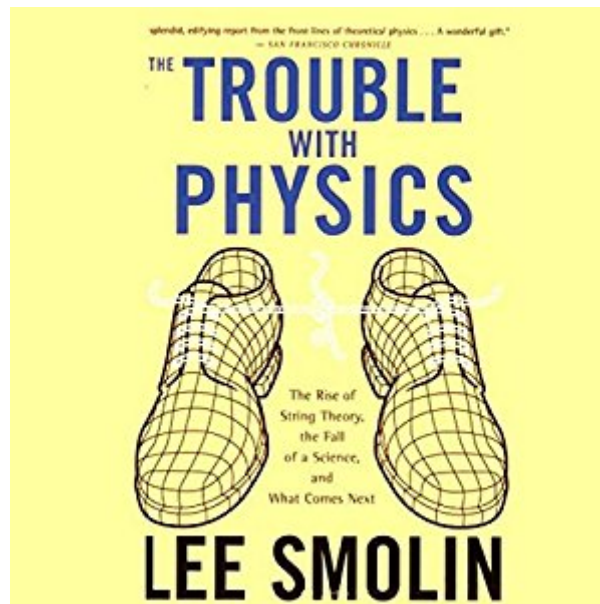


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# The Trouble With Physics: The Rise Of String Theory, The Fall Of A Science, And What Comes Next



## Synopsis

In this illuminating book, the renowned theoretical physicist Lee Smolin argues that fundamental physics -- the search for the laws of nature -- losing its way. Ambitious ideas about extra dimensions, exotic particles, multiple universes, and strings have captured the public's imagination -- and the imagination of experts. But these ideas have not been tested experimentally, and some, like string theory, seem to offer no possibility of being tested. Yet these speculations dominate the field, attracting the best talent and much of the funding and creating a climate in which emerging physicists are often penalized for pursuing other avenues. As Smolin points out, the situation threatens to impede the very progress of science. With clarity, passion, and authority, Smolin offers an unblinking assessment of the troubles that face modern physics -- and an encouraging view of where the search for the next big idea may lead. --This text refers to an out of print or unavailable edition of this title.

## Book Information

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## Customer Reviews

The part of the book I found most interesting was the part which tells how the string theorists were scammed by Nature (or Mathematics). Of course, Smolin doesn't put it exactly like this, but imagine the following conversation. String theorists: We've got the Standard Model, and it works great, but it doesn't include gravity, and it doesn't explain lots of other stuff, like why all the elementary particles have the masses they do. We need a new, broader theory. Nature: Here's a great new theory I can sell you. It combines quantum field theory and gravity, and there's only one adjustable parameter in it, so all you have to do is find the right value of that parameter, and the Standard Model will pop

right out. String theorists: We'll take it. String theorists (some time later): Wait a minute, Nature, our new theory won't fit into our driveway. String theory has ten dimensions, and our driveway only has four. Nature: I can sell you a Calabi-Yau manifold. These are really neat gadgets, and they'll fold up string theory into four dimensions, no problem. String theorists: We'll take one of those as well, please. Nature: Happy to help. String theorists (some time later): Wait a minute, Nature, there's too many different ways to fold our Calabi-Yao manifold up. And it keeps trying to come unfolded. And string theory is only compatible with a negative cosmological constant, and we own a positive one. Nature: No problem. Just let me tie this Calabi-Yao manifold up with some strings and branes, and maybe a little duct tape, and you'll be all set. String theorists: But our beautiful new theory is so ugly now! Nature: Ah!

I never write reviews for books I buy here although I've read virtually every popular theoretical physics book for sale on ; however-- the bizarre negative 'ad hominem' reviews for this book have forced me to say something. I was looking forward immensely to the release, in fact I pre-ordered it, because Lee Smolin's earlier "Life of the cosmos" absolutely captivated me way back when. And I must say, "Trouble with Physics" was so interesting and filled with intelligent ideas I couldn't put it down from the moment I bought it, even reading it while walking home like back when I was in high school...As stated in the book descriptions above, it reviews the past 30 years of theoretical physics and then concentrates on the fact that little progress has been made in that period towards a 'final theory'. And when you think about it, he's right! The problem of unifying quantum mechanics and relativity is already more than half a century old! And so the book discusses why he thinks string theory has failed, and why physics needs a kind of soul-searching to regain its path, aided by experimental results. I remember well the 'hype' for string theory a few years ago, it was expected to lead to a theory of everything pretty quickly, which obviously has not happened. I'm assuming the negative reviews of this book are from the string theorists, since there is nothing wrong with the cogency or pertinence of Smolin's arguments. String theorists seem to be oddly over-confident they are on the right path, and Smolin is willing to ask if they are not a bit self-deluded on that count. It does seem like a bit of a rejection of Occam's razor, to be positing multiple dimensions, and a multi-verse, when in the end very little has been truly explained... who knows, in the end?

Fundamental physics has been exceedingly successful for over two centuries. The rapid advances in our understanding of natural laws in the first three quarters of the 20th century were just as breathtaking as those in microchips or hard drives in the last. But this progress came to a

screeching halt 30 years ago. There has been no real progress since the establishment of the standard model. To observers outside of the physics community, this fact is far from obvious. Theorists in fundamental physics continue to make announcements on new ideas and results. Books are written and TV shows are made to trumpet the progress in string theory. Many models based on string theory are taken and marketed as facts. As years and decades go by and waves of string theory "predictions" are repeatedly superseded by new, incompatible ones, doubts begin to grow in the minds of knowledgeable outsiders. How can a "theory of everything" that completely describes an "elegant universe" keep contradicting itself on issues as basic as the dimensionality of spacetime? How can the string theorists be so sure of what happens at  $10^{19}$  GeV while being totally silent on the physics just beyond the standard model at  $10^3$  GeV? How can 30 years go by and nothing in particle physics theory is remotely Nobel-worthy? How can the two most important experimental results (non-zero neutrino masses and a positive cosmological constant) catch string theory by such surprise? Inquiries regarding these and many other suspicious signs are stonewalled by string theorists. The person who raises the issue is inevitably called ignorant, stupid, malicious, anti-science or all of the above. There are just too many beautiful results in string theory to be explained by coincidence, we are told.

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