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Beyond the Big Bang

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Summary

This book considers the relation between scientific cosmology and theology. Is belief in God still a reasonable option in an age of science? Or have religious beliefs been ruled out by science? Or should we conceive of the relationship between these two human enterprises differently, perhaps even consider them unrelated?

The Big Bang theory has been claimed as support for belief in creation. More recent developments in cosmology have led to the claim that a creator is superfluous. Such claims use science as a body of results which might contribute to certainty in religious matters. However, scientific research is also an active process which is characterized by an open attitude. This attitude is based upon awareness of the provisional status of theories and of the limitations accompanying scientific answers. The present study, *Beyond the Big Bang: Quantum Cosmologies and God*, starts with the answers cosmology, the science of the Universe, apparently offers, and how these answers have been used in favor of, or against, religious ideas. In considering such proposed relations, many uncertainties and ambiguities of interpretation will be discovered. Implications for the relation between science and religion will be drawn.

Chapter 2 discusses a number of religious responses to the Big Bang theory, its use in arguments for the existence of a cause beyond the Universe, and the claim that there are parallels with Biblical stories about creation. Such religious appropriations of the Big Bang theory neglect many problems, for example that the 'initial moment' is outside the domain where the theory can be trusted. In that connection, quantum cosmologies are needed.

In chapter 3 recent developments beyond the Big Bang theory are considered. Three different scientific cosmologies are discussed. Andrej Linde envisages an eternal Universe in which all kinds of bubbles form; the 'Big Bang' being the beginning of a bubble, our observable Universe. Stephen Hawking envisages a timeless Universe without edges. An apparent beginning is due to our description, just as edges on a map. Roger Penrose seems closest to the Big Bang image, with strong emphasis on the specialness of the initial conditions and on the asymmetry of time. These differences are related to metaphysical assumptions about the nature of reality, possibilities, and time. Hence, the Big Bang theory, which they all incorporate, is open to rather different interpretations.

In chapter 4 possible explanations of the Universe are considered. Is there evidence for plan and design (anthropic principles) or for contingency, and should such evidence be understood as support for belief in God? Or is a complete explanation to be expected, and should that be understood as ruling out belief in God? The conclusion is, again, that ambiguity persists. Scientific cosmology is open to different interpretations. It does not offer certainty in (anti-)religious matters.

Chapter 5 deals with the future of the Universe and eschatology. Big Bang cosmology has been interpreted as predicting a future which is unlivable, extremely cold in an ever expanding universe or extremely hot in a universe that would

collapse. More optimistic scenarios of Freeman Dyson and Frank Tipler are considered.

Theology and science have been considered thus far as a common quest for understanding reality. This assumes that scientific and religious ideas refer to a single reality. One might expect harmony between the best ideas about God and the world. However, one might also think of theology as a response to experiences of imperfection and injustice. Eschatology would not be about 'life forever', but about judgement in the present, a call for conversion as response to a critical judgement, and consolation in the face of suffering, evil, and failure. Such a theology is less interested in finding traces of God in the world, a project which failed as far as the cosmological issues of the preceding chapters are concerned. Such a theology is more interested in relevance, one might say in constructing a world which is more in line with certain values. This theological perspective is developed in the last two chapters, still in dialogue with the sciences.

Views about the way theology can be related to science are discussed in chapter 6. The theological stance chosen in the preceding chapter is combined with an emphasis on the constructive nature of theology, a construction which should take account of science. Coherence and relevance are the major applicable criteria. The final chapter, 7, recapitulates the main argument of the book, and proposes tentatively to understand God as the ground of values, possibilities, and reality.

Eight appendices give additional information about scientific issues, the exegesis of Genesis 1, and the history of the doctrine of *creatio ex nihilo*.

It is quite possible to skip chapter 2, and continue with chapter 3 after the introductory chapter. Skipping more detailed analysis and discussion of the viewpoints of others, one could restrict reading to the author's position in chapter 1, the sections 3.1, 4.6, 5.1, 5.5, 6.1, and 6.5, and the final chapter 7.