

Wallace Matson and the Crude Cosmological Argument

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Wallace Matson objects to the second premiss of the "crude" cosmological argument, that *the universe began to exist*, by pointing out that the natural number series shows the logical possibility of an infinite collection of things. The cosmological argument proves only that an infinite collection cannot be formed in a finite time. But the argument asserts the *real*, not the *logical*, impossibility of an actual infinite. Nor does it assume that time is finite: one cannot explain how one infinite collection (the series of events) can be formed by successive addition merely by superimposing another (the series of moments) upon it. Matson objects to the first premiss, that *everything that begins to exist has a cause of its existence*, by asserting that if it were true, then God would also need a cause. But Matson misconstrues the premiss to state *everything has a cause of its existence*. The correct premiss does not imply a cause of God, since He did not begin to exist.

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1. The First Cause Cosmological Argument

Of all the various forms assumed by the cosmological argument, the most intriguing and mentally stimulating is the proof for a first cause of the universe based on the impossibility of an infinite temporal regress of events, a proof unceremoniously dubbed by Wallace Matson as the 'crude cosmological argument'. {1} The argument appears to have originated in the efforts of early Christian apologists to refute the Greek doctrine of the eternity of matter. {2} The Alexandrian commentator and theologian John Philoponus (d. 580) was the last great champion of the doctrine of *creatio ex nihilo* in the pre-Islamic era, and it is his refutation of Aristotle's doctrine of an eternal universe that constitutes the roots of the Arabic

and Jewish formulations of the first cause cosmological argument. {3} Thinkers such as al-Kindi, Saadia, and al-Ghazali reworked Philoponus's arguments into a variety of cosmological proofs. {4} The basic form of these arguments was:

Everything that begins to exist has a cause of its existence.
The universe began to exist.
The universe has a cause of its existence.

The critical second premise was supported quite frequently by two different arguments. First, the argument from the impossibility of the existence of an actual infinite:

An actual infinite cannot exist.
An infinite temporal regress of events is an actual infinite.
An infinite temporal regress of events cannot exist.

The argument was usually supported by demonstrating the various absurdities to which the existence of an actual infinite would give rise, such as infinities of different sizes, and so forth. The second argument was based on the impossibility of forming an actual infinite by successive addition:

A collection formed by successive addition cannot be actually infinite.
The temporal series of events is a collection formed by successive addition.
The temporal series of events cannot be actually infinite.

The argument held that since the infinite cannot be traversed, the present moment would never arrive if it were preceded by an infinite number of prior events. The reasoning eventually found its way into the thesis of Kant's first antinomy concerning time.

2. Matson's Critique

Now according to Matson, every premise of the crude cosmological argument is vulnerable. {5} Turning first to the second premise, that *the universe began to exist*, Matson's main objection to the first supporting argument is that it is logically possible for the temporal series of causes and effects to regress infinitely. {6} When the cosmological argument asserts that the series of causes and effects *must* have a beginning, this 'must' indicates that logical necessity is being claimed. Otherwise, all that is claimed is that as a matter of fact the series has a beginning, though it could conceivably be otherwise. Hence, the argument must prove that it is logically impossible for any series to lack a first member. And this is easily refuted: for example, the series of negative numbers

... , -8, -7, -6, -5, -4, -3, -2, - 1

has no first member. Matson acknowledges that the number series is an intellectual construction and is in that sense different from the series of events in the real world. But that is beside the point; the cosmological argument must show any such series to be a logical impossibility:

There is nothing logically inconsistent in the notion of a (numerical) series without a first member; therefore, there is nothing logically inconsistent in the notion of a series of events, forming a causal chain, and such that at least one event in the chain is associated with each number in the beginningless series. {7}

Therefore, the cosmological argument fails to show that the series must be finite and must have a first cause.

With regard to the second supporting argument for the premise that the universe began to exist, Matson argues that it is question-begging, for it is only impossible to enumerate successively an infinite series *in a finite time*. {8} But if the universe is eternal, then there has been infinite time to complete the series. The

cosmological argument gains plausibility only by supposing that in an infinite series of events, there must be an event infinitely distant from the present, such that the distance between the two could never be traversed. But this is false, for, as the number series illustrates, no event need be infinitely removed; all that is required is that for any event finitely distant, there be a predecessor.

With regard to the first premise of the crude cosmological argument, that *everything that begins to exist has a cause of its existence*, Matson objects that if everything must have a cause, then God must also have a cause. {9} Thus, it is impossible to prove that there was a first cause who made the world.

