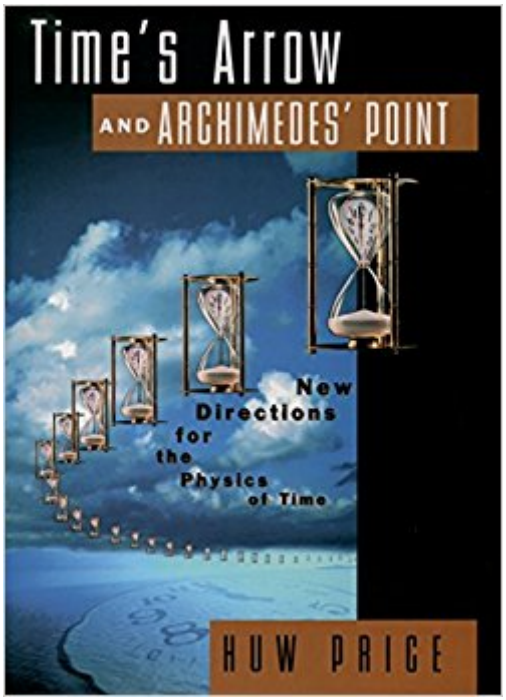
Time's Arrow And Archimedes' Point: New Directions For The Physics Of Time



Synopsis

Why is the future so different from the past? Why does the past affect the future and not the other way around? What does quantum mechanics really tell us about the world? In this important and accessible book, Huw Price throws fascinating new light on some of the great mysteries of modern physics, and connects them in a wholly original way.Price begins with the mystery of the arrow of time. Why, for example, does disorder always increase, as required by the second law of thermodynamics? Price shows that, for over a century, most physicists have thought about these problems the wrong way. Misled by the human perspective from within time, which distorts and exaggerates the differences between past and future, they have fallen victim to what Price calls the "double standard fallacy": proposed explanations of the difference between the past and the future turn out to rely on a difference which has been slipped in at the beginning, when the physicists themselves treat the past and future in different ways. To avoid this fallacy, Price argues, we need to overcome our natural tendency to think about the past and the future differently. We need to imagine a point outside time -- an Archimedean "view from nowhen" -- from which to observe time in an unbiased way.Offering a lively criticism of many major modern physicists, including Richard Feynman and Stephen Hawking, Price shows that this fallacy remains common in physics today -- for example, when contemporary cosmologists theorize about the eventual fate of the universe. The "big bang" theory normally assumes that the beginning and end of the universe will be very different. But if we are to avoid the double standard fallacy, we need to consider time symmetrically, and take seriously the possibility that the arrow of time may reverse when the universe recollapses into a "big crunch."Price then turns to the greatest mystery of modern physics, the meaning of quantum theory. He argues that in missing the Archimedean viewpoint, modern physics has missed a radical and attractive solution to many of the apparent paradoxes of quantum physics. Many consequences of quantum theory appear counterintuitive, such as Schrodinger’s Cat, whose condition seems undetermined until observed, and Bell’s Theorem, which suggests a spooky "nonlocality," where events happening simultaneously in different places seem to affect each other directly. Price shows that these paradoxes can be avoided by allowing that at the quantum level the future does, indeed, affect the past. This demystifies nonlocality, and supports Einstein’s unpopular intuition that quantum theory describes an objective world, existing independently of human observers: the Cat is alive or dead, even when nobody looks. So interpreted, Price argues, quantum mechanics is simply the kind of theory we ought to have expected in microphysics -- from the symmetric standpoint.Time’s Arrow and Archimedes’ Point presents an innovative and controversial view of time and contemporary physics. In this exciting book, Price urges physicists, philosophers, and

anyone who has ever pondered the mysteries of time to look at the world from the fresh perspective of Archimedes' Point and gain a deeper understanding of ourselves, the universe around us, and our own place in time.

