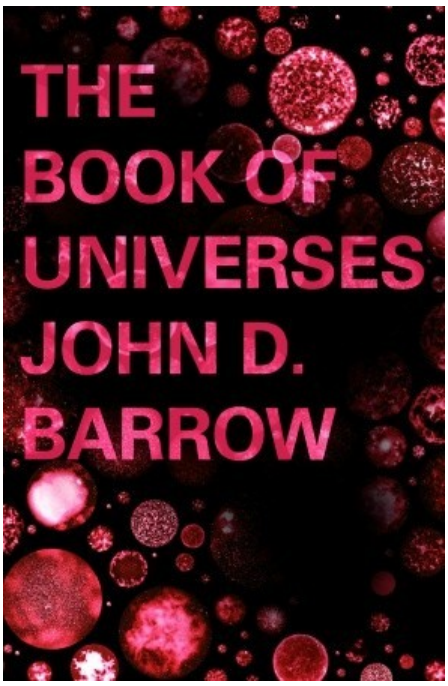

The Book of Universes: Exploring the Limits of the Cosmos

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This is a book about universes, a story that revolves around a single unusual and unappreciated fact: that Einstein's famous theory of relativity describes universes -- entire universes. Not many solutions of Einstein's tantalizing universe equations have ever been found, but those that have are all very remarkable. Some of them describe universes that expand in size, while others contract, some rotate like a top and others are chaotic. Some are perfectly smooth, while others are lumpy, or shaken in different directions by tides of energy; some oscillate forever, some become lifeless and cold, while others head towards a runaway future of ever-increasing expansion. Some permit time travel into the past, and others allow infinitely many things to happen in a finite amount of time. Only a few allow life to evolve within them; the rest remain unknowable to conscious minds. Some end with a bang, some with a whimper. Some don't end at all.

Our story will encounter universes where the laws of physics can change from time to time and from one region to another, universes that have extra hidden dimensions of space and time, universes that are eternal, universes that live inside black holes, universes that end without warning, colliding universes, inflationary universes, and universes that come into being from something else -- or from nothing at all.

Gradually, we will find ourselves introducing the latest and the best descriptions of the Universe we see around us today, together with the concept of the 'Multiverse' -- the universe of all possible universes -- that modern theories of physics lead us to contemplate. These are the most fantastic and far-reaching speculations in the whole of science.

Other cosmology and astronomy books focus on particular topics -- dark matter, dark energy, the beginning of the universe, inflation, life-supporting coincidences, or the end of the universe -- but this book introduces the reader to whole universes in a coherent and unified way.

The Book of Universes: Exploring the Limits of the Cosmos Details

Date	:	Published March 7th 2011 by Bodley Head (first published January 1st 2011)
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From Reader Review The Book of Universes: Exploring the Limits of the Cosmos for online ebook

Charles Mathes says

John D. Barrow's THE BOOK OF UNIVERSES is not a rollicking good read, but a book like this couldn't be. History only comes alive when you have characters that you care about, whom you can follow through various reversals - basically what makes a good novel a good novel. THE BOOK OF UNIVERSES is a history book, a survey of the development of physicists' theories about the universe. There is no plot, and instead of reversals there is evolution -- a much slower phenomenon.

Depending on what you are seeking, histories can either be dull or rewarding. For fast-paced gee-whiz physics, look elsewhere. If you want to learn something, this book can be immensely rewarding. Barrow is not a flashy writer, but he has an enviable clarity of mind and objectivity with which he presents intelligibly the thoughts of some of the greatest scientific minds as they built upon one another over centuries and in light of continually developing technological evidence. He doesn't resort to language that only physicists can understand unless he has absolutely has to -- and then only briefly.

I came away from this book with a vastly better understanding of not only what the best minds in the world believed the Universe to be a few thousand years ago and what they think they think they know right now, but also a knowledge of some of the key thinkers and an inkling of how science itself works.

Barrow, an English cosmologist, physicist and mathematician, is actually one of the scientists who is a player in the history that he recounts. I, for one, appreciated the quiet modesty and effortless-looking writing skill he brings to this impossibly difficult subject -- he doesn't make it all look easy, but he can take you all the way if you'll let him. (

Sofia says

The introduction really grabbed my attention; I began to read it quite fast. Whatsoever, in the middle of the book, the fact that there are SO MANY THEORIES made the reading a little dull; I simply wanted to finish it. Maybe this happened mostly because I simply wanted to know the "most valid" theory earlier than what it really took (not considering every cosmologist who helped us understand the origins of our universe), however, the information is VERY CLEAR, straightforward and the book is full with Figures (photos, graphs, etc.) which help one as a reader understand more. Great book for an overall picture, but maybe for me in particular was more than I wanted.

