

COSMOLOGICAL ARGUMENTS

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Cosmological arguments try to establish the existence of an uncreated creator of the cosmos. They argue for the conclusion expressed in the first verse of the *Bible*, "In the beginning God created the heaven and the earth."

Although most cogently formulated by philosophers such as St Thomas Aquinas (1225-1274), al Ghazali (1058-1111), and Gottfried Leibniz (1646-1716), cosmological arguments have a powerful appeal also to those non-philosophers who feel that the "ultimate" explanation for the existence of the *natural* universe is that it was created by some sort of *supernatural* entity, viz., God.

Such arguments belong to Religion, not Science; to Metaphysics, not Physics. Along with various versions of the Ontological argument and the Teleological argument (argument from Design), they constitute one of the standard "proofs" of the existence of God.

Yet a broad consensus of philosophers, including many who agree with the conclusion, hold that none of these arguments, however persuasive they may seem, really establishes the desired conclusion. This is why Immanuel Kant (1724-1804) concluded that the existence of God is not for reason to demonstrate but for faith to proclaim.

The *kalam* Cosmological Argument

Of the countless versions of the cosmological argument devised by metaphysicians and theologians in the Greek, Roman, Judaic, Christian, and Islamic traditions, that devised by Arab scholars during the Islamic Golden Age (750-1258) is particularly noteworthy for its intuitive appeal, the sophisticated way in which it can engage the intellect of scientists and mathematicians as well as philosophers, and for its overall persuasive power. As reconstructed by the contemporary Christian philosopher-apologist, William L. Craig, it is designated as "the *kalam* cosmological argument." Many of the lessons learned by examining its credentials can be applied to the evaluation of other versions.

Craig's formulation of the *kalam* argument

Craig presents the first stage of his version as a simple syllogism:

Premise 1: Whatever begins to exist has a cause.

Premise 2: The universe began to exist.

Conclusion: Therefore the universe has a cause.

This first stage of the argument is valid. But are its premises true? And a second question: How does God get into the act, as it were? How does one

get from the conclusion that there is a first cause to the further conclusion that this is God?

Aquinas thought it sufficed to say: "this all men call God." Craig, however, supplies a second stage of argument, claiming that the most plausible account of the first cause is that it is a personal God who, while creating space and time, is (or was) himself not in either.

Premise 1: "Whatever begins to exist has a cause"

As with all other versions of the Cosmological argument, the *kalam* has at least one empirical claim among its premises--a claim, that is, for whose truth we have to rely on our experience of the world around us. So the question arises whether, *in our experience*, everything that has a beginning does in fact have a cause.

To most people Premise 1 seems so obviously true as not to need defending. Objects don't just "pop into existence". Likewise with events (changes in things or states of affairs). They begin and end in a temporal series of causes and effects. Things, we say, don't "just happen." Rather, every event is caused by, and hence determined by, some event or events that precede it in time.

Yet this commonsense belief is not beyond dispute.

First, the standard interpretation of quantum physics maintains that the commonsense belief in universal causality must be abandoned. The occurrence of events at the microphysical level is unpredictable, uncaused, and indeterministic in character. Or so many claim. Yet if this interpretation of quantum phenomena is sound, then Premise 1 is just plain false, notwithstanding its endorsement by ordinary experience.

Second, the truth of Premise 1 is inconsistent with the account of free will that is embraced by many theists, Craig included. The problem is that, if it were true, and the chain of causes did indeed go back to God as the ultimate cause and creator of the universe, then God would thereby be made the ultimate cause of all the evils that universe contains. We would have to take him at his word when he claims, "I make peace, and create evil: I the LORD do all these things." (*Isaiah*, 45:7)

One way of avoiding this unpalatable conclusion is to say that genuine free will involves a break in the causal chain, that our free acts are uncaused by anything other than ourselves, and hence that it is we (and perhaps other free agents like Satan and his cohorts) who bring about all the evils in God's universe. But on this so-called "contra-causal" account of free will, Premise 1 is false. It makes our free choices *uncaused* causes of our free acts. Hence the theists' dilemma: Either accept Premise 1 and make God causally

responsible for evil, or reject Premise 1 and abandon the cosmological argument for God's existence.

Premise 2: "The universe began to exist."

