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# The Oxford Companion To Cosmology

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Cosmology

The Problematic Theology Inherent in Modern Cosmology

An Introduction to Modern Cosmology

The Oxford Handbook of Philosophy and Neuroscience

The Oxford Companion to Cosmology

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The Oxford Handbook of Presocratic Philosophy

Cosmology Without God?

Understanding the Evolution of the Universe

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*The Oxford Companion To Cosmology*

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## NOEMI DECKER

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*Cosmology* Oxford University Press on Demand

Containing 609 encyclopedic articles written by more than 200 prominent scholars, *The Oxford Companion to the History of Modern Science* presents an unparalleled history of the field invaluable to anyone with an interest in the technology, ideas, discoveries, and learned institutions that have shaped our world over the past five centuries. Focusing on the period from the Renaissance to the early twenty-first century, the articles cover all disciplines (Biology, Alchemy, Behaviorism), historical periods (the Scientific Revolution, World War II, the Cold War), concepts (Hypothesis, Space and Time, Ether), and methodologies and philosophies (Observation and Experiment, Darwinism). Coverage is international, tracing the spread of science from its traditional centers and explaining how the prevailing knowledge of non-Western societies has modified or contributed to the dominant global science as it is currently understood. Revealing the interplay between science and the wider culture, the Companion includes entries on topics such as minority groups, art, religion,

and science's practical applications. One hundred biographies of the most iconic historic figures, chosen for their contributions to science and the interest of their lives, are also included. Above all *The Oxford Companion to the History of Modern Science* is a companion to world history: modern in coverage, generous in breadth, and cosmopolitan in scope. The volume's utility is enhanced by a thematic outline of the entire contents, a thorough system of cross-referencing, and a detailed index that enables the reader to follow a specific line of inquiry along various threads from multiple starting points. Each essay has numerous suggestions for further reading, all of which favor literature that is accessible to the general reader, and a bibliographical essay provides a general overview of the scholarship in the field. Lastly, as a contribution to the visual appeal of the Companion, over 100 black-and-white illustrations and an eight-page color section capture the eye and spark the imagination.

*The Problematic Theology Inherent in Modern Cosmology* Wipf and Stock Publishers

This book introduces quantum field theory, together with its most important applications to cosmology and astroparticle physics, in a coherent framework. The path integral approach is employed

right from the start, and the use of Green functions and generating functionals is illustrated first in quantum mechanics and then in scalar field theory. Massless spin one and two fields are discussed on an equal footing, and gravity is presented as a gauge theory in close analogy with the Yang-Mills case. Concepts relevant to modern research such as helicity methods, effective theories, decoupling, or the stability of the electroweak vacuum are introduced. Various applications such as topological defects, dark matter, baryogenesis, processes in external gravitational fields, inflation and black holes help students to bridge the gap between undergraduate courses and the research literature.

**An Introduction to Modern Cosmology** Yale University Press  
Bridging astronomy and physics, cosmology seeks to examine the nature of the universe as a whole. Scientific investigation of cosmology began in ancient times and progressed rapidly after the Scientific Revolution, which produced the discovery of gravity and the heliocentric model of Copernicus. This volume examines the historical developments in the field of cosmology, the evidence supporting the Big Bang theory, and the future implications of dark matter and an expanding universe. Readers will also be introduced to the various thinkers who helped advance study of this endlessly fascinating field.

**The Oxford Handbook of Philosophy and Neuroscience** OUP  
Oxford

This book deals with a topic that has been largely neglected by philosophers of science to date: the ability to refer and analyze in tandem. On the basis of a set of philosophical case studies involving both problems in number theory and issues concerning time and cosmology from the era of Galileo, Newton and Leibniz up through the present day, the author argues that scientific knowledge is a combination of accurate reference and analytical interpretation. In order to think well, we must be able to refer successfully, so that we can show publicly and clearly what we are talking about. And we must be able to analyze well, that is, to discover productive and explanatory conditions of intelligibility for the things we are thinking about. The book's central claim is that the kinds of representations that make successful reference possible and those that make successful analysis possible are not the same, so that significant scientific and mathematical work typically proceeds by means of a heterogeneous discourse that juxtaposes and often superimposes a variety of kinds of representation, including formal and natural languages as well as more iconic modes. It demonstrates the virtues and necessity of heterogeneity in historically central reasoning, thus filling an important gap in the literature and fostering a new, timely discussion on the epistemology of science and mathematics.