Finally, Matson mentions in passing several smaller difficulties: {10} (1) Since the universe is finite, the cause of the universe need not be an infinite being. (2) The 'big bang' may have been the first cause, not God. (3) The notion of cause assumed in the argument is dubious. Because of these considerations, concludes Matson, 'careful' Christian thinkers have held that the truth of the doctrine of creation can be known only by revelation. {11}

3. Answer to Matson's Objections

I think I can show fairly easily that Matson's objections fail to turn back the force of the crude cosmological argument. With regard to the first supporting argument for the beginning of the universe, it is incorrect that the argument asserts the *logical* impossibility of an infinite series. What the argument contends is that such a series is *really* impossible because of the various paradoxes to which it would give rise. Take, for example, the famous illustration of 'Hilbert's Hotel', an intellectual creation of the great German mathematician David Hilbert. {12} Let us imagine a hotel with a finite number of rooms, and let us assume that all the rooms are occupied. When a new guest arrives and requests a room, the proprietor apologises, 'Sorry--all the rooms are full.' Now let us imagine a hotel with an infinite number of rooms, and let us assume that again all the rooms are occupied. But this time when a new guest arrives and asks for a room, the proprietor exclaims, 'But of course!' and proceeds to shift the person in room 1 to room 2, the person in room 2 to room 3, the person in room 3 to room 4, and so on . . . The new guest then moves into room 1, which has become vacant as a result of these transpositions. But now let us suppose that an *infinite* number of new guests arrives, each asking for a room. 'Certainly, certainly!' says the proprietor, and he proceeds to move the person in room 1 to room 2, the person in room 2 to room 4, the person in room 3 to room 6, the person in room 4 to room 8, and so on.... In this way, all the odd-numbered rooms become free, and the infinity of new guests can easily be accommodated in them. But Hilbert's paradoxical hotel is even more bewildering than the great mathematician realised. For what happens when the guests begin to check out? Suppose the guest in room 1 departs. Is there not one less guest in the hotel? Suppose all the guests in rooms 1, 3, 5, . . . check out? In this case an infinite number of persons has left the hotel, but there are no fewer persons in the building. But suppose the guests in rooms 4, 5, 6 . . . decide to check out. Suddenly the hotel is all but emptied, the guest register reduced to but three names, and the infinite transformed to the finite. And yet exactly the same number of guests checked out this time as when the guests in all the odd-numbered rooms departed. Can anyone believe that such a hotel could exist in reality?

A second example of the paradoxes resulting from the existence of an actual infinite is the Tristram Shandy paradox alluded to by Russell. {13} In the novel by Sterne, Tristram Shandy writes his autobiography so slowly that it takes him a whole year to record the events of a single day. At this rate, he laments, he will never finish his life-story. This conclusion would only be true, asserts Russell, if Tristram Shandy were mortal, but if he were immortal, then he would finish, since each day would correspond to a year and both would be infinite. Russell's paradoxical conclusion, however, would not hold if we regard the future as a potential infinite. In this case, Tristram Shandy would only get farther and farther behind so that instead of finishing his autobiography, he would progressively approach a state in which he would be *infinitely* far behind. But he would never reach such a state because the years and hence the days of his life would always be finite in number though indefinitely increasing. But let us turn the story about: suppose Tristram Shandy has been writing from eternity past at the rate of one day per year. In this case Russell's paradoxical conclusion would be correct. Because a one-to-one correspondence would exist between the days and years of his life, the autobiography would be completed. But again an even deeper paradox now arises. For we may ask, why did Tristram Shandy not finish his autobiography yesterday or the day before, since by then

an infinite series of events had already elapsed? No matter how far along the series one regresses, Tristram Shandy would have already completed his autobiography. Therefore, at no point in the past would we find him finishing the book. Worse than that, at no point in the past will we even find Tristram Shandy writing, for at any point the book would have already been completed. But this seems absurd, for *ex hypothesi* he has been writing from eternity, and to have completed the book, he would at some specific point have to have finished it. Now the proponent of the crude cosmological argument contends that situations such as arise in Hilbert's Hotel and the Tristram Shandy paradox, whatever their logical consistency may be, are nevertheless really impossible in the extra-mental world.

The difference between logical and real possibility may be illustrated with regard to God's existence: if God exists, then his non-existence is logically possible, but really impossible. And if God does not exist, then his existence is logically possible, but really impossible. The necessity of God's existence is not a logical necessity, but a real or factual necessity. {14} So it is with an actually infinite series. According to the argument, the existence of an actually infinite series may be logically possible, but it is really impossible. Hence, the difference, acknowledged by Matson, between the series of natural numbers as an intellectual construction and the temporal series of real events in the time-space universe becomes all important. For even if in the mathematical realm, given certain axioms, it is logically possible to talk about an infinite series of numbers, this in no way implies that the existence of an infinite series of events is really possible. In the same way that God's existence is factually necessary, the existence of an infinite series could be factually impossible.