David says

This is a nice summary of modern cosmology by a very talented writer. It is well written and well organized. My only qualms about this book is that the topics covered are also covered in several other books out at the present time.

Gary Beauregard Bottomley says

The author considers how we have thought about our universe from Copernicus to various solutions to Einstein's equations up to different incarnations of the multiverse.

There are many solutions to Einsteins equations. Each solution provides a different kind of universe with possibly different characteristics. Most of the solutions are also possible just by solving Netwon's equation (I had not realized that). Some of the solutions give interesting phenomena. Godol's solution involving a non-expaning rotating universe would give us time travel in addition to a a coherent system. Everything Godol does seems interesting beyond belief. That's why it's so believable when Einstein is quoted in the book to have said he went to work at Princeton just to be able to walk home with Godol and talk about stuff.

The footnotes to the book (and the book is chock full of them) are as interesting as the text and I had to book mark both the text and the footnotes because I was constantly switching back and forth. Also, almost every other page had a figure of a graph or a chart with pictorial representation of what was being talked about in the text. DO NOT READ THIS IN KINDLE, IT WOULD BE TOO HARD TO FLIP BACK BETWEEN FOOTNOTES AND FIGURES! (Never mind, this doesn't seem to be available on Kindle).

I had bought the book in 2011 and only got around to reading it recently. The author is good at giving the metaphor and the details of what he is explaining. He doesn't delve into the long analogy that a Brian Greene would provide and therefore this book reads smoother. He's a very good writer and I would find myself rereading paragraphs because he explained it so well and I wanted to understand what he was saying.

There are two models that we use to understand reality. One the Corresponding Theory of Truth and the other Coherent Theory of Truth. The first is data dependent and the second is reason dependent. The author and the way he presents his universes seemed to appeal to the second way of understanding. He would use the systems coherence with its lack of contradictions to attest for the universes authenticity. String Theory (and he does speak of it in the end chapters) is a wonderfully coherent belief system, but it doesn't really (yet) correspond to actual data. Don't get me wrong, Ludwig Boltzman (and he and his Brains are also mentioned) had the coherence before he had the corresponding (atoms couldn't be seen in his days) and he let the nay sayers drive him to suicide.

I liked this book and can recommend it. But, I would first recommend the Copernicus Complex https://www.goodreads.com/book/show/2..., it covers the same kind of thinking about the universe, but provided a more even approach to the topic. Because in the end, real advancement comes with a better tool of some kind (a microscope, a telescope, detector of some kind, etc.) not just pure reason alone.

Graziano says

Di questo parla la moderna cosmologia. Essa non si limita a descrivere il nostro universo nella maniera piu' completa e accurata possibile, ma cerca di inserire la descrizione in un contesto di possibilita' piu' ampio di quello reale. Si domanda "perche'" il nostro universo abbia alcune proprieta' e non altre. Naturalmente potremmo scoprire, alla fine, che non esiste altro universo possibile ... oltre a quello che vediamo. (7)

Finora si e' creduto che ogni nostra conoscenza debba regolarsi sugli oggetti; ma tutti i tentativi, condotti a partire da questo presupposto, di stabilire, tramite concetti, qualcosa a priori intorno agli oggetti, onde allargare in tal modo la nostra conoscenza, sono andati a vuoto. E' venuto il momento di tentare una buona volta, anche nel campo della metafisica, il cammino inverso, muovendo dall'ipotesi che siano gli oggetti a dover regolarsi sulla nostra conoscenza...Le cose stanno qui ne' piu' ne' meno che per i primi pensieri di Copernico; il quale, incontrando difficolta' insormontabili nello spiegare i movimenti celesti a partire dall'ipotesi che l'insieme ordinato degli assi ruotasse attorno allo spettatore, si propose di indagare se le cose non procedessero meglio se la cosa non potesse riuscire meglio facendo star fermi gli astri e ruotando lo spettatore. Nella metafisica, un tentativo del genere puo' essere messo in atto per quanto riguarda l'intuizione degli oggetti. (38) Kant, Critica della ragion pura.