**The Oxford Companion to Cosmology** Oxford University Press, USA

This companion includes over 350 entries, extensively cross-referenced, describing the modern view of cosmology, including both theoretical ideas and the many strands of observational evidence.

**The Oxford Companion to Cosmology** Routledge

These fourteen essays by leading historians and philosophers of science introduce the reader to the work of Albert Einstein. Following an introduction that places Einstein's work in the context of his life and times, the essays explain his main contributions to physics in terms that are accessible to a general audience, including special and general relativity, quantum physics, statistical physics, and unified field theory. The closing essays explore the relation between Einstein's work and twentieth-century philosophy, as well as his political writings.

**The Oxford Handbook of Presocratic Philosophy** Oxford University Press

The Oxford Handbook of Jewish Studies reflects the current state

of scholarship in the field as analyzed by an international team of experts in the different and varied areas represented within contemporary Jewish Studies. Unlike recent attempts to encapsulate the current state of Jewish Studies, the Oxford Handbook is more than a mere compendium of agreed facts; rather, it is an exhaustive survey of current interests and directions in the field.

**Cosmology Without God?** Oxford University Press, USA

The revised second edition of this established dictionary contains over 4,300 up-to-date entries covering all aspects of astronomy. Compiled with the help of over 20 expert contributors under the editorship of renowned author and broadcaster Ian Ridpath, A Dictionary of Astronomy covers everything from space exploration and the equipment involved, to astrophysics, cosmology, and the concept of time. The dictionary also includes biographical entries on eminent astronomers, as well as worldwide coverage of observatories and telescopes.

Supplementary material is included in the appendices, such as tables of Apollo lunar landing missions and the constellations, a table of planetary data, and numerous other tables and diagrams complement the entries. The entries have been fully revised and updated for this edition, and new entries have been added to reflect the recent developments within the field of astronomy, including magnetic reconnection, Fornax cluster, luminosity density, and Akatsuki. The content is enhanced by entry-level web links, which are listed and regularly updated on a companion website. A Dictionary of Astronomy is an invaluable reference source for students, professionals, amateur astronomers, and space enthusiasts.

**Understanding the Evolution of the Universe** The Oxford Companion to Cosmology

The Oxford Handbook on Early China brings 30 scholars together to cover early China from the Neolithic through Warring States periods (ca 5000-500BCE). The study is chronological and incorporates a multidisciplinary approach, covering topics from archaeology, anthropology, art history, architecture, music, and metallurgy, to literature, religion, paleography, cosmology, religion, prehistory, and history.

**The Oxford Handbook of Jewish Studies** Oxford University Press

Since its publication in 1996, The Oxford Companion to Archaeology has firmly established itself as the standard reference work in the field of archaeology, selling nearly 15,000 copies to date and remaining a favorite among students, scholars, and anyone interested in archaeology. In 700 entries, the second edition provides thorough coverage to historical archaeology, the development of archaeology as a field of study, and the ways the discipline works to explain the past. In addition to these theoretical entries, other entries describe the major excavations, discoveries, and innovations, from the discovery of the cave paintings at Lascaux to the deciphering of Egyptian hieroglyphics and the use of luminescence dating. Much has changed in the field since 1996. Recent developments in methods and analytical techniques (e.g., laser-based mapping and survey systems, new applications of the scanning electron microscope) have revolutionized the ways excavations are performed. Cultural tourism, cultural resource management, heritage, and conservation have been redefined as areas within archaeology, and have had new emphasis given them by scholars and administrators. Major new sites have expanded our understanding of prehistory and human developments through time. The second edition explores each of these advances in the field, adding approximately 200 entries and expanding the total work to three volumes. Neil Asher Silberman, a renowned practicing archaeologist, author, and scholar, and a board

member for the first edition, is the editor in chief. In addition to significant expansion, first-edition entries have been thoroughly revised and updated to reflect the progress that has been made in the last decade and a half

