Arguments for *creatio ex nihilo*

We've been talking about *creatio ex nihilo*, and we now want to turn to arguments for *creatio ex nihilo.* Early church fathers, though they were heavily influenced by Greek philosophy, broke decisively with Greek tradition concerning one doctrine, and that was *creatio ex nihilo.* They recognized clearly that the Greek view of the eternity of matter was incompatible with the biblical doctrine of *creatio ex nihilo.* Aristotle argued that the universe is eternal in the past and that matter never began to exist. They rejected the teachings of Aristotle on that subject. There evolved a tradition within early Christian theology of defending the doctrine of *creatio ex nihilo.* The last great champion of *creatio ex nihilo* in the pre-Islamic era was the Alexandrian commentator and philosopher John Philoponus – not exactly a household name but nevertheless the fount of the *kalām* cosmological argument. Philoponus developed all sorts of fascinating arguments aimed at proving the finitude of the past and the impossibility of an infinite regress of past events and thus a beginning of the universe in support of *creatio ex nihilo*. When Islam swept across North Africa Muslims absorbed this tradition, and these arguments were taken up and developed with great sophistication by medieval Islamic theologians. These Islamic thinkers lived side by side with Jewish theologians in Muslim Spain. By the mediation of the Jews these arguments then were reintroduced into Christian Europe, where they became the subject of much controversy, pitting such great thinkers, for example, as Saint Bonaventure, who supported the arguments for *creatio ex nihilo,* against Thomas Aquinas, who thought that they were mere probability arguments and not strict

demonstrations and therefore should not be used in Christian theology.

Eventually this tradition of argumentation came to something of a sputtering close in the work of the great German philosopher Immanuel Kant in his *Critique of Pure Reason* published in 1781. In his so-called first antinomy concerning time, Kant argues that time cannot be infinite in the past and that the series of past events must therefore have had a beginning. Kant's treatment is, I think, undoubtedly the most visible legacy of this tradition.

These arguments, when reformulated in light of modern thought, are. I think, of great interest. They have become especially relevant in light of contemporary cosmology, which provides empirical evidence for the finitude of the past and the beginning of the universe. There are philosophical arguments and scientific confirmation for this claim that the universe began to exist.

We've covered this so-called *kalām* cosmological argument when we discussed arguments for the existence of God. *kalām* is the Arabic word which denotes medieval Islamic theology. In view of the contribution of these Muslim theologians to this version of the argument I have dubbed it the *kalām* cosmological argument. Since we've already covered these arguments, I don't want to go into them in detail now. I'll just review them very briefly and refer you to our discussion at ReasonableFaith.org in the Defenders class on the Excursus on Natural Theology where we talk about arguments for God's existence.[1]

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1 See Defenders Series 3, Excursus on Natural Theology, Lecture 8 at https://www.reasonablefaith.org/podcasts/defenders-podcast-series-3/s3-excursus-on-natural-theology/excursus-on-natural-theology-part-8/ (accessed June 24, 2018).

I presented two philosophical arguments in support of the beginning of the universe. The first is the argument based on the impossibility of the existence of an actually infinite number of things. The argument here is that an actually infinite number of things leads to inherently paradoxical, counterintuitive situations that cannot be instantiated in reality. But if the universe is past-eternal, then an actually infinite number of past events has been instantiated in reality. It would follow from this that therefore the series of past events cannot be actually infinite. It must be finite. Therefore the universe began to exist.

The second philosophical argument is quite independent of the first. It doesn't presuppose that an actually infinite number of things cannot exist. Rather, the second argument says that a collection having an actually infinite number of members cannot be formed by successive addition, that is to say, by adding one member at a time. The only way that God could create an actually infinite number of things would be by creating them all at once – *Let there be!* – and there would be an actually infinite number of things. But even God couldn't create it by adding one member at a time because, if you try count to infinity, for any number n that you pick, n +1 is always going to be a finite number. You're never going to arrive at infinity. Similarly, trying to count down from infinity seems even more bizarre. It would be like counting down all of the negative numbers and ending at zero, which is an intuitively bizarre task and leads to all sorts of absurdities. If an A-theory of time is correct, then the series of past events has been formed by successive addition. The past does not exist whole and entire; rather it has come to be one event at a time, one event happening upon the heels of another as things come into being and

pass away. So on an A-theory of time, the series of past events is a collection of items formed by successive addition. And since no such collection can be actually infinite, it follows that the collection of past events must be finite and therefore began to exist.

That is, as I say, a very quick capsule summary of these two arguments.

If that were not enough, we now have very powerful scientific confirmation of the arguments for the finitude of the past and the beginning of the universe. These are two in number. First is Big Bang cosmology. Prior to the 1920s, the standard view in science was that the universe is eternal. But when Einstein applied his general theory of relativity to the universe as a whole, he was shocked to discover that such a stable, static universe is impossible. The universe would either be in a state of cosmic expansion or else cosmic implosion, collapsing in upon itself. By taking this aspect of the theory seriously, scientists in the early 20s were able to formulate models of an expanding universe. As you trace the expansion of the universe back in time, the universe grows denser and denser and denser until finally you arrive at a point of infinite density before which the universe did not exist. This represents a boundary to space and time. On the standard Big Bang model, not only all matter and energy but physical space and time themselves come into being at the Big Bang. The standard model needs to be revised in certain ways, as is well-known, but none of these revisions serves to undo the fundamental prediction of the finitude of the past and the beginning of the universe. Indeed, according to Alexander Vilenkin, a very famous

cosmologist at Tufts University, there simply are no tenable models of the universe that are beginningless. He says that this gives us confidence that such models simply cannot be developed. Any empirically and mathematically adequate model of the universe will involve a beginning.

Secondly, we have the evidence of thermodynamics. When the laws of thermodynamics are applied to the universe as a whole, you find that the universe is increasing in its entropy – that is the amount of unusable energy. Given enough time, eventually all the stars will burn out and all matter will collapse into dead stars and black holes. Eventually the black holes themselves may evaporate. The universe will become nothing but an ultra-thin gas of elementary particles endlessly expanding into endless darkness and the cold recesses of space. There will be no heat, there will be no life, there will be no light, only the thin gas of elementary particles expanding into the infinite blackness. The question is: if, given enough time, this will happen, then why has it not already happened if the universe is infinite in the past? Given the infinitude of past time, the universe should now be in a cold, dark, dilute, and lifeless state. But it's not. It's in a state of disequilibrium. This suggests that the universe, in fact, began to exist, and that its initial low entropy condition was simply put in as an initial condition, and it has been winding down since that point until today. So the evidence of thermodynamics also supports the notion that the universe began to exist just as Big Bang cosmology says.

Having just briefly reviewed these arguments for creation out of nothing, what we will do next time is we look at objections to *creatio ex nihilo*. I've taken some of them from the Internet as well

as from scientists like Lawrence Krauss and Stephen Hawking, so I think you'll find that some of these are very entertaining.