



Preface

Did time begin at a Big Bang? Will the present expansion of the universe last for a finite or infinite time? These questions sound philosophical but are now becoming in the twenty-first century central to the scientific study of cosmology. The answers, which should become clearer in the next decade or two, could have profound implications for how we see our own role in the universe. Since the publication of Stephen Hawking's *A Brief History of Time* in 1988, the answers to these questions have progressed as a result of research by a community of active theoretical physicists including myself. To present the underlying ideas requires a discussion of a wide range of topics in cosmology, especially the makeup of the energy content of the universe. A brief summary of my conclusions, that of three different possibilities concerning the history and future of time, the least likely being the conventional wisdom (time began and will never end) and most likely being a cyclic model (time never begins or ends), is in the short final chapter which could be read first. To understand the reasoning leading to those conclusions could encourage reading of the entire book. My hope in writing this, my first popular book, is that it

will engender reflection about time. Many nonscientists may already hold a philosophical opinion about whether time begins and ends. This book aims to present some recently discovered scientific facts which can focus the reader's consideration of the two brief questions in the book title.

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