist independently of the intervals which they

bound. If instants and points exist only as boundaries of intervals, then they have no independent ontological status and so cannot subsist alone. But in the case of the initial cosmological singularity, this point-instant is said to exist independently. Therefore, point-instants of the manifold can exist (as boundaries of intervals), while the singularity cannot.

The B-theorist would deny this distinction, since the singularity bounds the space-time manifold. But this response is not open to the A-theorist because on his view temporal becoming is real and objective, and so, if temporal becoming is instantaneous, at the instant the singularity comes to exist, all other instants are non-existent, mere future potentialities. Therefore, it would exist alone. ⁷ Indeed, it seems to me in general very difficult to reconcile the A-theory of time with the view that instants are not mere boundary points, but subsist as independent, degenerate intervals of zero duration. Not only does this raise the ancient puzzle of how the present moment can be an interval of zero temporal duration, given that past and future are ontologically unreal, ⁸ but the notion that the present is a solitary instant also seems to pose insuperable problems for the reality of temporal becoming, since instants have no immediate successors, so that one after another cannot elapse. ⁹

Be that as it may, so long as it is consistent to hold that points and instants have reality only insofar as they bound intervals, Smith's *reductio* argument fails. He offers no direct refutation of the claim that a physical object existing for no time and having no extension is not a physical object at all. If the initial cosmological singularity is a mere conceptualization ontologically equivalent to nothing, Smith's premise (1) is false and his argument fallacious, since the universe did not begin at the singularity. Rather the universe, the space-time manifold, does not possess a first temporal instant, but exists at any moment arbitrarily close to the initial, cosmological singularity. It is therefore governed throughout its existence by natural laws so that its becoming animate could be physically guaranteed from any arbitrarily designated initial temporal segment.

But the theist need not prove even so much in order to remove the teeth from Smith's

argument. Plantinga has reminded us that in dealing with defeaters of theism, it is not necessary to supply a rebutting defeater-defeater: an undercutting defeater-defeater may do.¹⁰ So long as my interpretation of the ontological status of the singularity has even equal, if not superior, plausibility to Smith's, his argument for God's non-existence is undercut. At the very least, I think, Smith must in all honesty admit that the ontological status of the singularity is so poorly understood today that such an interpretation is as equally valid as his own. But if that is so, then premise (1') is at best unsubstantiated and therefore his argument fails to prove that the theistic interpretation is inconsistent and, therefore, that the atheistic interpretation is better justified, since the latter claim rests solely on the alleged inconsistency of the theistic interpretation.

Premises (2) and (5) are also problematic. Smith's argument seems tacitly to assume that the only finite, animate life that exists is that which exists in the physical universe, for he equates God's intending "his creation to be animate" with God's intention to create an animate universe. But the problem is that according to Christian theism the physical universe does not exhaust the created order. There are also realms of spiritual substances, or angels, which are part of the created order. Suppose God created the angelic realms prior to creating the physical universe. In such a case, creation is already animate before the work of physical creation has begun. So why is God obliged to guarantee *ab initio* that the physical order is animate? Indeed, why must the physical order ever become animate in such a case? What these considerations suggest is that even if Smith's argument were effective against some bare-boned theism, it still might not have any relevance to Christian theism.

But premise (5) has more serious shortcomings than this. For, we may ask, is (5) necessarily true? Are there no possible worlds in which God creates an inanimate universe? Smith thinks that "It is essential to the idea of God in the Judaeo-Christian-Islamic tradition that if he creates a universe he creates an animate universe. . . ." and that God's creating an inanimate universe is therefore "at odds" with classical theism.¹¹ But if we take Aquinas as our guide, that does not seem to be the case. On

his view, rational creatures enhance the goodness of the universe, but there is no necessity that God create them. He writes, "God wills man to have a reason in order that man may be; He wills man to be so that the universe may be complete; and He wills that the good of the universe be because it befits His goodness."¹² Thomas goes on to explain that some things are willed by God with a necessity of supposition (for example, that man be endowed with reason, if God wills that man exist), others as useful but not necessary to some end, and still others as merely befitting His goodness. This last relation is conceived by him to be extremely weak; something so willed is willed by God's good pleasure as appropriate to, but not required by, His goodness. Hence, even if it is necessary that God will man's existence in order for the goodness of the universe to be complete, there is no necessity that God will that the goodness of the universe be complete. God could have willed that a universe without intelligent life--or without life at all--exist. This does not imply that God therefore has no reason for willing that animate beings exist. On the contrary, Aquinas affirms that a reason can be assigned for the divine will, but that this reason is contingent. Smith is therefore mistaken in thinking that willing an inanimate universe is impossible for God according to classical theism.