Book Information

File Size: 1591 KB

Print Length: 320 pages

Publisher: Oxford University Press (December 4, 1997)

Publication Date: December 4, 1997

Sold by:Ã Â Digital Services LLC

Language: English

ASIN: B004SL4KIU

Text-to-Speech: Enabled

X-Ray: Not Enabled

Word Wise: Enabled

Lending: Not Enabled

Screen Reader: Supported

Enhanced Typesetting: Enabled

Best Sellers Rank: #741,184 Paid in Kindle Store (See Top 100 Paid in Kindle Store) #42 inÃ Â Kindle Store > Kindle eBooks > Nonfiction > Science > Agricultural Sciences > Bacteriology #79 inÃ Â Kindle Store > Kindle eBooks > Nonfiction > Science > Physics > Time #83 inÃ Â Books > Medical Books > Basic Sciences > Bacteriology

Customer Reviews

This is a very good book, but I feel that something is missing.Imagine if someone in 1820 had written the definitive book about electricity and magnetism: It would have contained all kinds of information about Leyden jars, dynamos, induced current, electro-magnets, compasses, etc. It would not mention the electro-magnetic field, nor would it mention electro-magnetic radiation.This is not a criticism of the author: No one today could write a complete book on the subject of time, because we still do not really understand itThe author does a good job of covering entropy, causality, and quantum time asymmetry, but I believe that these phenomena are all aspects of the same thing. The scientific and philosophical study of time is still in the stage where we are "collecting stamps", rather like biology was in the period before Darwin.We are still waiting for an integrated theory of time, which can explain the direction of causality, the non-reversibility of

radiation, and all of the other time-asymmetries in one package.

Fruit flies like an orange.About the extent of what I got out of this very difficult to read book and I enjoy reading Virginia Wolfe! I know, apples and oranges.Book has point to make and failed to make it with this reader. Then again I posit that time is little more than an artifact of life and a hindrance to our understanding other dimensional systems. To me time is like gravity as we have no understanding of either beyond that of a facile observer - no ability to create either, control either, modify either ... yet!

The author is obviously extremely intelligent and well-versed in his areas of expertise. But he seems to have written this book for a limited audience of people like himself rather than a broader group of more average people who are interested in gaining more insight and understanding concerning the question of the nature of time. Unless a person is an expert in physics as well as philosophy, hopefully there are probably books somewhere more accessible than this one. I certainly will be looking for one.

For every Einstein, there are tens of thousands of Huw Price’s, who somehow think they are like an Einstein. How sad.Too many places to start- one example is Chapter 7: "Convention Objectified and the Past Unlocked," from the "Overview on page 264:"The diagnosis of the previous chapter finds attractive expression in terms of the conventional asymmetry of counterfactual conditionals. However, the conventionalist view seems to make the asymmetry of dependance- the fact that the future depends on the past, but not vice versa-insufficiently objective, in two sense: it seems too weak, in making the asymmetry conventional, and too strong, in ruling out backward causation by fiat."That’s right- if you understand what Price just said! Show me one observable system that does not evolve from present to future leaving a past.Here are some other books on "time" that are highly recommend:G.J. Whitrow’s "The Natural Philosophy of Time," second edition, 1980, does great job of discussing and elucidating these tricky issues of "time." Whitrow’s book also presents a wonderful historical perspective of the human concept of "time" throughout the ages.Also interesting is "chronos," by Etienne Klein, originally published in French in 2003, English translation 2005. This book is a diamond in the ruff which contains some interesting ideas, e.g. footnote 3 (located on p. 168) to Chapter 7, where Klein discusses Albert Le Grand (1200-1280), and Le Grand’s statement:"What depends on the soul is not the existence of time, but the perception of time."And this to me this what so many people who write and discuss "time" seem to miss. The existence of

"time" does not need humans or human "consciousness," "time" existed before humans and will exist after humans are gone. What we struggle with is the perception of "time."Another good book is "About Time- Einstein's Unfinished Revolution," 1995, by Paul Davies. This book is worth a read.

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