L'universo di de Sitter avrebbe contribuito in misura rilevante alla nostra comprensione attuale del cosmo. Rileviamo alcune delle sue caratteristiche. Non smette mai di crescere e non ha inizio ne' fine. Benche' rimpicciolista quando lo si segue a ritrso nel tempo,non raggiunge mai dimensioni nulle e non vi e' un inizio dove le dimensioni siano nulle e la desnita' di materia sia infinita. Il ritmo al quale si espande ha un valore costante ed e' sempre lo stesso. Se si viene depositati in questo universo in un dato momento della storia, non c'e' modo di collocarsi nel tempo: il futuro e' indistinguibile dal passato. Tutte le cose che si possono osservare sono sempre le stesse. La storia non e' un argomento importante nel mondo di de Sitter. (68)

Si puo' paragonare l'evoluzione del mondo a un'esplosione di fuochi artificiali appena finita: qualche pennacchio rosso, cenere e fumo. Su braci ben raffredate, contempliamo la lenta scomparsa dei soli e cerchiamo di ricordarne lo svanito splendore. (73) Georges Lemaitre

Non vedo come ci si possa occupare di fisica e nel contempo scrivere poesie. In campo scientifico, si cerca di dire una cosa che nessuno sapeva prima con parole che tutti capiscono. In campo poetico, si dice una cosa che tutti sanno gia' con parole che nessuno capisce. (104) Paul Dirac

La sua (Kurt Godel) fama e' legata soprattutto al teorema di incompletezza dell'aritmetica. Sbalordendo i vari matematici e filosofi, dimostro' che sistemi logici abbastanza ampi da contenere l'aritmetica includono sempre proposizioni la cui verita' o falsita' non puo' essere ne' dimostrata ne' confutata all'interno delle regole del medesimo sistema. Il teorema ha ogni sorta di conseguenze inaspettate; per esempio, che nessun software che non modifichi il sistema operativo del computer e' in grado di individuare tutti i software che lo fanno. Percio' nessun programma antivirus puo' trovare tutti i possibili virus del nostro computer, a meno che non interferisca nel sistema operativo, modificandolo. (126-7)

Il passato e' quello che e'. Non lo si puo' alterare e pensare che il presente da noi esperito continui a esistere. Non possono esserci due passati. Se potessimo viaggiare indietro nel tempo per impedire la nostra nascita, non saremmo qui a viaggiare indietro nel tempo a quello scopo. (130)

Le ricerche di molti commentatori hanno gia' gettato molto buio sull'argomento ed e' probabile che, se proseguiranno, presto non ne sapremo niente di niente. (212) Mark Twain

Il numero di universi potenziali e il numero di quelli reali che sono grandi quanto la regione che chiamiamo "l'universo a noi visibile oggi" e' di una grandezza pressoche' inconcepibile. (237)

Dunque, la notte, il cielo e' buio a causa della vecchiaia dell'universo. Un tempo, quando l'universo era di un migliaio di volte indietro rispetto a oggi nella sua espansione, il cielo notturno era luminoso quanto la superficie del Sole in tutta la volta celeste. La temperatura era troppo alta perche' esistessero stelle, pianeti, molecole e atomi. Nessun osservatore avrebbe potuto contemplare il luminoso cielo notturno. (244)

Era un'epoca in cui si pensava che tutto sarebbe cambiato, ma tutto rimase lo stesso, solo in modo diverso. (250) Henning Mankell

Il quadro di un universo che si autoriproduce in eterno esplorando la serie di tutti i possibili stati di vuoto dell'universo, con le loro distinte costanti fisiche, dimensioni spaziali e forze peculiari, e' la cosa piu' prossima che abbiamo a un'analisi di tutti i mondi possibili. (253)

Molti mondi potrebbero essere stati abbozzati e mal formati nel corso dell'eternita', prima che questo sistema potesse avere la luce. Molto lavoro perduto, molti tentativi senza esito, e un lento ma continuo progresso attraverso infinite eta' nell'arte di fare mondi... (265) David Hume

Ma viene da pensare che il tessuto segreto della realta' abbia la duplicazione al suo centro. (271)

Multiversi, eterno ritorno e duplicazione oppure mimesi, doppio - tanto per dire, Nietzsche.

L'unica cosa nuova al mondo e' la storia che non si conosce. (292) Harry S. Truman

La peculiarita' che piu' fa riflettere, di tutti questi sviluppi della fisica fondamentale che ci inducono a prendere sul serio le dimensioni supplementari dello spazio, e' che lo spazio tridimensionale intorno a noi, cui diamo il nome di "universo", sia solo l'ombra di una realta' piu' vera, di dimensioni superiori. (301)

Una delle peculiarita' piu' straordinarie dell'universo accelerato e' il suo futuro. ... L'universo futuro appare un cimitero cosmico di stelle morte e particelle elementari isolate. (316)

Oggi, forse, dovremo accettare l'idea che nemmeno il nostro universo sia al centro dell'Universo. (323)

David Dort says

When I learned about the theories about the origins of the universe as a middle schooler, I just assumed that one day someone looked at Newton's (and/or Einstein's) equations and said "Eureka!" and they just figured it all out, Big Bang, expanding universe, etc. In contrast, Barrow, takes us through the mostly congenial process of the painstaking incremental discoveries after Einstein proposed General Relativity. Most interesting is Einstein's own reaction and disbelief that the universe was not steady-state. And many of the scientists and mathematicians who were willing, even decades after their discoveries, to admit they were wrong, even as their work (relegated to the dustbin of intellectual history) was an important building block of our understanding. What is more disconcerting is that, where I stand is simply a moment in history, like any other, and our understanding, being more complete is NOT complete. Science is not a bolt of lightning, but a delicate piece of wood on a lathe.