But Smith also argues that God cannot have a contingent reason for creating an animate universe since this "contradicts his omnibenevolence."¹³ It is impossible that God have a reason for creating an inanimate universe because "omnibenevolence requires living creatures in relation to which God can exercise his benevolence."¹⁴ But this point precisely supplies the thread for the unraveling of Smith's argument: benevolence is a relational property connoting willing the good of others. Since God is not morally obligated to create any world at all, the theist may hold that omnibenevolence is therefore, like sovereignty and providence, a contingent property of God. Smith does not deny that it is not immoral of God to refrain from creating; but if that is the case, it follows that omnibenevolence is not essential to God's nature. Rather goodness is; the property of being disposed to will the good of any others that exist. Such a dispositional property does not entail the existence of others to whom benevolence would be shown. Smith denies that

God is good if He creates an inanimate universe, when He could have brought into existence a world with animals and persons. But this is just the old "best of all possible worlds" argument in new guise; if there is no best possible world, then a similar complaint could be voiced about any world that God creates, so the objection is vacuous. Smith would perhaps deny this, claiming that within the inanimate type of world there is no best possible inanimate world and within the animate type of world there is no best possible animate world, but that God is morally obligated to choose a world from the latter type over the former type. But it is not obvious why this is so, since we can imagine innumerable many worlds of the former type which would exceed in goodness worlds of the latter type (for example, inanimate worlds of great beauty compared with animate worlds filled with unredeemed and gratuitous evil). To say that God must choose one of the latter type which exceeds in goodness all of the former type immediately starts one down the infinite regress, since the lines of one's typology are arbitrarily drawn by certain chosen standards and one can always find better and better types of world, just as one can find better and better worlds.

Besides all this, the Christian theist will deny Smith's assumption that omnibenevolence requires living creatures as the objects of God's benevolence. One of the beauties of the Christian doctrine of the Trinity is that God is not a lonely monad, but a triad of persons united in one nature. In the absence of creation, God enjoys the fullness of the love and joy of the inner-Trinitarian fellowship; each of the divine persons wills the good of the others. In the trinity of His own being God's benevolence is fully expressed, and the wonder of creation is that God should voluntarily and out of no necessity of His own nature graciously choose to create finite persons and invite them into this inner fellowship of the Godhead. God's omnibenevolence, whether taken to be a contingent or essential property of God, does not therefore constrain Him to create an animate universe, anymore than two artists are morally obligated to beget children.

Now consider the inference drawn in premise (6), which seems clearly invalid. Smith understands (6) to mean that if God "creates a first state of the universe, he creates a state that

is, or is guaranteed to evolve into, an animate state."¹⁵ But even if we concede the truth of (5), how does it follow that (6) is true? There are two ways in which a provident God could create an animate universe out of a necessarily inanimate initial singularity: (i) By His middle knowledge, God could have known that had He actualized the Big Bang singularity, an animate universe would have evolved from it, or (ii) By His miraculous intervention, God could causally bring about an animate universe.

With respect to God's ensuring an animate universe by means of His middle knowledge, Smith is content to rest his case on the final validity of the possible worlds semantics for counterfactual conditionals.¹⁶ But until such semantics show us how to deal with intuitively true or false counterfactuals with impossible antecedents, their adequacy must remain in doubt and with them Smith's argument.

Smith's original charge against the middle knowledge position was that it is viciously circular.¹⁷ I attempted to answer this charge by explaining that those states of affairs which make counterfactuals of freedom true or false are actual logically prior to God's decree to create and therefore serve as one measure of similarity among worlds, an account which is not viciously circular.¹⁸ Smith's rejoinder to this is curious. He asserts,

According to these semantics, 'counterfactual states of affairs' are not the truth-makers of counterfactual propositions. There are no such states of affairs The truth-makers are rather the similarity relations among worlds that are grounded upon the world-histories and the laws themselves.¹⁹

There are at least two things wrong with this response: (1) It confuses truth conditions with grounds of truth of a proposition. Possible worlds semantics does not even aspire to tell us why certain counterfactuals are true/false or the grounds of their truth. As a semantical theory it merely lays out the semantical conditions for a certain class of propositions' taking the values T or F respectively. It is a sort of calculus, if you will, that tells us what it means to say that a counterfactual proposition is true/false, but it neither tells us what makes it true/false nor makes any ontological pronouncement on

whether counterfactual states of affairs exist.²⁰ (2) More importantly, it is irrelevant. Suppose that the grounds of the truth of counterfactuals are just the similarity relations among worlds, as Smith maintains. Plantinga's salient point remains that included in these similarity relations is the worlds' degree of shared counterfactuals. The counterfactual propositions true at a world are true logically prior to the truth or falsity of contingent categorical propositions at that world and so can be known by God logically prior to His creative decree. It matters not whether we order logically prior to the full instantiation of a world either the relevant states of affairs or else the relevant similarity relations. So long as some such ordering is coherent--and the burden of proof is on Smith to show otherwise--, the middle knowledge solution to God's ensuring an animate creation is viable.