Craig has two subsidiary arguments for the truth of the second premise. One involves an appeal to *empirical* evidence from current scientific cosmology. The other involves an *a priori* argument (an argument that requires no appeal whatever to experience) from the supposed impossibility of an actually infinite number of things or events.

Subsidiary argument from scientific cosmology

Three main cosmologies have engaged the attention of physicists over the past half-century or so: the Steady State model; the Oscillating model; and the Big Bang model. The first two hold that the universe never had a beginning but always existed, either in the same steady state or in successive states of recurrent expansion and contraction. Only the third postulates a temporal beginning of the universe.

Which of these models is correct? An overwhelming scientific consensus supports the Big Bang model according to which both the physical universe and time itself began about 12-14 billion years ago. Yet if empirical evidence tells us anything it is that, in the fullness of time, this model may give way to one of the others or to some other model yet to be conceived or empirically confirmed. Craig claims that models allowing for a beginningless universe are "physically impossible." But this is too strong. It presupposes that the Big Bang theory has been established beyond all possibility of revision and that any further tests of its truth would be fruitless. Yet such tests proceed.

But suppose that the Big Bang model is in fact true (not just currently accepted as true). Since it asserts that time and space began with the expansion of a so-called singularity, its truth would indeed lend support to Premise 2. But at the same time, its truth would undermine Premise 1. For if time itself began with the Big Bang, then no temporally preceding event can have caused it to begin. In short, current physical cosmology can be invoked to support Premise 2 only at the expense of having it controvert Premise 1.

Either the spatio-temporal universe had a beginning or it didn't. If it did begin--as the Big Bang model postulates--then, so far as science can tell us, Premise 2 is true but Premise 1 is false. On the other hand, if it didn't have a beginning--the scenario painted by both the Steady State and Oscillating models--then, so far as science can tell us, Premise 1 is true and Premise 2 false. On either scientific account, the *kalam* argument is unsound.

Subsidiary argument from the impossibility of an actual infinite

A common feature of all versions of the Cosmological Argument is the claim that the regress of causes postulated in Premise 1 "cannot go on forever." What distinguishes the *kalam* version from these others is that it offers an *a priori* argument for the impossibility of the regress of causes being infinite.

Craig presents this subsidiary argument thus:

An actually infinite number of things cannot exist.

A beginningless series of events in time entails an actually infinite number of things.

Therefore, a beginningless series of events in time cannot exist.

Clearly this argument is valid. Equally clearly, the conclusion, if true, would rule out the kind of endless chain of events envisaged in both the Steady State and Oscillating models of the physical universe. It would provide *a priori* endorsement for the sort of beginning of space-time that is postulated in the Big Bang theory.

But what, we need to know, is meant by an "actual infinite"? And what is impossible about the notion that an actually infinite number of things should exist?

A collection of things (objects, events, or moments of time) is said to comprise an actual infinite if it satisfies the conditions for being an infinite set as defined by the mathematician Georg Cantor (1845-1918), namely, that the members of that set can be put into a 1-to-1 correspondence with the members of one of its proper subsets. Consider the claim, "For every natural number there exists a successor that is itself a natural number." Clearly this claim entails the existence of an infinite set of natural numbers. This set satisfies Cantor's conditions for being an infinite set since the proper subset comprising just the odd numbers can be thought of as standing in 1-to-1 correspondence with all the natural numbers, even as well as odd.

The idea of a set all of whose members are equinumerous with one of its proper subsets is certainly counter-intuitive. But this, it has been argued, arises from the fact that most of our thinking about sets focuses on the properties of *finite* sets not infinite ones. So we have no good reason to suppose the latter to have the same properties as the former. In any case, despite its "paradoxical" consequences, Cantor's theory of transfinite numbers is logically self-consistent and cannot be shown to be logically impossible.

Now just as the statement "For every natural number there is a successor that is a natural number" generates an infinite set of natural numbers, so the statement "For every event that begins to exist there is a preceding event that is its cause" generates an infinite series of events. Likewise with the claim "For every moment of time that begins to exist there is a moment of time that precedes it." Yet both these latter claims are entailed by Premise 1 of Craig's *kalam* argument. Hence if there is nothing logically impossible about the existence of an infinite set of natural numbers, there would seem to be nothing

logically impossible about the existence of an infinite series of events or an infinite series of moments of time.