Francesco says

Difficile trovare un libro che risulti più completo e allo stesso tempo comprensibile senza bisogno di particolari conoscenze quanto questo. Dalla scoperta della relatività generale ad inizio '900 fino agli inizi del 2000, il libro prende in esame tutti i modelli di universo proposti per spiegare quello in cui ci troviamo,

seguendo il percorso storico che li ha visti formulare e spiegando di ognuno le implicazioni e le predizioni.

Arko says

This is the most special experience in the history of reading books in my life. Ofcourse the content of the book is special for me which sets my life going and while reading I had a doubt for which I wrote to Prof John.D.Barrow, the author and it was so special a feeling when he replied back with the answer. I think along with superb intellect and curiosity, these kindness and gestures make such great scientists like Barrow. Thank you for this book, Sir. #respect

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Troy says

The book traces the theories related to possible universes through history. As a non-scientist, I found it did a nice job of making the math and science approachable.

It starts out as a compelling read but gets bogged down in the latter half.

Duff says

Incredible read. However, as a non-scientist, non-mathematician, it was often a slow read for me. I needed time to absorb and often relied on the footnotes to help me through a particularly difficult concept. But, there were many "aha" moments when Barrow simply made a concept clear that had been "fuzzy" for me prior to this book. The concepts are mind boggling. Trying to grasp one universe is overwhelming, but somehow it made great sense to put that in perspective of many possible universes. He presents a depth of information about the field of cosmology that centers the non-specialist in a way that allows the newer theories/concepts to be grasped. A distinct effort and a distinct pleasure to read.

Jeff says

Ooof, this was a slog. Now it's not the author's fault. I thought this was going to be a lot more general-reader friendly, but it turns out that I needed to understand a good deal more physics to get through this successfully. I did get through it, though, and I am proud of that fact--and I would say I did learn some things, particularly that cosmologists today are making discoveries that are not only absolutely mind-blowing but also raise philosophical questions of real import for how we understand our lived reality.

Kyle Wright says

A very thorough history of mankind's understanding of the universe around us, this book contains a lot of interesting information and guides the reader through the logic of the times that attended the various states of understanding. Unfortunately, I felt that the book was a bit dry at times, with some of the concepts

introduced in a very stiff and formal manner.

Overall, it was a good read, but I prefer the humor and accessibility of Brian Greene's writing.

Linnea says

First of all the setting of this book is awesome: How can we define universes, what is our own universe like and how it came to be? And on top of that Barrow tries to explain things as uncomplicated as possible. The problem is, for me at least, that the things are so complicated to start with it's immensely hard to make them understandable. Most of the graphs, for example, made very little sense to me. On the other hand Barrow has an interesting viewpoint, telling everything from the point of view of the cosmologists and physicists, making it down-to-earth in that sense.

Summa summarum; understood very little of the physics but enjoyed the writing, the history of studying universes and the questions it made me think about.

Paul Vigo says

If you pick up this book on cosmology, you've probably read a few cosmology books before. I've read a lot of them and this was a pleasant surprise. Barrow covers a lot of ground, cataloging the many models and mysteries of the universe. Along the way we discover many of the personalities in cosmology, their pet theories, and their arguments.

Books on cosmology usually fall into one of three camps; texts on observational astronomy which mostly describe the universe, explorations of the pet theories of a particular cosmologist - of which the Hawking and Penrose books are prime examples, or classical pop-sci texts that tend to get bogged down in philosophy or biography. Barrow avoids all these pitfalls, and skitters along at a great clip, delving deep into the history and idiosyncrasies of various cosmological theories, providing just enough philosophical, biographical and hard science to tie it all together. If you do know what black holes and Hawking radiation are, you won't be put off by laborious descriptions, and if you don't, there's enough concise explanation to understand what you need to know.

The book of universes asks just one big question; what is the topology of the universe and spacetime. By exploring everything this fascinating question has to offer, rather than trying to cover... well... everything, it makes for an unusual and compelling read.

James says

A disappointing take on a fascinating topic. The writing is incredibly uneven in tone, alternating between dense physics, quirky biography, and weakly pedestrian explanation. It is frequently interrupted by epigraphs (every couple of pages or so), which quickly become more annoying than entertaining. The most interesting material is in the last quarter of the book, but it's a slog to get to that point. Two stars.