Turning, then, to the second alternative of divine miraculous intervention, Smith claims that it is irrational and inefficient for God to create a first state of the universe which does not tend to the end for which the universe is created.²¹ I argued that perfect being theology does not, pace Smith, entail a Deist account of creation.²² Surprisingly, Smith erroneously interprets me to hold that his argument counts against Deism, but not against Christian theism.²³ Smith correctly follows the classical theologians in distinguishing originating creation (*creatio originans*) from continuing creation (*creatio continuans*). But Deists and Christians alike affirmed both of these. What divided them was a further distinction drawn by the classical theologians concerning God's governance (*gubernatio*) of the world. They distinguished between God's ordinary providence (*providentia ordinaria*) and His exceptional providence (*providentia extraordinaria*). The governance of His ordinary providence roughly coincides with what Smith calls "rational continuous creation."²⁴ But the world also includes events governed by His extraordinary providence, which we would call "miracles." Such events need not be characterized as "violations of the laws of nature," since natural laws have implicit *ceteris paribus* clauses stipulating that no natural or supernatural causes are intervening.²⁵ An act of God's exceptional providence is an event which He brings about at time *t* and

location *l* which could not have been brought about at *t*, *l* solely as the effect of natural causes and agents. Smith's position is Deistic in that he rejects works of exceptional providence.

But other than simply labeling ordinary providence or conservation "rational" (and thus tacitly relegating exceptional providence to the realm of the "irrational"), I do not see any new argument on Smith's part for denying the possibility of exceptional providence. According to Aquinas, ". . . it can be manifested in no better way, that the whole of nature is subject to the divine will, than by the fact that sometimes He does something outside the order of nature. Indeed, this makes it evident that the order of things has proceeded from Him, not by natural necessity, but by free will."²⁶ In this respect the God of revelation and the God of the philosophers coincide, what Morris has aptly called "the God of Abraham, Isaac, and Anselm."²⁷ The God Smith describes is not the God of classical theism, but the God of Spinoza's *Tractatus* and Enlightenment rationalism.

As for Smith's argument from efficiency, it will be recalled that I made two points: (1) efficiency is relative to the ends desired, and (2) efficiency is significant only to someone with limited time and/or power. In response to (2), Smith now claims that being efficient is a positive aesthetic value which God must have.²⁸ This strikes me as an extremely tenuous value judgment on which to deny the existence of God. But even if we grant this, its importance depends, as Smith says, on "all else being equal." Factors pertinent is (1) easily override it. Would we dare to call an artist wanting in aesthetic value for preferring the creative labor of executing his oil on canvas rather than simply having, if he could, the finished painting? I suggested that the Creator likewise perhaps delights in the work of creation. Smith responds that this is impossible because it would be inefficient and irrational. This renewed charge of inefficiency closes a vicious circle on Smith's part and condemns artists, chefs, and boys building model airplanes as persons who "'delight' in doing something inefficient, irrational or aesthetically disvaluable."²⁹ The point is that the delight of engaging in creative activity can itself be a justification for what the

rationalist deems inefficient and aesthetically disvaluable activity.

Smith's further charge of irrationality is based on the premise that a person is irrational if he performs some action which fails to advance his goals rather than an action within his power which would advance his goals.³⁰ But God's creating the initial singularity does serve to advance His goals, for it furnishes Him with the raw material for His creative activity.

Moreover, what if His goals include, not merely the having of a created order, but the divine pleasure of fashioning a creation? By focusing too narrowly on the end product, Smith fails to see the wider purposes which God may have in view. Smith's is the viewpoint of the manufacturer, God's the viewpoint of the artist.