**The Cambridge Companion to Einstein** Oxford University Press

What did the ancient Greeks eat and drink? What role did migration play? Why was emperor Nero popular with the ordinary people but less so with the upper classes? Why (according to ancient authors) was Oedipus ('with swollen foot') so called? For over 2,000 years the civilizations of ancient Greece and Rome have captivated our collective imagination and provided inspiration for so many aspects of our lives, from culture, literature, drama, cinema, and television to society, education, and politics. Many of the roots of the way life is lived in the West today can be traced to the ancient civilizations, not only in politics, law, technology, philosophy, and science, but also in social and family life, language, and art. Beautiful illustrations, clear and authoritative entries, and a useful chronology and bibliography make this Companion the perfect guide for readers interested in learning more about the Graeco-Roman world. As well as providing sound information on all aspects of classical civilization such as history, politics, ethics, morals, law, society, religion, mythology, science and technology, language, literature, art, and scholarship, the entries in the Companion reflect the changing interdisciplinary aspects of classical studies, covering broad thematic subjects, such as race, nationalism, gender, ethics, and ecology, confirming the impact classical civilizations have had on the modern world.

**What (if Anything) Should We Infer from the Fine-Tuning of Our Universe for Life?** Yale University Press

A theoretical astrophysicist explores the ideas that transformed our knowledge of the universe over the past century. The cosmos, once understood as a stagnant place, filled with the ordinary, is now a universe that is expanding at an accelerating pace, propelled by dark energy and structured by dark matter. Priyamvada Natarajan, our guide to these ideas, is someone at the forefront of the research—an astrophysicist who literally creates maps of invisible matter in the universe. She not only explains for a wide audience the science behind these essential ideas but also provides an understanding of how radical scientific theories gain acceptance. The formation and growth of black holes, dark matter halos, the accelerating expansion of the universe, the echo of the big bang, the discovery of exoplanets, and the possibility of other universes—these are some of the puzzling cosmological topics of the early twenty-first century. Natarajan discusses why the acceptance of new ideas about the universe and our place in it has never been linear and always contested even within the scientific community. And she affirms that, shifting and incomplete as science always must be, it offers the best path we have toward making sense of our wondrous, mysterious universe. “Part history, part science, all illuminating. If you want to understand the greatest ideas that shaped our current cosmic cartography, read this book.”—Adam G. Riess, Nobel Laureate in Physics, 2011 “A highly readable, insider’s view of recent discoveries in astronomy with unusual attention to the instruments used and the human drama of the scientists.”—Alan Lightman, author of *The Accidental Universe* and *Einstein’s Dream*

**The Infinite Cosmos** Oxford University Press on Demand  
Introduction to Astronomy & Cosmology is a modern undergraduate textbook, combining both the theory behind astronomy with the very latest developments. Written for science students, this book takes a carefully developed scientific approach to this dynamic subject. Every major concept is

accompanied by a worked example with end of chapter problems to improve understanding. Includes coverage of the very latest developments such as double pulsars and the dark galaxy. Beautifully illustrated in full colour throughout. Supplementary web site with many additional full colour images, content, and latest developments.

