

REPLY TO SEAN CARROLL

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Sean Carroll argues that we should endorse atheism since there are no good reasons for affirming the more complex thesis of theism over the less complex thesis of materialism. However, this argument relies on an epistemological minimalism we should reject.

There have been both atheists and theists for a long time. These are the words of one Peter of Cornwall, writing in about the year 1200.

There are many people who do not believe that God exists They consider that the universe has always been as it is now and is ruled by chance rather than by Providence.¹

In Peter's time, people, both atheists and theists, had a very different picture of the physical universe (the *mundus*, they would have called it) from the one we have today. The *mundus*, they believed, was bounded by a big sphere, the sphere of the fixed stars. No official size was ascribed to this sphere (Ptolemy had pointed out that whatever its size was, it was so much larger than the earth that the earth could be treated as a dimensionless point in astronomical calculations), but one piece of medieval science-fiction gives it a diameter close to what we now know is the diameter of the orbit of Mars. The earth — Peter's contemporaries had the size of the earth about right — was at the center of this thing, and between the earth and the stars were invisible rotating spheres in which the moon and the sun and the planets were embedded.

Since that time we've discovered a lot about the *mundus*, a lot about the totality of the distribution of matter and radiation in spacetime, and our discoveries show that what the medievals believed about it was mostly wrong. It is many orders of magnitude larger than they thought, it has no geometrical center, it is of vast but finite age (in Peter's time, Christians thought it was about 5000 years old and atheists thought it had an eternal past), and it has not always been as it is now: it has developed into its present state from earlier, very different states and it will be very different in the far future from the way it is now. We know a lot, too, about what we now call the laws of physics, and we know that the most general features of the world are not a mere jumble of unrelated facts but are very tightly constrained by these laws.



So we've learned a lot. Is any of what we've learned relevant to the old debate between the atheists and the theists? Does, for example, Sean Carroll know anything of relevance to the debate that was not known to Aethelred the Atheist in AD 1200? In my view, the answer is that some of what we've learned is of great importance for this debate, and none of it is of really fundamental importance. Here's an example of something we now know that is of great but not really fundamental importance for the debate. We know that there was no such time as twenty billion years before now — just as there is no such place as twenty thousand miles to the north of here. And the atheists of Peter's time believed (at least what they believed logically implied) that there *was* such a time as twenty billion years before now and that the mundus was at that time, in its large-scale features, much as it is now. But this doesn't show that the medieval atheists were *fundamentally* wrong; it shows only that their picture of the mundus was defective. A more subtle picture of the relation of the physical world to time than theirs has turned out to be necessary, but the more subtle picture is, or various more subtle pictures are, consistent with atheism. And the same is true the other way round, so to speak. A lot of what theists believed about the mundus and its contents has turned out to be wrong: that the earth is at its center, for example, that God had created it in essentially its present form about four thousand years before the birth of Christ, that a living organism can exist only if a rational agent has imposed the form definitive of its species on a particular parcel of matter But none of these theses was essential to theism, and theists, a few radical and intellectually marginalized Protestants apart, gave them up with less fuss than atheists have generally displayed in giving up the idea of a physical universe that has an eternal, uniform past.

And why not? After all, if God exists he can create an object to any set of specifications that doesn't involve a contradiction. Given, then, that the current — or any future — scientific specification of the features of the physical universe doesn't involve a contradiction, God can create an object that meets that specification. It says so on the label. And hence God, if he exists, is able to make an object that has just the features that today's science tells us, or that any future science might tell us, the physical universe has (unless, of course, there's a hidden contradiction in that combination of features). *Would* he? Well, leaving the general topic of pain and suffering to one side — the problem of evil is a worthy topic, but it's not our topic today, for the plain reason that the existence of suffering is not a scientific discovery — I don't see why not. (I must say, I don't see even the faintest hint of plausibility in the suggestion that a God who could make any possible universe would have made a smaller universe than this one or a universe in which there was only one family of elementary particles.) I don't see any feature of the physical universe that looks like some sort of clue that it is uncreated.

How shall I argue for this thesis? Well, let me tell a parable. In the far future, our descendants create a virtual reality, a world simulated in a computer of (to us) miraculous storage capacity and computational speed. The Creators, so to call them, put *people* into their virtual world (for in my parable, the Strong AI Thesis is true) — self-aware, rational beings: "the Inhabitants." The Inhabitants and their environment are not the product of

a patchwork simulation of human neural activity and the interactions of physical objects involving tens of thousands of arbitrary rules to enable the program to simulate the surface features of physical objects in the world of human experience. Rather, the Creators simulate a world at the level of its constituent elementary particles. In one sense, the computer does nothing *but* simulate the interactions of individual elementary particles, which take place in accordance with strict rules embedded in the program: the laws of nature of the virtual world. Everything else supervenes on that, as philosophers like to say, including an evolutionary process by which the Inhabitants have come to be. By a clever choice of laws and boundary conditions, the Creators see to it that the Inhabitants have the intellectual and physical (physical from the point of view of the Inhabitants) resources to understand their world scientifically. And the Inhabitants succeed in doing this. They discover the laws and boundary conditions the Creators have built into their world and they are able to tell the story of its workings and origin and development and their own evolution in a way as intellectually satisfying to them as our scientific story of the workings and origin and development of the physical world and our own evolution is to us.²