I also suggested that God may have created the world as He did in order to leave a general revelation of Himself in nature. Smith responds that this gets things backwards; the evolution of an animate universe through random chance and improbable occurrences suggests that God does not exist. But this is surely a misreading of the evidence on Smith's part, as is evident from the heated debate surrounding the Anthropic Principle and the new life which this has breathed into the teleological argument.³¹ Popularized in novels like Updike's *Roger's Version* or meticulously examined as in John Leslie's *Universes*, the anthropic coincidences are seen by many as so unlikely and finely tuned that they bespeak divine design.³² Tony Rothman muses,

It's not a big step from the [Anthropic Principle] to the Argument from design . . . When confronted with the order and beauty of the universe and the strange coincidences of nature, it's very tempting to take the leap of faith from science into religion. I am sure many physicists want to. I only wish they would admit it.³³

P. C. W. Davies is a good example of a physicist who does admit that the anthropic coincidences persuade him of God's existence.³⁴ The point is that it is inconceivably more probable that the

universe should be life-prohibiting rather than life-permitting, and the best explanation for the cosmos as it is may well be intelligent design. Of course, God could have broadcast His existence even more clearly in creation, but if, as John Hick surmises, God wanted to place creation at a certain "epistemic distance" from Himself so as not to be coercive, then we should expect His revelation to be somewhat subtle, ambiguous, and discernible only to those who have eyes to see.³⁵

Finally, in response to my suggestion that God may have reasons for creating as He did which we are unaware of, Smith admits that this blocks a deductive argument against God's existence, but leaves a probabilistic argument intact. Here I think we can learn a lesson from recent work in the philosophy of religion on the problem of evil. There, too, we have a deductive and an inductive (or probabilistic) version of an argument against God's existence, and it is now generally recognized that the deductive version is a failure, since it seems at least possible that God has morally sufficient reasons for permitting evil, even if these remain unbeknown to us. But some non-theists insist that it is nonetheless highly improbable that God has morally sufficient reasons for permitting the evils in the world. One response to this inductive version of the argument is to point out that there is no probability that we should be able to discern all God's reasons for permitting evil, so that our failure to do so does not render it improbable that God has such reasons. In a recent development of this response, William Alston exposts six "cognitive limits" which make it impossible for us to judge that God lacks morally sufficient reasons for permitting evil. One of these limits, particularly relevant to our discussion, is the difficulty of knowing what is metaphysically possible. Alston writes,

We don't have a clue as to what essential natures are in God's creative repertoire and still less do we have a clue as to which combinations of these into total lawful systems are do-able. We are in no position to make a sufficiently informed judgment as to what God could or could not create by way of a natural order that

contains the goods of this one without its disadvantages.³⁶

Take quantum mechanics, for example. I dare say that we have no idea of whether God could have created a world order comparable in goods to this one while sacrificing quantum physics. This is important because a physical universe governed by quantum mechanical laws not merely allows for the possibility of miracles, but, if God is to be provident and sovereign without recourse to middle knowledge, actually necessitates acts of extraordinary providence. For quantum indeterminacy serves to render certain macroscopic systems chaotic, that is, sensitive to small changes in their initial conditions and therefore unpredictable in their outcome. John Barrow gives a striking example from a game of billiards:

What could be more deterministic than the motion of billiard balls on a billiard table? . . . However, cue games like billiards and pool exhibit that extreme sensitivity and instability . . . If we could know the starting state as accurately as the quantum Uncertainty Principle of Heisenberg allows, then this would enable us to reduce our uncertainty as to the starting position of the cue-ball to a distance less than one billion times the size of a single atomic nucleus (this is totally unrealistic in practice of course, but suspend all practicality for one moment). Yet, after the ball is struck, this uncertainty is so amplified by every collision with other balls and with the edges of the table that after only fifteen such encounters our irreducible infinitesimal uncertainty concerning its initial position will have grown as large as the size of the entire table. We can then predict nothing at all about the ensuing motion of the ball on

the table using Newton's laws of motion.³⁷

Barrow points out that all the important laws of nature are described by equations which exhibit this chaotic sensitivity. What this seems to imply is that if quantum indeterminacy is not merely epistemic, but ontic, then, in the absence of middle knowledge, it is simply impossible for God to providentially direct a world governed by such laws to His provisioned ends without miraculous intervention; in particular, it is impossible for Him to ensure (even with high probability) that an animate universe should evolve from an initially inanimate state. Given the chaotic nature of macro-systems, miracles are not merely necessary, but recurrent, at a very fundamental and probably indiscernible level. Given this exigency, what possible rationale remains for debarring God's interventions prior to the Planck time and at the singularity? What Smith must say is that God could have created a universe of animate creatures described by different laws of nature which are neither indeterministic nor chaotic:

. . . the proponent of the atheological argument may grant that God could not have created an animate universe [governed by the laws of quantum mechanics] without creating a big bang singularity, but he will point out that it would be irrational and incompetent on the part of God to create an animate universe; the rational thing to do is to create an animate universe1, or an animate universe2, etc., such that these systems do not require divine interventions for animate states to be ensured.³⁸

