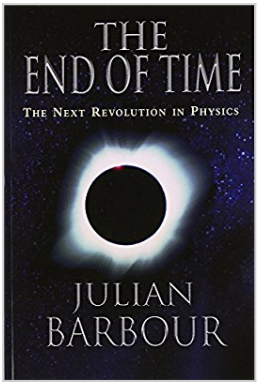


# The End of Time: The Next Revolution in Physics

*By Julian Barbour*



**The End of Time: The Next Revolution in Physics** By Julian Barbour

Richard Feynman once quipped that "Time is what happens when nothing else does." But Julian Barbour disagrees: if nothing happened, if nothing changed, then time would stop. For time is nothing but change. It is change that we perceive occurring all around us, not time. Put simply, time does not exist.
In this highly provocative volume, Barbour presents the basic evidence for a timeless universe, and shows why we still experience the world as intensely temporal. It is a book that strikes at the heart of modern physics. It casts doubt on Einstein's greatest contribution, the spacetime continuum, but also points to the solution of one of the great paradoxes of modern science, the chasm between classical and quantum physics. Indeed, Barbour argues that the holy grail of physicists--the unification of Einstein's general relativity with quantum mechanics--may well spell the end of time.
Barbour writes with remarkable clarity as he ranges from the ancient philosophers Heraclitus and Parmenides, through the giants of science Galileo, Newton, and Einstein, to the work of the contemporary physicists John Wheeler, Roger Penrose, and Steven Hawking. Along the way he treats us to enticing glimpses of some of the mysteries of the universe, and presents intriguing ideas about multiple worlds, time travel, immortality, and, above all, the illusion of motion.
*The End of Time* is a vibrantly written and revolutionary book. It turns our understanding of reality inside-out.

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**The End of Time: The Next Revolution in Physics By Julian Barbour Bibliography**

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## Editorial Review

From Publishers Weekly
Where does the time go? Independent physicist Barbour presents an unusual alternate to the standard way of viewing the four-dimensional universe (three spatial dimensions and time), beginning with how our perception of time is formed. Time, he says, does not exist apart from events: the motions of the sun and the stars, the mechanical movement of a clock. Rather than truly feeling the passing of time, we merely note changes in our surroundings, described by the author as a series of "Nows," like frames of a motion picture. Not only do Nows exist for the events that actually occur, but a large number of Nows represent alternate possibilities, inhabiting a land called Platonia. Which Nows become our perceived reality? The rule of thumb Barbour gives is, "only the probable is experienced." In the "macro" world, the author addresses determinism, Newtonian mechanics and the second law of thermodynamics as they relate to his theory of Nows. In the quantum mechanical realm, he ties his theory of time to the Schrodinger Equation in its various forms. Throughout, the author accompanies his theories not with complex equations but rather with elegant (if sometimes convoluted) diagrams. If these theories sound intriguing, readers already familiar with the Wheeler-DeWitt and Schrodinger equations, eigenstates and wave functions may appreciate this unique perspective. Ultimately, however, Barbour's attempts to "simplify" physics, in particular quantum mechanics, will confuse as many readers as they enlighten. 20 illustrations. (Feb.)


From Library Journal
Barbour is a research physicist who works without formal ties to the academy. Here, he presents his thesis that time and motion do not exist; they are illusions. The first portion of the book is rather philosophical in tone, but most of the work is concerned with the struggle to resolve the disparities among classical physics, quantum mechanics, and general relativity. Barbour argues that the omission of time from the foundations of physics will enable scientists to achieve a unified theory of physics. At the moment many physicists have not accepted this remarkable viewpoint; it seems to be a desperate expedient to resolve a set of problems that may yet be solved by other means. Even so, this is a book that deserves serious study and consideration. Recommended for academic and large public libraries.AJack W. Weigel, formerly with Univ. of Michigan Lib., Ann Arbor


Review
"This book presents a number of subtle physical (and accompanying philosophical) ideas in a non-technical manner for the non-professional reader. The exposition is often a model of clarity..., presenting very difficult physical and conceptual ideas in a remarkably lucid way."--Mathematical Reviews

"This book is gold.... Barbour leaves his mark on every topic he considers, including the arrow of time and the origins of the Big Bang. One is left with a remarkable conception of reality and a sense of a personal quest.... Above all we get a sense of what economy of thought can truly be, of how shocking and sparse the concepts of physics may turn out to be.... Whether or not Barbour is right in his vision, as pedagogy and as analysis his book is a masterpiece."--The New York Times Book Review

"An unusual alternate to the standard way of viewing the four-dimensional universe (three spatial dimensions and time), beginning with how our perception of time is formed."--Publishers Weekly

"Barbour's theories may lead to the solution of one of the great paradoxes of modern science: the chasm

between classical and quantum physics."--Science News

"The End of Time [is] British physicist Julian Barbour's treatise on the idea that time doesn't even exist. It's nothing more, he says, than an illusion, a sort of cosmic parlor trick.... The orderly flow of events may really be as much an illusion as the flickering frames of a movie. And according to independent physicist Barbour's new book, even the apparent sequence of the flickers is illusory."--Time

"In this provocative volume, Barbour presents the basic evidence for the nonexistence of time, explaining what a timeless universe is like and showing how the world will nonetheless be experienced as intensely temporal."--The Astronomical Society of the Pacific

"Most of the work is concerned with the struggle to resolve the disparities among classical physics, quantum mechanics, and general relativity. Barbour argues that the omission of time from the foundations of physics will enable scientists to achieve a unified theory of physics.... A book that deserves serious study and consideration."--Jack W. Weigel, Library Journal

"I cannot think of another book that so successfully forces the reader to reconsider his or her most intimate assumptions about reality. But there is much more here than a radical scientific vision. In order to properly explain his destruction of time, Barbour also offers one of the clearest overview explanations of twentieth century physics available. Whether he is right or wrong, Barbour is on a great intellectual journey, and he is articulate enough to allow us to observe him in flight. Of course, if Barbour is right, the previous sentence would have to be rewritten. Read the book and learn how."--Jaron Lanier

"Julian Barbour is so knowledgable about contemporary physics--especially general relativity theory, quantum theory, and quantum gravity--so learned in the history of physics, so gifted at analytical philosophy and so elegant and amusing in his presentation that anyone who seriously confronts his argumentation and nevertheless remains a temporalist (as I do) will inevitably emerge a stronger, subtler, and wiser advocate of that philosophy."--Abner Shimnoy, Emeritus Professor of Philosophy and Physics, Boston University

"Julian Barbour's new theory of time is the most interesting and provocative new idea about time to be proposed in many years. If true it will change the way we see reality. Experts in the field of quantum gravity have for years looked up to Julian Barbour for his wisdom and imagination, as he is one of the few people who is truly both a scientist and a philosopher. Written with rare clarity and force, this book makes his thinking accessible to all interested readers."--Lee Smolin

## Users Review

**From reader reviews:**

**Vanesa Thomas:**

Why don't make it to be your habit? Right now, try to prepare your time to do the important action, like looking for your favorite reserve and reading a publication. Beside you can solve your trouble; you can add your knowledge by the guide entitled The End of Time: The Next Revolution in Physics. Try to the actual book The End of Time: The Next Revolution in Physics as your buddy. It means that it can to become your friend when you sense alone and beside that course make you smarter than before. Yeah, it is very fortuned to suit your needs. The book makes you a lot more confidence because you can know every thing by the book. So , we need to make new experience as well as knowledge with this book.

**Antoinette Hogg:**

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**James Batts:**

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**Elizabeth Fischer:**

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