It should be clear that none of the Inhabitants' scientific investigations are going to reveal to the them that the Creators exist or that they, the Inhabitants, are the denizens of a virtual reality. But suppose that, for one reason or another, some of them do *believe* these things — the Virtualists, they're called. Could a cosmologist of the virtual world write an interesting paper about why so few cosmologists are Virtualists? What would the arguments of such a paper be? I think they would, unsurprisingly, be much like Sean Carroll's arguments, premised on a kind of epistemological minimalism. That is, on a principle something like this: Don't believe in anything not present to the senses unless it's required by the most compact and elegant and effective theories of the physical world; visible and tangible things aside, believe only in what figures in the best scientific theories (unless the best scientific theories reveal themselves as in some significant way incomplete, in which case it may be permissible to believe in certain things that don't figure in them but whose postulation somehow mitigates that incompleteness).

Would the arguments of the virtual cosmologist be right? (A parenthetical question: Even if those arguments are right, wouldn't they support agnosticism about the truth of Virtualism rather assent to the falsity of Virtualism? And, by a parallel argument, doesn't epistemological minimalism support agnosticism rather than atheism?) Have the Creators, in creating the Inhabitants, created people who could believe in them, the Creators, only on pain of irrationality, or at least on pain of having beliefs whose foundations could not survive epistemological analysis? Is there necessarily something objectionable about the position of the Virtualists?

I don't think these questions can be answered, for I, the author of the parable, have said too little about the epistemological condition of the Inhabitants for them to have answers. I haven't, for example, said anything about *why* some of the Inhabitants are Virtualists. I suggest further reflection on the question whether there are any possible features the Creators could build into their virtual world in virtue of which it would be proper for some at least of

the Inhabitants to believe in them, the Creators, and to believe this rationally, with the proper sort of epistemic grounding. Would the Creators, if they wished some of the Inhabitants rationally to believe in them, have to include miracles in their world (which of course they could easily enough do)? Or, in setting up the laws and initial conditions of the virtual world, would they have to make these aspects of the world in some way “incomplete”?

I will say no more about these questions. But I do want to raise a question about epistemological minimalism. That thesis would seem to be no more plausible than this very slightly more general thesis: Don't accept *any* proposition not subject to straightforward factual verification unless that proposition is endorsed by the sciences or is necessary for explaining some global fact that the sciences leave mysterious. However plausible this thesis may seem when it is considered in the abstract, no one I know of conforms to it. Even in the sciences, we quite often find two scientists who have access to exactly the same relevant data and who nevertheless disagree — about, say, whether Neanderthal genes are still present in modern humanity, or whether so-called gamma-ray bursts originate inside our galaxy or at cosmic distances, or whether anything is going to come of superstring theory. And don't get me started on our philosophical and political beliefs; it's certainly obvious that almost everyone has political beliefs that are neither verifiable matters of fact nor endorsed by the best scientific theories. It's an interesting question whether there's any important epistemological difference between an atheist and theist (on the one hand) and (on the other) two equally expert and informed astronomers in, say, 1994, one of whom thought that gamma-ray bursts occurred inside our galaxy and the other of whom thought they occurred at cosmic distances. Whatever differences there may be between the two pairs of disputants, at least one person in each pair is in violation of the principle of epistemological minimalism. Think of matters this way: it can hardly be true that the proposition 'Gamma-ray bursts are local phenomena' and the proposition 'Gamma-ray bursts are not local phenomena' were *both* endorsed by the science of astronomy in 1994; logic therefore dictates that at least one of our scientists was not conforming to the requirements of epistemological minimalism, and common sense whispers that it was almost certainly both of them who were. (As Thomas Kuhn said, “Whenever you get two people interpreting the same data in different ways, that's metaphysics.”³) So, whether epistemological minimalism is philosophically defensible or not, few if any of us *are* consistent epistemological minimalists, epistemological minimalists with respect to every subject-matter. I ask only that no one say that it's all right to fail to adhere to epistemological minimalism in science or politics or philosophy, but that one must be a strict epistemological minimalist in theological matters.

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NOTES

1. In an unpublished manuscript, quoted in Robert Bartlett, *England under the Norman and Angevin Kings, 1075-1225*. The quotation was re-quoted in a

review of the book by John Gillingham, in the *Times Literary Supplement*, 5 May 2000, p. 26. The reviewer also quoted these words from the book: ". . . simple materialism and disbelief in the afterlife were probably widespread, although they leave little trace in sources written by clerics and monks." No page citations were given in the review.

2. The parable is modeled on a simulation imagined in Greg Egan's novel, *Permutation City* (New York: HarperPrism, 1994).

3. Kuhn said this in an interview with the science writer John Horgan. See John Horgan, *The End of Science* (New York: Broadway Books, 1996), p. 44.