But this is where Alston's point becomes relevant: we simply have no idea whether God could have created such a world-order and even less whether it would have involved the goods which this system does without greater disadvantages. We can imagine such worlds, but that does nothing to prove that they are either possible or feasible. Paraphrasing Alston, I should say that

. . . the judgments required by the inductive argument from [Big Bang cosmology] are of a very special and enormously ambitious type and our cognitive capacities are not equal to this one We are simply not in a position to justifiably assert that God would have no sufficient reason for [creating the Big Bang singularity]. And if that is right, then the inductive argument from [Big Bang cosmology] is in no better shape than its late lamented deductive cousin.³⁹

It seems to me, therefore, that Smith's argument is based on such multiple mootable premises that we can repose no confidence in it.

Atheistic vs. Theistic Interpretation of the Big Bang

But what, in any case, is Smith's "atheistic interpretation" of the Big Bang and what warrant does it enjoy? Although he does not develop this interpretation at any length, it would appear to be that the initial, cosmological singularity inexplicably "exists and emits the four-dimensional spatio-temporal universe."⁴⁰ But at this point one must be very careful. For although Smith uses here tenseless language to describe the origin of the universe, Smith is no B-theorist of time who thinks that the entire space-time manifold (plus any singular points) exists tenselessly. Rather Smith is an ardent A-theorist who rejects strictly tenseless language and regards even abstract objects as having temporal duration. Hence, in no sense of the term are we to think of the initial cosmological singularity as possessing the property of permanence, which has been so effectively analyzed elsewhere by Smith.⁴¹ On an A-theory of time, the singularity is neither sempiternal, omnitemporal, everlasting, infinite in the past and future, beginningless and endless in time, endlessly recurrent, eternal, nor merely timeless. In order for any of these predicates to apply to

the singularity, one must adopt a B-theory, according to which the singularity does not come to be or pass away, but tenselessly exists. On Smith's A-theoretic view, the first physical state of the universe came to be without any temporally preceding states whatsoever and immediately emitted the space-time manifold. Moreover, this coming to be is admitted to be unexplained, that is, without cause or reason.⁴²

What possible warrant could there be for such an incredible scenario? If it enjoys no independent support or inherent plausibility apart from the alleged inconsistency of the theistic interpretation, then with the failure of Smith's argument, its epistemic warrant shrinks to zero. Smith, however, does offer an argument in favor of his interpretation: it is simpler than the theistic hypothesis. Noting that the singularity has zero spatial volume, zero temporal duration, and non-finite values for its density, temperature, and curvature, Smith contends that it is the simplest possible physical object, even as God is the simplest possible person. They are thus on a par with each other. Both God and the initial, cosmological singularity exist unexplained and so are also on a par in this respect. But "It is simpler to suppose that the 4D physical universe began from the simplest instance of the same basic kind as itself, viz., something physical, than it is to suppose that this universe began from the simplest instance of a different kind, viz., something nonphysical and personal."⁴³

Smith's argument, however, depends on a parallelism between God and the initial cosmological singularity which seems clearly exaggerated. For the sense in which God is unexplained is radically different from the sense in which the initial, cosmological singularity is unexplained. Both can be said to be without cause or reason. But when we say that God is uncaused we imply that He is eternal, that He exists either timelessly or sempiternally. His being uncaused implies that He exists permanently. But the singularity is uncaused in the sense that it comes into being without any efficient cause. It is impermanent, indeed, vanishingly so. These hypotheses can therefore hardly be said to be on a par with each other. Moreover, God is without a reason for His existence in the sense that His existence is metaphysically necessary. But the singularity's

coming to be is without a reason in the sense that, despite its contingency, it lacks any reason for happening. Again these hypotheses are fundamentally different. The hypothesis that the universe was brought into being by an eternal, metaphysically necessary being hardly seems on a par with the hypothesis that the singularity inexplicably and causelessly came into being. Thus, Smith's parallelism between God and the singularity evaporates once the alleged parallels are examined.

As for the simplicity argument itself, Smith's case for the superiority of the atheistic interpretation is, in effect, that only on the atheistic hypothesis does the space-time universe have a material cause, namely, the singularity. But that is a red herring. For the theist could also maintain that the universe emerged from a physical singularity, adding that the latter was created by God. The real issue is rather the origin of the singularity itself. On the theistic hypothesis the space-time manifold plus its initial singular point was brought into being by God. But on Smith's hypothesis the space-time manifold plus its initial singularity came to be without any cause or reason. Hence, atheism is not explanatorily simpler than theism after all, since physical reality did not begin from an "instance of the same basic kind as itself, viz., something physical."⁴⁴ In fact, on Smith's own principle concerning simplicity and difference in kind, theism is arguably a simpler hypothesis, since, as Duns Scotus put it, there is an infinite distance between being and non-being, and theism posits the origin of being by being, whereas atheism posits the origin of being from non-being.

