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Ye of Little Faith

Alan Lightman admirably renders the delicate position in which cosmology now finds itself, and then he almost spoils it with his punch line ["The Accidental Universe," Essay, December 2011]. In order for scientists to explain their mental deductions, Lightman writes, they must "believe in what we cannot prove." He continues: "Theologians are accustomed to taking some beliefs on faith. Scientists are not. All we can do is hope that the same theories that predict the multiverse also produce many other predictions that we can test here in our own universe."

But that hope is *huge*, and the situation is not at all like theology. First, theologians almost never aspire to make novel predictions based on their faith—unless you count those earnest naifs who set off to find traces of Noah's Ark. Second, scientists have learned to live with the limits of their knowledge; ignorance can be disappointing, but frustration is no excuse for fabrication.

That said, it is often breathtaking how much we can discover by cantile-

vering what we do know beyond the boundaries of direct observation. Scientists will never visit other universes, but they also are barred from traveling to the center of the sun, or returning by time machine to the first billion years of Earth's existence—and this does not stop them from proving many facts about those utterly unobservable conditions. We may never be able to get direct confirmation, or disconfirmation, of the many-universes hypothesis, but, as Lightman suggests, if we find that the theories that predict it also make a host of predictions we *can* confirm, the frustration will turn to satisfaction. Look what we've figured out without even leaving our galaxy!

Daniel C. Dennett
Medford, Mass.

The human brain is by far the most complex thing we know of in the universe. By its powers of comprehension we understand that we would not be cogitating the structure of the universe if some of the physical constants were only slightly different; it is as if the universe has been "fine-tuned" for our existence—the so-called anthropic principle. As Einstein said, the most incomprehensible thing about the universe is its comprehensibility.

When Aristotle could not explain why the heavens continuously spun about the earth, he said that it

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