**Journey of the Universe** John Wiley & Sons

An Introduction to Modern Cosmology Third Edition is an accessible account of modern cosmological ideas. The Big Bang Cosmology is explored, looking at its observational successes in explaining the expansion of the Universe, the existence and properties of the cosmic microwave background, and the origin of light elements in the universe. Properties of the very early Universe are also covered, including the motivation for a rapid period of expansion known as cosmological inflation. The third edition brings this established undergraduate textbook up-to-date with the rapidly evolving observational situation. This fully revised edition of a bestseller takes an approach which is grounded in physics with a logical flow of chapters leading the reader from basic ideas of the expansion described by the Friedman equations to some of the more advanced ideas about the early universe. It also incorporates up-to-date results from the Planck mission, which imaged the anisotropies of the Cosmic Microwave Background radiation over the whole sky. The Advanced Topic sections present subjects with more detailed mathematical approaches to give greater depth to discussions. Student problems with hints for solving them and numerical answers are embedded in the chapters to facilitate the reader’s understanding and learning. Cosmology is now part of the core in many degree programs. This current, clear and concise introductory text is relevant to a wide range of astronomy programs worldwide and is essential reading for undergraduates and Masters students, as well as anyone starting research in cosmology. The accompanying website for this text, <http://booksupport.wiley.com>, provides additional material designed to enhance your learning, as well as errata within the text.

**The Oxford Guide to the History of Physics and Astronomy** OUP Oxford

St. Maximus the Confessor (580-662), was a major Byzantine thinker, a theologian and philosopher. He developed a philosophical theology in which the doctrine of God, creation, the cosmic order, and salvation is integrated in a unified conception of reality. Christ, the divine Logos, is the centre of the principles (the logoi) according to which the cosmos is created, and in accordance with which it shall convert to its divine source. Torstein Tollefsen treats Maximus’ thought from a philosophical point of view, and discusses similar thought patterns in pagan Neoplatonism. The study focuses on Maximus’ doctrine of creation, in which he denies the possibility of eternal coexistence of uncreated divinity and created and limited being. Tollefsen shows that by the logoi God institutes an ordered cosmos in which separate entities of different species are ontologically interrelated, with man as the centre of the created world. The book also investigates Maximus’ teaching of God’s activities or energies, and shows how participation in these energies is conceived according to the divine principles of the logoi. An extensive discussion of the complex topic of participation is provided.

John Wiley & Sons

The field of ‘science and religion’ is exploding in popularity among both academics and the reading public. This is a comprehensive and authoritative introduction to the debate, written by the leading experts yet accessible to the general reader.

The Routledge Companion to Philosophy of Physics OUP Oxford  
 If the physical constants, initial conditions, or laws of nature in our universe had been even slightly different, then the evolution of life would have been impossible. This observation has led many philosophers and scientists to ask the natural next question: why is our universe so "fine-tuned" for life? The debates around this question are wide-ranging, multi-disciplinary, complicated, technical, and (at times) heated. This study is a comprehensive investigation of these debates and the many metaphysical and epistemological questions raised by cosmological fine-tuning. Waller's study reaches two significant and controversial conclusions. First, he concludes that the criticisms directed at the "multiverse hypothesis" by theists and at the "theistic hypothesis" by naturalists are largely unsuccessful. Neither of these options can plausibly be excluded. Choosing between them seems to turn on primitive (and so hard to justify) metaphysical intuitions. Second, in order to break the philosophical deadlock, Waller moves the debate from the level of universes to the level of possible worlds. Arguing that possible

worlds are also "fine-tuned" in an important and interesting sense, Waller concludes that the only plausible explanation for the fine-tuning of the actual world is to posit the existence of some kind of "God-like-thing."

**A Dictionary of Astronomy** OUP Oxford

Offers 609 articles by more than two hundred scholars covering the history of science from the Renaissance to the beginning of the twenty-first century.

The Oxford Companion to the History of Modern Science Oxford University Press

The history of physics and astronomy from the Renaissance to the present day is traced in this collection of more than one hundred and fifty entries about key scientists, concepts, discoveries, technological innovations, and learned institutions.

*The Oxford Handbook of Eschatology* Springer Nature

Einstein's general theory of relativity is introduced in this advanced undergraduate textbook. Topics covered include geometric formulation of special relativity, the principle of equivalence, Einstein's field equation and its spherical-symmetric solution, as well as cosmology.

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