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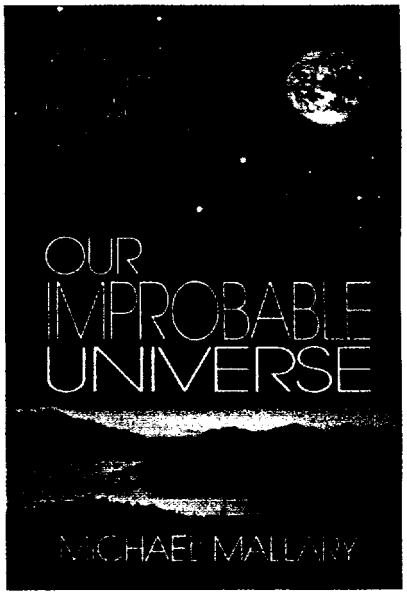

Our Improbable Universe

Michael Mallary, Thunder's Mouth Press, 245 West 17th Street, 11th Floor, New York, New York, 10011, 2004, ISBN 1-56858-301-X US$ 26.00

Reviewed by Chris De Pree, Associate Professor of Physics & Astronomy, Agnes Scott College, Decatur, Georgia, USA.

Since the time of Galileo, most scientists have stuck to observing and modeling the physical world, and let the philosophers and theologians talk about *why* things are the way they are. But in recent years, scientists – a large fraction of them physicists – have more openly taken on topics along the frontier of science and religion. In a lecture at Agnes Scott College in Decatur, Georgia several years ago, Sir John Polkinghorne (English particle physicist turned Anglican priest) described the "battlefront" between science

and religion as having zones with differing levels of strife, with some areas of open conflict (biology) and other areas of relative calm (physics).

As an indication of their level of involvement along the frontier between science and religion, physicists and astrophysicists have won a disproportionate share of Templeton Prize awards in recent years. This prize is given annually to an individual who is credited with the "creation of new structures of understanding the relationship of the Creator to his ongoing creation of the universe." While the prize is open to all disciplines, close to half of the winners of the Templeton prize since 1987 are physicists or astronomers. In fact, Sir John Polkinghorne won the prize in 2002.

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Michael Mallary is yet another physicist who does not shy away from the frontier between religion and science, and in his new book *Our Improbable Universe*, he takes on the philosophical implications of the uniqueness of our universe. His arguments are an extrapolation of an idea called the *anthropic principle*. The idea is basically this: the universe is the way it is because, if it were different, we would not be here to observe it.

Mallary's book begins with an interesting premise: whether the universe was designed, or came into being randomly is not the most important issue. Mallary states that whatever its origin, our universe is highly improbable, and for that reason, we are obliged to be good stewards of it. The book opens with an explanation of just how finely tuned this universe of ours appears to be, describing what Mallary calls the fourteen stepping stones required for our existence as observers. His stepping stones span particle physics (CP Asymmetry), nuclear physics (mass of neutrons), and astronomy (stellar evolution and supernovae). The first five chapters then expand on the details and quirks of physics that make life in the universe (us) possible, and this part of the book is quite clear and readable, with helpful diagrams.

The book is divided into thirds, with the first third devoted to physics, the second third to the origin and evolution of life, and the final third to speculation about other life in the universe, and the possible signature of a creator. Since the book is written by a physicist, it is not surprising that the first part is the strongest of the three. The final third of the book contains interesting philosophical speculation about the implications of an improbable universe, but the narrative seems to lose direction in the later chapters, in particular in Chapter 13 ("Where is the Signature?"). Let me be clear, this is not a book that argues against evolution or any other well-established scientific theory, but its speculation about a creator in later chapters might make even physicists along the frontier with religion a bit uncomfortable.

Mallary makes a convincing case that the universe that we inhabit is highly improbable. In his introduction, Mallary states:

> If the life-begetting substructure of our cosmos arose from a random process, then our fertile universe is a rare gem amongst an uncountable number of dead ones. If its physical laws were micro-engineered by a creator, the accomplishment is awe-inspiring. Either way, this incredible universe, and the life it has spawned, should be cherished.

When Mallary sticks to this message in the book, he is most successful. His descriptions of the science are clear and entertaining, and his style is engaging throughout. But when the book meanders into suggestions for the signature of a creator in the universe, the arguments lose their clarity. This may be the book you'll need for answering questions after a planetarium show, or to browse through some evening when the clouds have pre-empted the observatory program. Check it out.