

Book review : *Our Cosmic Habitat*
by Sir Martin Rees

Weidenfeld & Nicolson (2001) ISBN 0 297 82901 7 pp 195 (followed by 9 pages of index)

Martin Rees is the Astronomer Royal and Royal Society Research Professor at Cambridge. He has made important contributions to our understanding of the evolution of the Universe and I was intrigued to read his latest offering. It should be both a rapid summation of existing knowledge and theories, and an insight into his vision of the structure of the Universe.

The book is organised into three parts and eleven chapters. Rees states that his aim is to "... offer a broad-brush picture of some lively scientific frontiers, emphasizing new ideas in a way that [is] accessible to a general audience". He says that asking "why anything exists at all" lies beyond the remit of science; whereas the "overarching problem [for science] is to understand how a genesis event so simple that it can be described by a short recipe seems to have led, 13 billion years later, to the complex cosmos of which we are a part". Whether one agrees with these two tenets is a matter of personal philosophy, but does Rees achieve his goals in this book ?

He begins by giving a concise 'history' of the development of theories on stellar and planetary formation. The thread then moves on to a discussion of whether there is life elsewhere in the Universe, before returning to nuclear synthesis & stellar evolution. There follows a look at the large-scale structure of the Universe and the Big Bang 'theory' (including the observational evidence for it, the role of gravity and the inferred necessity for dark matter). Rees then changes tack to look at black holes and the possibility of time travel. There is then an engaging discussion on the geometry and long-term fate of the Universe. The book ends by looking at the conditions needed to create our Universe and asking if we are just one member of a '*multiverse*'.

The book weaves a strange path through the story of cosmology, yet one is never lost for a sense of direction from Rees. There are plenty of historical examples and anecdotes to keep the reader engaged. One in particular has lodged in my memory; the story of Giordano Bruno who wrote in 1584 that "there are countless constellations, suns and planets ... there are also numberless earths circling around their suns, no worse and no less than this globe of ours". This is an extraordinary leap of imagination which has only been "proven" by science in the last few years. The difference between our research today and Bruno's imaginings is that we don't have to face trials for heresy when conducting it. Bruno's work cost his life when he was burned at the stake by the Inquisition in 1600.

In this book Rees does achieve his goal of sharing his wonder at the processes which led to the formation of our Universe. It won't make you an expert, but it will help to fuel a fascination for the subject.

Lee Russell
29th March 2003