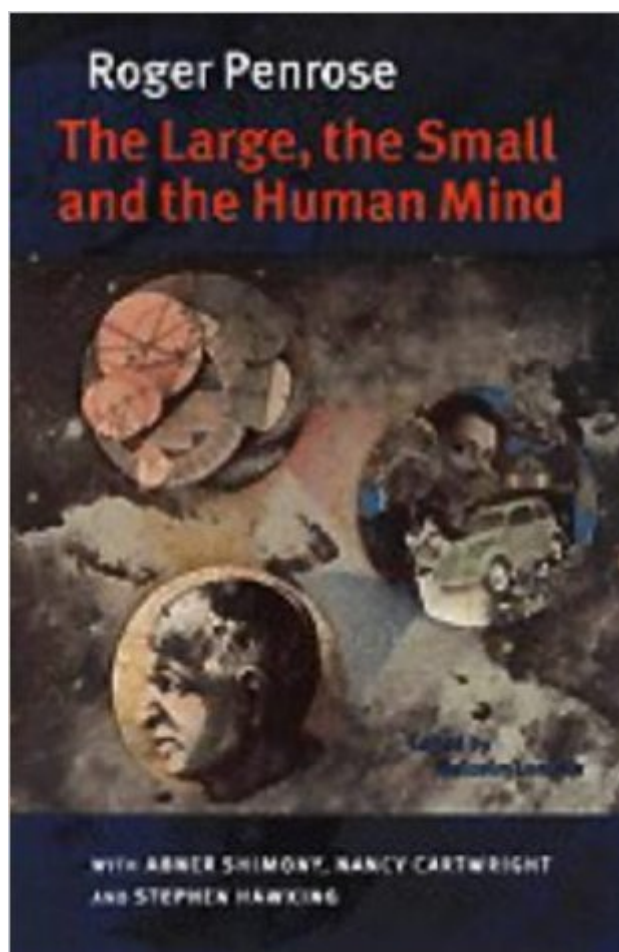


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# The Large, The Small And The Human Mind



## Synopsis

In this book, Roger Penrose presents a masterly summary of those areas of physics in which he feels there are major unsolved problems. These ideas are then challenged by three distinguished experts from different backgrounds - Abner Shimony and Nancy Cartwright as Philosophers of science and Stephen Hawking as a theoretical physicist and cosmologist. Finally, Roger Penrose responds to their thought-provoking criticisms. This paperback edition has been updated to include a striking and easily accessible example of Gödel's theorem, and a ground-breaking proposal for a physical experiment designed to test some of Penrose's most novel ideas about quantum mechanics. Penrose's enthusiasm, insight and good humour shine through this accessible, illuminating, and brilliant account of 21st-century theoretical physics.

## Book Information

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## Customer Reviews

Let me first say something about Roger Penrose. One notices how certain other mathematicians and mathematical physicists speak of him. He is not only admired and respected; it seems that he is positively enjoyed! This may be a bit surprising when one notices that Penrose is something of a thorn in the side of several popular ideas in contemporary physics (and psychology). Cosmic inflation theories and ideas regarding the fundamental nature of quantum uncertainty find a formidable and articulate critic in the Oxford mathematician. Of the somewhat less popular, but ever fanciful "many-worlds" interpretation of quantum superpositioning, Penrose says "[the 'many-worlds' view] is not a very economical description of the Universe but I think things are rather worse than that for the many-worlds description. It is not just its lack of economy that worries me. The main

problem is that it does not really solve the problem." He brings the same mental rapier to what he has called "the missing science" of mind and to the idea of computational / artificial intelligence. It is the problem of superpositioning described by Schrodinger and the decoherence caused by quantum measurement that prompt Penrose's search for an 'objective reduction' (OR) of quantum state vectors, the key ingredient in a "revolutionary" physical theory that remains a mystery. He speculates that this physical mystery may be related to the mystery of consciousness. He is unconvincing in this regard, but his ideas and arguments are quite interesting. Well, let me now take this a bit further. Penrose also seems to terribly irk certain others! In particular he really raises the hackles of proponents of strong AI and the Dawkins/Dennett camp of 'consciousness-is-merely-mechanism' dogmatists.

On the back of the book jacket it states that this book provides an "accessible" introduction to Roger Penrose's ideas. This is simply false, unless you are a physicist, a mathematician or a genius. For all others (in which category I fall), this book is close to incomprehensible. Roger Penrose is brilliant, has a wonderfully clear mind, and can write beautifully and clearly. I think that *The Emperor's New Mind* and *Shadows of the Mind* are wonderful books. Penrose can make extremely difficult ideas wonderfully clear, by breaking down complex arguments into clear simple steps. Some pages of *Emperor's* and *Shadows* take a long time to understand, (I must admit that I have read quite a bit less than all of either book), but the argument is spelled out so clearly that with effort and patience it can be fully understood. Penrose, I think, understands the questions he is wrestling with as well as any one alive, and his is a mind of great depth as well as clarity. Even if you don't find his arguments entirely convincing, you can't help but learn a great deal from these books, and develop insights of great value. What went wrong with *The Large, the Small and the Human Mind*? I think the key to answer lies in a comment Penrose makes on page 105, where he writes "The first 200 pages of *Shadows of the Mind* were devoted to trying to show that there are no loop-holes in the argument that I am going to give you." He then gives his argument in a few pages. The main part of the book (not including the replies of others and Penrose's replies to these replies) is just 139 rather small pages long.

Penrose concisely manages to give us an overview about 3 somehow interconnected fields, the mathematically described large-scale world, the deterministic quantum microcosm and the recently emergent mind science. His major aspiration is to see the new generation of scientists erecting a bridge between the quantum world and the always controversial substance of conscience. Having in

his mind (in a neo-platonic way) the idealistic nature of mathematics that apply to the physical world as a well-justified model, he firstly presents some themes from cosmology and abstract mathematics (e.g. hyperbolic, Riemann geometry), and why, in his opinion, Guth's inflationary universe theory, has weak points (see also Penrose's book- Difficulties with inflationary cosmology) In chapter 2 ,quantum physics related, he gives us interesting examples (the paradox& puzzles reference shows his great sense of humor) and explain us how wavefunction's reduction can assist us to deal with the probabilistic nature of events in this level.In the most interesting third one, he is concerned to lay an in-depth foundation between quantum procedures through neurons, so as to explain his main belief - brain function (that creates conscience) can't be simulated through A.I. Even though I tend to prefer J.Searle opinion (presented in his book Mind,Brain & Science) Penrose's points are adequately justified, thus leaving an open window for Free Will.In the next three chapters certain Penrose's point's are opposed from Shimony (physician, philosopher) Nancy Cartwright(logician, philosopher) and the renowned Steven Hawking.

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