

## **Stephen Hawking and Leonard Mlodinow -- The Grand Design**

How can we understand the world in which we find ourselves? Over twenty years ago I wrote *A Brief History of Time*, to try to explain where the universe came from, and where it is going. But that book left some important questions unanswered. Why is there a universe – why is there something rather than nothing? Why do we exist? Why are the laws of nature what they are? Did the universe need a designer and creator?

It was Einstein's dream to discover the grand design of the universe, a single theory that explains everything. However, physicists in Einstein's day hadn't made enough progress in understanding the forces of nature for that to be a realistic goal. And by the time I had begun writing *A Brief History of Time*, there were still several key advances that had not yet been made that would prevent us from fulfilling Einstein's dream. But in recent years the development of M-theory, the top-down approach to cosmology, and new observations such as those made by satellites like NASA's COBE and WMAP, have brought us closer than ever to that single theory, and to being able to answer those deepest of questions. And so Leonard Mlodinow and I set out to write a sequel to *A Brief History of Time* to attempt to answer the Ultimate Question of Life, the Universe and Everything. The result is *The Grand Design*, the product of our four-year effort.

In *The Grand Design* we explain why, according to quantum theory, the cosmos does not have just a single existence, or history, but rather that every possible history of the universe exists simultaneously. We question the conventional concept of reality, posing instead a “model-dependent” theory of reality. We discuss how the laws of our particular universe are extraordinarily finely tuned so as to allow for our existence, and show why quantum theory predicts the multiverse - the idea that ours is just one of many universes that appeared spontaneously out of nothing, each with different laws of nature. And we assess M-Theory, an explanation of the laws governing the multiverse, and the *only* viable candidate for a complete “theory of everything.” As we promise in our opening chapter, unlike the answer to the Ultimate Question of Life given in the *Hitchhiker’s Guide to the Galaxy*, the answer we provide in *The Grand Design* is not, simply, “42.”