Smith opened his paper with the confession that "the reason for the apparent embarrassment of non-theists" when faced with the prospect of the beginning of the universe "is not hard to find": they must believe that "the universe came from nothing and by nothing." Like C. D. Broad, I find this notion insupportable, and any world view taking this thesis on board will be eventually pulled under by its weight. The principle that something cannot come out of absolutely nothing strikes me as a sort of metaphysical first principle, one of the most obvious truths we intuit when we reflect philosophically. Smith, on the other hand, maintains that this principle is neither a

necessary *a posteriori* nor a necessary *a priori* truth.⁴⁵ It cannot be necessary *a posteriori* because the sentence "Everything that begins to exist has a cause" cannot express different propositions in different possible worlds while obeying its actual rule of use. Now I personally see no reason at all to think that all necessary *a posteriori* truths must conform to the analysis Smith lays down. According to Kripke, all of his examples of metaphysically necessary *a posteriori* truths have a character such that we see that if they are true at all, they are necessarily true, so that any empirical knowledge of their truth is automatically empirical knowledge of their necessity.⁴⁶ So why is it implausible that we should see that the proposition "Everything that begins to exist has a cause" is necessarily true, if true at all, and see on the basis of experience that it is true? I can think of other metaphysically necessary truths that seem analogous; for example, "No effect precedes its cause" and "No event precedes itself," which are metaphysically necessary due to the A-theoretical nature of time and becoming,⁴⁷ but which perhaps require some experience of time in order to be seen as true.

In any case, can we not construct a scenario meeting Smith's criteria? When I say that "Everything that begins to exist has a cause," the sentence is significantly tensed and expresses a tensed fact. Everything that did, does, or will begin to exist had, has, or will have a cause. Let us imagine, then, a world W exactly like the actual world except that it is devoid of ontological tense. All things in W exist tenselessly at their appointed space-time coordinates and so never really begin (significantly tensed) to exist. Things begin (tenselessly) to exist only in the sense that their world lines have front edges, or are finite in the "earlier than" direction of time. Persons in W believe and utter the tensed sentence, "Everything that begins to exist has a cause," but that sentence does not express the same fact that it does in the actual world, for there are no tensed facts in W. Indeed, I should say that the tenseless proposition it expresses, that "Everything that begins to exist has a cause" is not necessarily true, since such things never undergo temporal becoming, that is, they never come (significantly tensed) to exist and so do not need a cause of their world lines' being finite in the "earlier than" direction.

Smith might reject this example because such a tenseless world is metaphysically impossible and, hence, strictly inconceivable. I should agree that it is inconceivable; but it is not unimaginable. In general it seems to me that Smith confuses conceiving a world with imagining a world. To the same extent that we can imagine a world in which water is not H₂O, we can imagine a world in which tense does not exist or in which things come into being without a cause. But this amounts to no more than our ability to form mental pictures and to give them labels like "A World in which Water Is Not H₂O" or "A World in which Something Begins without a Cause." Strictly speaking, they are alike inconceivable.

This prompts us to ask why "Everything that begins to exist has a cause" cannot be a necessary a priori truth which can be immediately known. Smith's response is, in effect, that we can imagine a world in which, say, the universe comes into being without a cause. I agree that we can form such a picture in our imagination. But that does nothing to prove that the proposition is not a necessary a priori truth. Consider Aquinas's point with which we began this paper. A pure potentiality cannot be conceived to actualize itself. Therefore, there must be an actual cause for anything's coming to exist. In the case of creation, there was not anything physically prior to the singularity. Therefore, it is impossible that the potentiality of the existence of the universe lay in itself, since it did not exist. On the theistic view, the potentiality of the

universe's existence lay in the power of God to create it. On the atheistic interpretation, on the other hand, there did not even exist any potentiality for the existence of the universe. But then it seems inconceivable that the universe should come to be actual if there did not exist any potentiality for its existence. It seems to me therefore that a little reflection discloses that our mental picture of the universe arising uncaused out of absolutely nothing is just that: pure imagination. Philosophical reflection reveals it to be inconceivable.

Hence, far from being simpler than the theistic hypothesis of creation, the atheistic interpretation is less simple, has zero explanatory power, and in the end degenerates into metaphysical absurdity.

