Something from nothing

by Carol Zaleski in the December 14, 2010 issue

The Reuters headline was eye-catching: "God did not create the universe, says Hawking." The occasion was British physicist Stephen Hawking's new book, *The Grand Design,* a recap of the history of physics crowned by the assertion that the latest form of superstring theory ("M-theory") renders the God hypothesis superfluous. In England, the Archbishop of Canterbury, the Archbishop of Westminster, the Chief Rabbi, the Chairman of the British Muslim Council and the Astronomer Royal all issued statements to the effect that, although a genius in his own field, Hawking is no oracle. Hawking claims that "philosophy is dead," but the paradoxical effect of his book has been to revive one of philosophy's great debates. Once again, university cafés and Internet chat rooms are abuzz with talk of evidence for divine design.

Early modern versions of the argument from design to the existence of God relied upon a simple analogy: the universe looks like an artifact, and an artifact implies a maker. But as 18th-century Scottish philosopher David Hume pointed out, one would have to have some experience observing universes being made in order to judge that the analogy holds true. It fell to William Paley, in his *Natural Theology; or, Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature* (1802), to mount a more nuanced, lawyerly defense with his parable of the watch. While acknowledging the dissimilarity between watch-making and world-making, Paley maintained that the functional complexity of organisms—above all the wondrous human eye—warranted an inference of design. But a half century later, Paley's argument shattered at one touch from Darwin's theory: natural selection could account for the wondrously adaptive characteristics of all organisms from beetles to bishops. The argument from design lay in ruins.

Then came intelligent design, a research program seeking evidence from design in the "irreducible" biochemical complexities that have come to light under the powerful microscopes and mathematical models of the present day. Yet intelligent design has run aground, seemingly neither scientific fish nor theological fowl.

Next in line for the defense is the fine-tuning design argument, which shifts the ground from biology to physics and cosmology, pointing out that the very existence of our universe depends upon a series of suspiciously improbable "anthropic coincidences." The physical constants had to be just so, the initial conditions just so, the laws of physics just so, the properties of chemical elements just so, and so on. One would have to be insensate not to marvel at all the just-sos that have made a universe fit to dwell in.

Critics of fine-tuning arguments are quick to make the objection that any state of affairs is the endpoint of a series of coincidences. Sally meets Joe, her future husband with whom she will have 12 children—if she does not happen to get stuck in traffic, etc. The encounter looks like a design of Providence, until one reflects that *everything* that happens is the result of contingencies which, ever so slightly altered, would have produced different results. One cannot judge the meeting of Sally and Joe as providential without an act of interpretation fed by streams other than the mere accumulating of coincidences.

This is true enough. But Sally meeting Joe is not suspiciously improbable. In fact, it is inherently likely; it's the sort of thing that happens all the time. The alternative to Sally meeting Joe is Sally meeting someone else. The emergence of a fine-tuned universe, on the other hand, is something momentous and radically new, bringing existence out of nonbeing, life out of nonlife, thought out of mere sensation—and the alternative is a lifeless, mindless chaos.

Some cosmologists have speculated, however, that what we call the universe is actually one of many parallel universes produced by quantum fluctuations. M-theory, which Hawking favors as the best candidate for a "theory of everything," suggests that there are 10^{500} such universes generated "out of nothing" by unfathomably tiny strings vibrating in ten or more dimensions. On that theory the fine-tuning of our universe would no longer be suspiciously improbable.

Nonetheless the mystery remains. That there should be a multiverse is from any angle a genuine *novum,* surpassingly good, radically different from any conceivable alternative. The normal human response to such a *novum* would be to see, in the totality of what is made and the rules by which it is made, signs of a maker.

Only a presumption of atheism would make one strive at all costs to devise other explanations; but shift the burden of proof to the atheist, and what one gets is an assertion of brute fact: the universe (or multiverse, if you prefer) just is. What would

make such an assertion more rationally satisfying than the confession that God is the maker of the 10^{500} dwelling places? "He is the Place of the world and the world is not His place," said second-century Jewish sage Yose ben Halafta, as he meditated upon the infinite mystery of God. No discovery of cosmology or particle physics can make belief in an omnipresent and transcendent Creator less rational—or more rational—than it was for Rabbi Yose.