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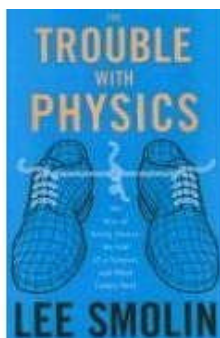
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The Rise of String Theory,
the Fall of a Science, and
What Comes Next
(Hardcover)**by [Lee Smolin](#)

★★★★★ (41 customer reviews)

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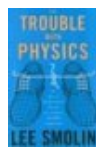
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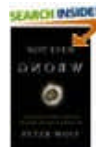
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From Publishers Weekly

String theory—the hot topic in physics for the past 20 years—is a dead-end, says Smolin, one of the founders of Canada's Perimeter Institute of Theoretical Physics and himself a lapsed string theorist. In fact, he (and others) argue convincingly, string theory isn't even a fully formed theory—it's just a "conjecture." As Smolin reminds his readers, string theorists haven't been able to prove any of their exotic ideas, and he says there isn't much chance that they will in the foreseeable future. The discovery of "dark energy," which seems to be pushing the universe apart faster and faster, isn't explained by string theory and is proving troublesome for that theory's advocates. Smolin (*The Life of the Cosmos*) believes that physicists are making the mistake of searching for a theory that is "beautiful" and "elegant" instead of one that's actually backed up by experiments. He encourages physicists to investigate new alternatives and highlights several young physicists whose work he finds promising. This isn't easy reading, but it will appeal to dedicated science buffs interested in where physics may be headed in the next decade. 30 b&w illus. (Sept. 19)

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From Bookmarks Magazine

In *The Trouble with Physics*, Lee Smolin, founder of the Perimeter Institute of Theoretical Physics in Ontario, Canada, and the author of several popular science books, including *The Life of the Cosmos* and *Three Roads to Quantum Gravity*, takes a complex debate on a highly theoretical topic and makes it accessible and interesting to the general public. With gusto, the author describes the infighting and politics that hinder progress in physics. Opinions vary on the success of Smolin's call to action in sections where he skewers his colleagues in theoretical physics for their shortsightedness. Reviewers, however—most of them physicists—tend to agree that string theorists' inability to empirically test their results will continue to undermine their efforts.

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144 of 156 people found the following review helpful:

★★★★★ **The string theorists were scammed!**, September 25, 2006

Reviewer: [Peter W. Shor](#) (Wellesley, MA USA) - [See all my reviews](#)

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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! But the Anthropic Principle says that all the best theories are ugly.

String theorists: It does?

Nature: It does. And once you make it the fashion to be ugly, you'll ensure that other theories will never beat you in beauty contests.

String theorists: Hooray! Hooray! Look at our beautiful new theory.

Okay, I've taken a few liberties here. But according to Smolin's book, string theory did start out looking like a very promising theory. And, like a scam, as it looks less and less promising, it's hard to resist the temptation to throw good money (or research) after bad in the hope of getting something back for your return. One of the questions Smolin addresses in the rest of the book is why the theoretical physics community has kept with string theory and largely abandoned all the other approaches to quantum gravity. The short answer is that it's hard to admit that you've been scammed. The long answer is much more complicated. Another thing Smolin addresses in the book is other approaches to quantum gravity. And as could be predicted, he gives lots of space to his own approach and too little space to others, especially Alain Connes' non-commutative geometry. But overall, I found it very worthwhile and entertaining, and a good explanation as to how theoretical physics came to be in the state it is today.



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127 of 137 people found the following review helpful:

★★★★★ **Fantastic reading**, September 11, 2006

Reviewer: **[J. Jenkins "ahhhhhh"](#)** (Toronto, Canada) - [See all my reviews](#)

I never write reviews for books I buy here although I've read virtually every popular theoretical physics book for sale on amazon; 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?

The last part of the book deals with the sociology of academic physics in university depts., and I must admit is slightly less interesting, and more polemical, than the sections that speculate on what a 'final theory' might look like.

Some of these concepts-- such as the variable speed of light theory, or that relativity may not be the full truth, the huge mystery of the cosmological constant and its explanation, are really heretical and for that reason, immensely entertaining!

So, in conclusion, very enjoyable for the 'layperson' who is not committed to believing in string theory and is willing to open their minds to very intelligent speculation on a final theory.

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1 of 7 people found the following review helpful:

★★★★☆ **deja vu**, January 22, 2007

Reviewer: [twit](#) - [See all my reviews](#)

Unfortunately this reminds me of the furore over einstein's theory of relativity some decades back, (and newton's calculus further back), when it was roundly attacked by people who did not apparently understand it very well. It seems that here many reviewers are saying, well I did not understand string theory, and now thank heaven the author has given me leave not to. Books in which the author claims to be on the right track and to be exposing others as charlatans tend mostly to have a short halflife in the intellectual firmament.

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2 of 3 people found the following review helpful:

★★★★☆ **Almost Good Enough**, January 20, 2007

Reviewer: [Teddy Dover "sarge"](#) (Peabody, Ks) - [See all my reviews](#)

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This is a good book until you read the much better Not Even Wrong by Peter Woit. They both critically survey the field of string theory and find it lacking especially due its inability to be proven or disproven by experiment. They both attack the cult-like thinking exhibited by some in the field. If you can't get a hold of Not Even Wrong, read this book and you get the message Smolin and Woit are trying to convey.

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5 of 6 people found the following review helpful:

★★★★☆ **A valuable perspective**, January 19, 2007

Reviewer: [Experimental physics grad student](#) (Geneva, CH) - [See all my reviews](#)

This is a reasonably engaging book presenting a perspective on theoretical physics that has

been rather under-represented in popular works. If you've read popular books advocating string theory and found them convincing, this book will give you a more balanced understanding of the theory's achievements and its limitations. Smolin argues that string theory is failing because it's an extension of the practical particle physics that has led to successes such as the Standard Model--an approach that has done so well, he says, that it's drowned out other avenues of research right at the moment when it has ground to a halt itself--and that what is needed now is more emphasis on re-examination of fundamental problems like spacetime and quantum mechanics. My views are almost opposite in a way (i.e. that the problem with string theory is that it isn't nearly practical enough), but Smolin is an expert whose opinion is worth reading. One point of irritation for me in the text is that I don't trust the analogies. Although I don't know the technical details of most of what he discussed, an analogy he made for something I do understand (fine tuning and the Higgs mechanism) appears to have nothing to do with the actual physics. The others could be better, but I can't tell. His discussion of the specifics of string theory is more balanced than in other books I've read, and that's what makes the book most useful in my view. The rest of his views are kind of out there, but interesting.

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13 of 14 people found the following review helpful:

★★★★★ **A troubling view of the most quantitative science**, January 9, 2007

Reviewer: [Matthew J. Brauer](#) (Princeton, NJ United States) - [See all my reviews](#)

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To this non-physicist, Smolin makes a convincing case that the science of cosmology is broken, and that profound institutional and social factors will prevent its getting fixed any time soon.

Smolin is great at describing the physics in ways that allows the lay-person to get at least a glimpse at what the debate is about. Still, the book is clearly the work of someone with an ambitious--and perhaps grandiose--agenda. There is a bit of theorizing that veers into armchair sociology. "Science as potentially corrupt social endeavor" is not a particularly original line of argument, and Smolin spends a little too much time making this point.

That being said, Smolin does a profound service by revealing the extent to which String Theory is founded mostly on faith and unfulfilled promises. It's easy to assume that cosmological models are supported by either empirical data or by robust, quantitative theory. It was astonishing to me that String Theory is founded on neither, and I'll certainly never again accept those claims at face value.

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