Conclusion

Enjoying no greater consistency than its theistic rival, with no positive argument to commend it, and unable to escape the charge of metaphysical absurdity leveled against it, Smith's atheistic interpretation of the Big Bang appears to be untenable. If the standard model is correct, it does seem to constitute a powerful argument for the existence of a Creator of the universe. Smith leaves it open that the model may be false and some other model not involving an initial cosmological singularity be true. Perhaps, though there are reasons to doubt that an absolute beginning can be avoided through such models; but that is a debate for another day.

Endnotes

¹Thomas Aquinas *Summa contra gentiles* 1.13.30. (Pegis translation.)

²Quentin Smith, "A Defense of the Cosmological Argument for God's Non-Existence," p.

³See Thomas V. Morris, "Creatio ex nihilo," in *Anselmian Investigations* (Notre Dame, Ind.: University of Notre Dame Press, 1987), pp. 151-60. Morris argues that belief in creatio ex nihilo gains in rationality as the number of empirical beliefs it forces us to abandon decreases. Cutting out the singularity would sacrifice a minimal number of such beliefs.

⁴Quentin Smith, "A Big Bang Cosmological Argument for God's Non-Existence," *Faith and Philosophy* 9 (1992): 225.

⁵See William Lane Craig, "Theism and Big Bang Cosmology," *Australasian Journal of Philosophy* 69 (1991): 492-503. Analogous equivalencies elsewhere in science may help to drive home the point. For example, in discussions of the conventionality of simultaneity in relativity theory, one speaks of synchronization of spatially separated clocks by means of the slow transport of clocks from one place to another. It is claimed that by transporting clocks at progressively slower velocities, one can approach absolute synchronization, which would result from a clock transported from one place to another at infinitely slow velocity. But no one takes infinitely slow transport of clocks as describing an actual procedure, since infinitely slow velocity is ontologically equivalent to rest, that is, to no transport at all!

⁶Smith, "Cosmological Argument for God's Non-Existence," p.

⁷If the A-theorist adopts an atomistic view of time, then he could maintain that the singularity is the boundary of the first chronon of time. But this would undermine Smith's argument because then the first state of reality would not be lawless and unordered.

⁸Aristotle *Physics* 4. 10. 217b33-218a9. For an excellent discussion of the early history of this conundrum, see Richard Sorabji, *Time, Creation and the Continuum* (Ithaca, N.Y.: Cornell University Press, 1983), pp. 7-63. Augustine in particular agonized eloquently over this problem (Augustine *Confessions* 9. 15-28).

⁹See discussion in Adolf Grünbaum, "Relativity and the Atomicity of Becoming," *Review of Metaphysics* 4 (1950-51): 143-186. Recall that Grünbaum solves the problem only by denying the reality of temporal becoming. My own solution is not to adopt an atomistic view of time, but to maintain that only intervals of time are real or present and that the present interval (of arbitrarily designated length) may be subdivided into subintervals which are past, present, and future respectively. Thus, there is no such time as "the present" simpliciter; it is always "the present hour," "the present second," etc. The process of division is potentially infinite and never arrives at instants. For a fine treatment see Andros Loizou, *The Reality of Time* (Brookfield, Ver.: Gower, 1986), pp. 44-45.

¹⁰Alvin Plantinga, "Foundations of Theism," *Faith and Philosophy* 3 (1986): 298-313.

¹¹Smith, "Big Bang Cosmological Argument," p. 223.

¹²Thomas Aquinas *Summa contra gentiles* 1.86.5.

¹³Smith, "Cosmological Argument for God's Nonexistence," p.

¹⁴Ibid., p.

¹⁵Ibid., p.

¹⁶Ibid., p.

¹⁷Quentin Smith, "Atheism, Theism, and Big Bang Cosmology," *Australasian Journal of Philosophy* 69 (1991): 62-65.

¹⁸Craig, "Theism and Big Bang Cosmology," p.

¹⁹Smith, "Cosmological Argument for God's Nonexistence," p. .

²⁰This is especially evident if there are bivalent counterfactuals of freedom, for these cannot be made true or false on the basis of similarity relations alone, since counter-causal freedom requires that one be able to choose differently in worlds having exactly similar world histories up to the time of choice. Such a counterfactual cannot therefore be made true by the fact that in all the antecedent-permitting worlds most

similar to the actual world up to the point of decision, one chooses the alternative described in the consequent.

²¹Smith, "Atheism, Theism, and Big Bang Cosmology," p.

²²Craig, "Theism and Big Bang Cosmology," p.

²³Smith, "Cosmological Argument for God's Nonexistence," p.

²⁴However, providence also involves the intentional aspect that the states of the world are in some way planned or arranged by God. Moreover, nomological conservation would not be interpreted to abrogate creaturely freedom of the will.

