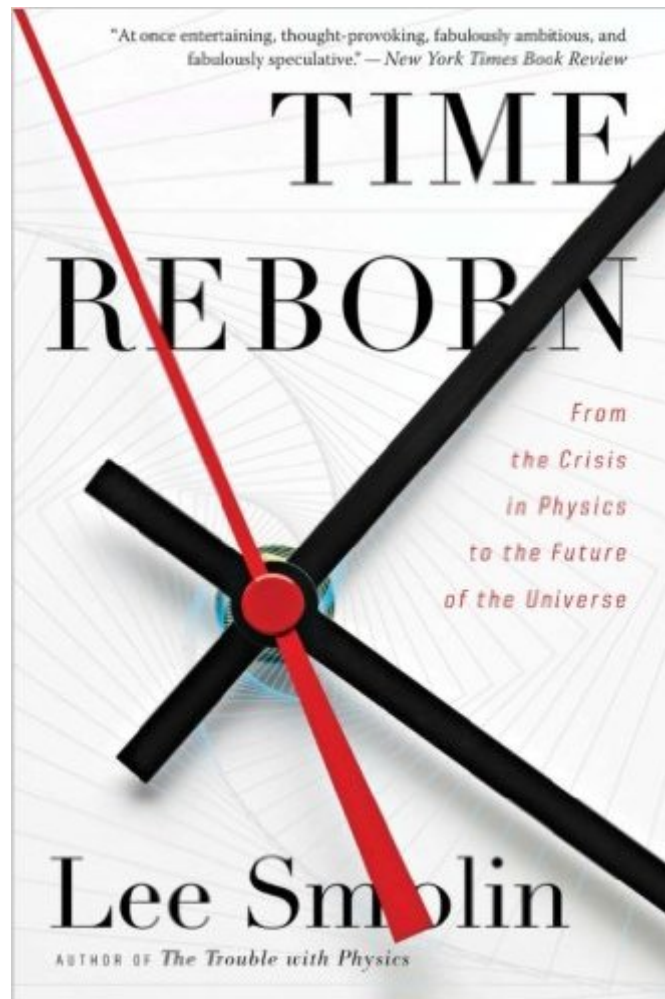


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# Time Reborn: From The Crisis In Physics To The Future Of The Universe



## Synopsis

"If you are looking for a bracing alternative vision of physics built from the ground up, Smolin's *Time Reborn* will take you to the mountaintop." — NPR  
What is time? It's the sort of question we rarely ask because it seems so obvious. And yet, to a physicist, time is simply a human construct and an illusion. If you could somehow get outside the universe and observe it from there, you would see that every moment has always existed and always will. Lee Smolin disagrees, and in *Time Reborn* he lays out the case why. Recent developments in physics and cosmology point toward the reality of time and the openness of the future. Smolin's groundbreaking theory postulates that physical laws can evolve over time and the future is not yet determined. Newton's fundamental laws may not remain so fundamental. *Time Reborn* serves as a popular primer and investigation of time, both what it is and how the true nature of it impacts our world. "He challenges not only Einstein's relativity, but also the very notion of natural laws as immutable truths." — Economist  
"One of the essential books of the twenty-first century . . . Smolin provides a much-needed dose of clarity about time, with implications that go far beyond physics to economics, politics, and personal philosophy." — Jaron Lanier, author of *You Are Not a Gadget*

## Book Information

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## Customer Reviews

I was very excited when I ordered this book. The idea that the laws of nature may be time dependent has been debated by every generation of physicists since Isaac Newton. It is a romantic idea full of potential surprises, ripe for exciting new theories. It has not caught on, not because physicists shy away from it, but because experimental evidence is not there. (Every physicist,

including myself, is very much intrigued by the possibility of time dependent physical laws, but we have not been able to make a fully scientific theory out of it (yet.) In fact as of today, we don't have a shred of irrefutable experimental evidence that the laws of physics or any of the physical constants have changed since the first few seconds of big bang more than 13 billion years ago. (And we have no reliable idea how the universe was before the first few seconds.) Even so, I was still jazzed up about it. I did not expect to read about a full theory, but some coherent sketch of how it may work out. Unfortunately, the book fell way short of my expectations. This is not a scientific book; in fact it is not even a philosophical book. It is a book in which the author preaches the laymen from his high pulpit, stating his own pet theories and speculations as if they are facts, or at least as if they are likely to be true even though they have not been supported by any evidence yet. I diligently read chapter after chapter expecting a high synthesis of ideas eventually. It never came. But it was much worse than that when I realized that the author was leading up to a type of "hidden variables" interpretation of Quantum Mechanics (QM).

Lee Smolin's book is fascinating, troubling, and probably the seed of a new way of looking at fundamental physics. I've long thought that modern mathematical physics may be going down a cul de sac because physicists confuse the metaphor (mathematics) with "reality." Smolin's book shows a willingness to avoid that trap. His arguments are interesting, well written, quite possibly fallacious from a logical point of view, and surprisingly devoid of mathematics. The book has a number of good and bad points, perhaps too many to set forth here. It concerns our concepts of the universe from the all-embracing large to the inconceivably small. Along the way it drifts off to political, social, and economic commentary, which is nonetheless well tethered to the main arguments about science, but annoyingly distracting from his central theme. In essence Smolin suggests a new way of looking at cosmological and quantum questions based largely on the approach of Gottfried Leibnitz who is credited by some with inventing calculus, by others with stealing it from Newton. Current physics is, in Smolin's eyes, too closely descended from Newton's "paradigm" of the universe and science with its concepts of absolute space and time and the more recent idea that time is an illusion or an "emergent" phenomenon. Although Einstein's approach made these concepts somewhat "relational," to Smolin he is too attached to the Newtonian "timeless" paradigm. Smolin goes further back to Leibnitz (as do some other contemporary physicists). Leibnitz had a stronger concept of the relational characteristics of those things physicists measure and a set of rules to guide future theorists.

All in all, I found this book a bit too speculative for my tastes. While not to my taste, I do recommend this book to those who liked "The Life of the Cosmos", and to those who like to be mystified by all the possible ways in which our universe can be explained, even if none of them are proven science. This book would also appeal to those most interested in the philosophy of scientific ideas, as opposed to science as a descriptor of experimental observations. Those, like myself, who like their science to be coherent and based on actual data would likely not find this book to their liking. I like my science books to be grounded on accepted facts, so for me this was only a two-star book, but perhaps not for you. In the author's own words (on page 243), "The developments described in Part II in chapters 11 through 18 are not yet fact and do not yet amount to a coherent theory." As such, I had to wonder if it was a bit premature to present ideas that are not yet coherent. I had the feeling that in a decade or so there might be enough data to determine which of the very many ideas contained in this book would be developed into a coherent theory and which would be discarded. Also, this book is replete with theories and ideas, so many that after a while I came to the conclusion that Professor Smolin was covering too much and that the book was not sufficiently focused. What is in the book - Time in the context of this book is more philosophical than the parameter found in many of the equations utilized in physics, such as that which defines velocity.

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