

# The New York Times Sunday Book Review

## Small Physics

Published: January 15, 2006

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To the Editor:

John Horgan's [essay](#) ("Einstein Has Left the Building," Jan. 1) was critical of current physics research for its inaccessibility and for its untestability. One of Horgan's objections was that physicists live in fantasy land without caring about evidence for their ideas. While some physicists do purely theoretical mathematical work, many of us — even those of us working on hyperspace and multiverses — care deeply about experimental tests of our ideas. That's what I explain in a recent physics book he didn't mention, "Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions."

I don't want to deceive anyone: we currently don't yet have experimental evidence for extra dimensions and the experiments will be challenging. But that's not surprising. It takes technological advances to study energies and distances beyond those we readily perceive. That doesn't happen overnight. But we know that when we have explored beyond readily accessible distance or energy scales, new phenomena have shown up. That doesn't mean any speculation is correct. But it gives us reason to speculate. As for the question of the incomprehensibility of modern science — at one book talk I gave, someone asked if I thought there would be a simple formulation of string theory or other aspects of current research, the way there is for relativity. My answer is that if the question is whether there will be a postcard formulation — like  $E=mc^2$  — the answer might well be yes. But like relativity, the theory will be far more complex and subtle than is conveyed in that simple equation. And Einstein didn't anticipate Global Positioning Systems (that use general relativity) when he did his theoretical research. I recently attended a panel discussion on language by writers and English professors. When the topic of translation came up, one person argued that there are untranslatable statements. He gave an example that's hard to argue with: "A Shakespeare he's not" is not translatable into Chinese. The fact is that science has its own language and its own logic and all popular books are an attempt to translate. So there will always be much that is untranslatable. Some books accomplish a great deal anyway — many ideas really can be reinterpreted in more everyday contexts. But some mathematical ideas and even the motivations for those ideas are just difficult to explain without the math. Nonetheless, trying to develop and share those ideas remains a laudable goal.

LISA RANDALL

Cambridge, Mass.