²⁵For an outstanding treatment of the relation between natural law and miracle see Stephen Bilinskyj, "God, Nature, and the Concept of Miracle" (Ph.D. dissertation, University of Notre Dame, 1982).

²⁶Thomas Aquinas *Summa contra gentiles* 3.100.10.

²⁷Thomas V. Morris, *Anselmian Explorations* (Notre Dame, Ind.: University of Notre Dame Press, 1987), p. 10.

²⁸Smith, "Cosmological Argument for God's Nonexistence," p.

²⁹Ibid., p.

³⁰Ibid., p.

³¹See William Lane Craig, "The Teleological Argument and the Anthropic Principle," in *The Logic of Rational Theism*, ed. Wm. L. Craig and Mark S. McLeod, *Problems in Contemporary Philosophy* 24 (Lewiston: Edwin Mellen, 1990), pp. 127-153; L. Stafford Betty and Bruce Cordell, "New Life for the Teleological Argument," *International Philosophical Quarterly* 27 (1987): 409-435.

³²John Updike, *Roger's Version* (London: Deutsch, 1986); John Leslie, *Universes* (London: Routledge, 1989).

³³Tony Rothman, "A 'What You See Is What You Beget' Theory," *Discover*, (May 1987), p. 99.

³⁴Paul Davies, *The Mind of God: Science and the Search for Ultimate Meaning* (New York: Simon and Schuster, 1992).

³⁵As Pascal wrote,

"It was not then right that He should appear in a manner manifestly divine, and completely capable of convincing all men; but it was also not right that He should come in so hidden a manner that He could not be known by those who should sincerely seek Him. He has willed to make Himself quite recognizable by those; and thus, willing to appear openly to those who seek Him with all their heart, and to be hidden from those who flee from Him with all their heart, He so regulates the knowledge of Himself that He has given signs of Himself, visible to those who seek Him, and not to those who seek Him not. There is enough light for those who only desire to see, and enough obscurity for those who have a contrary disposition" (Blaise Pascal, *Pensées*, trans. W.F. Trotter [London: J.M. Dent & Sons, 1932], No. 430, p. 118).

³⁶William Alston, "The Inductive Problem of Evil," *Philosophical Perspectives* 5 (1991): 65.

³⁷John D. Barrow, *The World Within the World* (Oxford: Clarendon Press, 1988), p. 277.

³⁸Smith, "Cosmological Argument for God's Nonexistence," p. . Of course, God could have created a quantum universe without the extrapolated initial state, but then we run into the same problem mentioned in note 3.

³⁹Alston, "Inductive Problem," pp. 65, 61.

⁴⁰Smith, "Cosmological Argument for God's Nonexistence," p. .

⁴¹See Smith's helpful analysis in "A New Typology of Temporal and Atemporal Permanence," *Nous* 23 (1989): 307-30.

⁴²In discussing the origin of the universe, one runs the risk of being bamboozled by his own language, for expressions like "The universe came to be" or "The universe came into being out of nothing without a cause" or "God created the universe out of nothing" might lead the uninitiated to infer that one means that there was a state of nothingness temporally prior to the first event from which the universe was created. But as Aquinas recognized, the import of *creatio ex nihilo* is that there was not anything temporally or metaphysically prior to the universe out of which it was made (*Summa contra gentiles* 2.16.4; 2.17.2; 2.36.7). It is very difficult to express this idea in a non-misleading way because the mere assertion that the universe or time began to exist can be interpreted by the B-theorist in such a way as to obscure the radicalness of this claim, whereas attempts to capture the A-theoretic sense of the assertion (e.g., "The universe came into being out of nothing") may sound analogous to the statement "John came into the house out of the rain," which betrays one's true meaning. What one means is that the universe started to exist without any temporal or causal antecedents and that this is a tensed fact. Fortunately, Smith understands this and nowhere objects to such expressions and occasionally even uses them himself.

⁴³Smith, "Cosmological Argument for God's Nonexistence," p. .

⁴⁴Ibid., p.

⁴⁵Quentin Smith, "A Criticism of A Posteriori and A Priori Arguments for a Cause of the Big Bang Singularity," pp. . Cf. Smith, "Big Bang Cosmological Argument," pp. 230-233, to which my remarks were originally directed.

⁴⁶Saul A. Kripke, *Naming and Necessity*, rev. ed. (Oxford: Basil Blackwell, 1980), p. 159.

⁴⁷See discussion in William Lane Craig, "Divine Foreknowledge and Human Freedom," *Studies in Intellectual History* 19 (Leiden: E. J. Brill, 1991), pp.111-113, 150-153.

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