Craig is prepared to allow the logical possibility of infinite sets in mathematics, despite their paradoxical consequences. So on one interpretation of "things", viz., that in which the things concerned are abstract entities like numbers, he is prepared to allow (contrary to the first premise of his subsidiary argument) that an actual infinity of things can exist after all. What he cannot accept is that interpretation of "things" in which the things concerned are constituents of the spatio-temporal universe, i.e., physical objects, events, or moments of time. But infinite sets of the latter sorts of entity are no more paradoxical than are infinite sets of abstract entities.

The upshot of his second subsidiary argument then is this. If the paradoxical nature of infinite sets did indeed demonstrate that an actually infinite number of events in time cannot exist, then Premise 1 is false since it entails just such an actually infinite set. But if, on the other hand, the paradoxical nature of infinite sets does *not* demonstrate the impossibility of an actually infinite number of events in time, then it provides no grounds for holding Premise 2 to be true.

Interim Conclusion: "Therefore the universe has a cause."

Set aside the previously noted objections to Premise 1: that its truth is threatened by both quantum theory and the contra-causal account of free will, and that the infinite series of beginnings it entails is rendered impossible by the argument against actual infinities. There are still more problems.

Consider, once more, the experiential warrant that is claimed on behalf of Premise 1. It is that within our ordinary experience of things that happen *within the spatio-temporal universe*, the beginnings of all events are brought about, or caused, by preceding events which themselves had beginnings. That is the scope and limit of our empirical grounds for holding Premise 1 true. There is, therefore, no experiential warrant whatever for our extending its scope to the case of the beginning of the universe itself. It is not as if we have experienced cases of many universes beginning and have found from our experience of these universe-beginnings that all of them are caused.

If we were to be more guarded in generalizing about how things happen (at least at the macrophysical level) in the spatio-temporal universe we experience, we would formulate Premise 1 so as to read "Whatever begins to exist *within the spatio-temporal universe* has a cause." It would then become clear that we have no warrant whatever for extending the limited universality of this more defensible premise to the beginning of the spatio-temporal universe itself. As Bertrand Russell (1872-1970) pointed out, to suppose that we do have such a warrant would be like supposing that from the statement that every human has a mother we can infer that humanity has a mother.

Final conclusion: "The cause of the universe is God."

Set aside all previously noted objections and, for the sake of argument, suppose that the spatiotemporal universe did have a cause. What then entitles us to conclude that this cause is anything like the personal God of theism?

Many questions call for answers. Why should not the cause of our universe be, or have been, some entity in another physical universe, a being or group of beings, perhaps, endowed with God-like magical power to conjure other universes out of nothing? What sense does it make to invoke the existence of a supernatural being with the powers of a Grand Wizard who, by some incomprehensible means, conjures the natural world into existence? Why suppose there is just one such being? Why suppose that such a being, if there were one, is a person with personal attributes akin to our own? And wouldn't both the existence and the acts of any such being call for explanation in terms of what caused it to exist or to act?

Craig does not address any of these questions other than the last two. The creator, he argues, cannot be *in* time for then there would be an infinite series of events in his life; and that, according to his argument against actual infinities, is impossible. Hence, he concludes, God must be conceived as a changeless being in whom, prior to creation, no events whatever--not even sequences of thoughts--occurred. He is to be conceived as having been, so to speak, an ultra-catatonic being--a being who suddenly, but inexplicably, springs into action, creates a temporal universe, and only then begins his own temporal career.

But then still other questions arise. What *caused* this beginning of the series of events in God's temporal career since time began? Premise 1 demands that there be such a cause. Yet if there was one, it must in turn have had a cause, and that another, and so on *ad infinitum*. Any puzzles there might be about the beginning of the universe seem to be paralleled by puzzles about the beginning of God's involvement with that universe.

There seems no way of escaping the dilemma: Either something can exist without having been caused to exist by something else (in which case there is no reason why the natural world should not be that thing), or there must be a cause for God's existence, and for the being that caused him, and so on *ad infinitum*.

Is the timeless God postulated by Craig's *kalam* argument the kind of God in whom most theists believe--one who has existed "from everlasting to everlasting" (*Psalms* 106.48)? That, as Kant would insist, is a question for the psychology of faith. But one thing is certain. As a logical proof of the existence of such a God, the *kalam* argument--arguably the best yet ventured--is a failure.