Finally, it might be added that Matson also assumes that the natural number series is actually infinite, which in light of the objections of intuitionists such as Kronecker and Brouwer is a point that must be proved. According to this school, mathematics is based in the pure intuition of counting; therefore, constructibility is a pre-requisite for the intelligibility of any mathematical entity. Because it is not constructible, an actual infinite is not a well-defined totality and is therefore illegitimate. This means that the natural numbers series is a potential infinity only. In this case, even the logical possibility of an actually infinite series has not been demonstrated.

As to the second argument for the beginning of the universe, Matson's allegation that it is question-begging is quite groundless. The argument has nothing to do with any time factor; it is inherently impossible to form an infinite collection through a process of successive addition. In set theory an infinite set is posited as a unity by the definition determining membership; there is no question of sequential formation of the collection. Sequential formation of a collection yields only a potential infinity, as expressed by the sign \aleph . But in set theory \aleph_0 is not the end member of a collection numbered 1, 2, 3, ..., but stands over and above it as the number of all elements in the collection taken together timelessly as a whole. That the argument has nothing to do with the amount of time involved may be seen by the fact that this conundrum may be applied to time itself. If we divide time into temporal segments of equal duration, say hours, and if past time is actually infinite, then that means that before the present hour could arrive, an infinite number of previous hours would have had successively to elapse. But this is impossible. Clearly it does no good to object that it is only impossible for them to elapse *in a finite time*, for the argument concerns time itself. Here the objection would commit the fallacy of assuming a time above time. Thus, Matson's objection is manifestly wrong-headed; for one cannot explain how one infinite collection (the series of past events) could be formed by successive addition merely by superimposing another infinite collection (the series of hours) also formed by successive addition upon the former.

Matson's objection to the first premise of the crude cosmological argument misconstrues the principle of causality therein employed. The premise is not, as Matson thinks, that *everything has a cause*, but rather that *everything that begins to exist has a cause*. Because the universe began to exist, it must have a cause. But the cause of the universe is itself uncaused and eternal. Because He never began to exist, but exists changelessly from eternity, God does not require a cause. Notice that Matson does not deny the truth even of the statement that *everything has a cause*. In fact he tacitly assumes it. What he maintains is that given such a principle, the regress of causes could never come to a halt in a first cause, for this would also need a cause, *ad infinitum*. But the principle that *everything that begins to exist has a cause* suffers under no such

difficulty. Therefore, Matson gives tacit admission that if the universe has a beginning, it must have a cause.

Finally, Matson's three minor difficulties: (1) The crude cosmological argument does not claim to prove the infinity of God's being, but simply that a personal creator of the universe exists. Matson's objections have failed to refute this conclusion. His complaint that the argument falls short of an infinite being reminds one of those philosophers who dismiss the teleological argument because it concludes only to an architect, not the creator, of the universe. If they really believed the argument proved that an intelligent mind has designed and built the entire universe, they would be filled with awe. Similarly, rather than indict the cosmological argument for not proving the infinity of the universe's creator, ought we not rather to be stimulated to further investigation to discover whether reason or revelation can answer this question? (2) The 'big bang' is simply a descriptive model of the initial conditions of the universe, but does not itself explain how the universe came to exist. According to this model, the universe began to exist in a cataclysmic explosion from a point of infinite density a finite time ago. This is all the more remarkable when one reflects that a state of 'infinite density' is precisely equivalent to 'nothing', so that what the big bang model requires is that the universe came into being *ex nihilo*. But further than this science will not go. As J. V. Narlikar comments,

It is assumed that all the present matter (and radiation) in the Universe appeared in its primary form at the time of the 'big bang'. Subsequent to this event matter as a whole is conserved according to the Einstein equations, although it may change its form as the universe evolves. So the question 'How was the matter created in the first place?' is left unanswered. {15}

Thus the big bang model, far from eliminating the necessity of a creator of the universe, fairly impels one to it, for, as Anthony Kenny observes, 'A proponent of such a theory, at least if he is an atheist, must believe that the matter of the universe came from nothing and by nothing.' {16} In such a case it is much more plausible to believe that a creator of the universe exists. (3) If the cosmological argument employed the notion of causality described by Matson, it might indeed be suspect. But the principle that whatever begins to exist has a cause of its existence is such a natural and intuitively reasonable principle that a sincere denial of it is well-nigh impossible. Even the sceptical Hume admitted that he never affirmed so absurd a proposition as that something might come to exist without a cause. This would seem to be doubly so when the entire universe's coming to exist is at stake.

