

[Fashion, Faith and Fantasy in the New Physics of the Universe](#), Roger Penrose, Princeton University Press, Princeton, 2016, 520 pages, ISBN: 978-0-691-11979-3.

This book is the result of a series of lectures Roger Penrose gave at Princeton in the early 2000s. I heard about it on *Science Friday* so I bought a copy. Be forewarned: this is not light reading. This is not a text book, but the concepts might have been better related had this been presented as a textbook.

The first three chapters cover the fields of String Theory (Fashion), Quantum Field Theory (Faith) and the Big Bang Theory with Inflation (Fantasy). The titles of the chapters are meant to let the reader know how Penrose feels about the particular subject.

The chapters on String Theory and the Big Bang Theory receive treatments that suggest there are fundamental flaws with both theories: many more than four dimensions for the former and inflation after the Big Bang for the latter. He makes a good point that both theories are virtually impossible to prove and physics should focus on that which can be proven. The chapter on Quantum Field Theory concludes with the paradigm that the current theory works well enough “for all practical purposes.”

I interpret the first three chapters as a diatribe against the aforementioned theories that allows Penrose to segue into the final chapter. Here he makes the case for his own pet theory, Twistor Theory (A New Physics for the Universe). The chapter ends with a discussion on *conformal cyclic cosmology*. CCC suggests that we are simply in a never ending cycle of big bang (minimum entropy) to black hole death (maximum entropy) and ultimately a sea of massless particles resulting in another big bang, over a time period on the order of 10^{100} years for each cycle.

There is a quote at the end that seems relevant today. One could remove “scientific” from the paragraph and describe a broader problem with information glut:

Let me end by making a few final comments about the role of fashion in its frequent grip on scientific ideas. I very much admire and benefit from the way that modern technology, mainly by way of the internet, allows immediate access to so much of the broadening body of scientific knowledge. Yet I fear that this very breadth may itself led to a tightening of the grip of fashion. There is so much out there which is now so accessible that it is extremely difficult to know which things among that multitude contain new ideas to which attention should be paid. How does one make judgments as to what may be important and what owes its prominence merely to its popularity?

There is a detailed mathematical appendix that covers some of the concepts in the main text, including iterated exponents, fields and topology.

You will need your thinking cap for this book, and be prepared to expand your horizons.

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