Finally, it is simply not true that 'careful' Christian thinkers have denied that the doctrine of creation can be proved. While this was true of Aquinas, it was not so of Bonaventure, whose own arguments for *creatio ex nihilo* survive all of Thomas's attempted refutations. {17} It is true that today many theologians misguidedly try to safeguard the biblical doctrine of *creatio ex nihilo* against scientific investigation by interpreting it mythologically. For example, C. H. Dodd writes,

In the beginning God created heaven and earth and all that in them is . . . I have described this as mythological, and as such it must, I think be understood. . . The story of Creation is not to be taken as a literal, scientific statement that the time series had a beginning--an idea as inconceivable as its opposite, that time had no beginning. {18}

Dodd may be perfectly correct that a beginningless temporal series of events is inconceivable; but that the time series had a beginning is not so difficult a conception. For on a relational view of time, time comes into existence with the first event, and the notion of time 'before' this event is a mental abstraction only, analogous to temperatures 'below' absolute zero. In contradistinction to Dodd's position, however, the influential German theologian Wolfhart Pannenberg has affirmed the doctrine of temporal *creatio ex nihilo* precisely on the basis of scientific evidence. {19} Pannenberg asserts that the abandonment of theistic proofs from nature has led to theology's increasing anthropocentricity, thus 'allowing the Christian belief in creation to atrophy'. {20}

It is clear, therefore, that Matson's criticisms are wide of the mark. Perhaps this form of the cosmological argument can be said to be crude only in the sense that metallic ore is such: intrinsically valuable, waiting only to be refined.

NOTES

- {1} Wallace I. Matson, *The Existence of God* (Ithaca, N. Y.: Cornell University Press, 1965), p. 56.
- {2} See Athenagoras *On the Resurrection* c. 3; Maximus Of *Ephesus* in Eusebius *Praeparatio Evangelica* 7.22; Tatian *Address to the Greeks* 5.7; Theophilus of Antioch *To Autolytus* 2.4, 10; Irenaeus *Against Heresies* 2.10.2,3; Tertullian *Apology* 17.1; *Against Herrnogenes* c. 4-8. 18 Dionysius of Alexandria in Eusebius *Praeparatio Evangelica* 7.19; Lactanius *Divine Institutes* 2.9.
- {3} See Herbert A. Davidson, 'John Philoponus as a Source of Medieval Islamic and Jewish Proofs of Creation', *Journal of the American Oriental Society* 89 (1969), pp. 357-391.
- {4} Al-Kindi, *On First Philosophy*, with an Introduction and Commentary by Alfred L. Ivry (Albany, N. Y.: State University of New York Press, 1974), pp. 67-75; Saadia Gaon, *The Book of Beliefs and Opinions*, trans. Samuel Rosenblatt (New Haven, Conn.: Yale University Press, 1948), pp. 41- 44; al Ghazali, *Kitab al Iqtisad*, with a foreword by İ. A. Çubukçu and H. Atay (Ankara: University of Ankara Press, 1962), pp. 15-16.
- {5} Matson, *The Existence of God*, p. 56.
- {6} *Ibid.*, pp. 58-60.
- {7} *Ibid.*, p. 60.
- {8} *Ibid.*
- {9} *Ibid.*, p. 61.
- {10} *Ibid.*, pp. 57-58.
- {11} *Ibid.*, p. 61.
- {12} This story is recorded in an entertaining work by George Gamov, *One, Two, Three, . . . Infinity* (London: Macmillan & Co., 1946), p 17.
- {13} Bertrand Russell, *The Principles of Mathematics*, 2d ed. (London: George Allen & Unwin, 1937), pp. 358-359.
- {14} John Hick, 'God as Necessary Being', *Journal of Philosophy* 57 (1960), 725-734. [Author's note: Since writing this article in 1978, I have come to understand God's existence as broadly logically necessary.]
- {15} J. V. Narlikar, 'Singularity and Matter Creation in Cosmological Models', *Nature: Physical Science* 242 (1973), pp. 135-36.
- {16} Anthony Kenny, *The Five ways: St Thomas Aquinas' Proofs of God's Existence* (New York: Schocken Books, 1969), p. 66.

{17} See Lucien Roy, 'Note philosophique sur l'idée de commencement dans la création', *Sciences Ecclésiastiques* 2 (1949), p. 223; Francis J. Kovach, 'The Question of the Eternity of the World in St. Bonaventure and St. Thomas-A Critical Analysis', *Southwestern Journal of Philosophy* 5 (1974), pp. 141-172 .

{18} C. H. Dodd, *History and the Gospel* (London: Nisbet, 1938), p 168.

{19} Wolfhart Pannenberg, 'Response to the Discussion,' in *New Frontiers in Theology*, ed. James M. Robinson and John B. Cobb, Jr., vol. 3: *Theology as History* (New York: Harper & Row, 1967), pp. 241-242. Pannenberg depends particularly on the scientific work of von Weizäcker.

{20} Wolfhart Pannenberg, *Theology and the Philosophy of Science*, trans. Francis McDonough (London: Darton, Longman, & Todd, 1976), pp. 126-127.

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