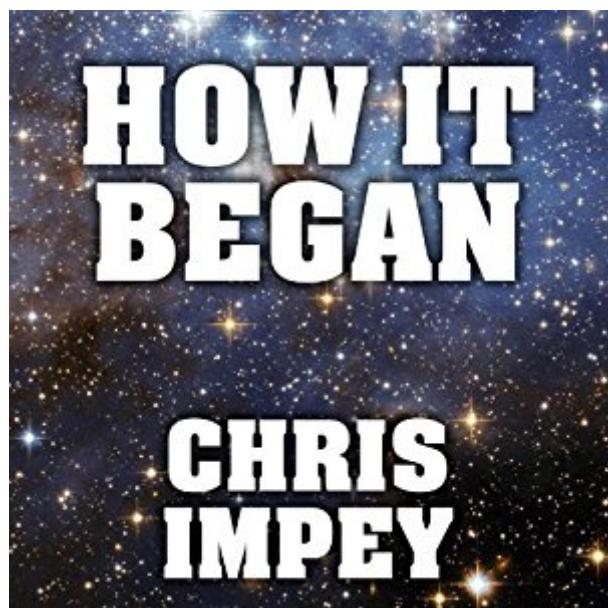


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How It Began: A Time-Traveler's Guide To The Universe



Synopsis

In this vibrant, eye-opening tour of milestones in the history of our universe, Chris Impey guides us through space and time, leading us from the familiar sights of the night sky to the dazzlingly strange aftermath of the Big Bang. What if we could look into space and see not only our place in the universe but also how we came to be here? As it happens, we can. Because it takes time for light to travel, we see more and more distant regions of the universe as they were in the successively greater past. Impey uses this concept - "look-back time" - to take us on an intergalactic tour that is simultaneously out in space and back in time. Performing a type of cosmic archaeology, Impey brilliantly describes the astronomical clues that scientists have used to solve fascinating mysteries about the origins and development of our universe. The milestones on this journey range from the nearby to the remote: We travel from the Moon, Jupiter, and the black hole at the heart of our galaxy all the way to the first star, the first ray of light, and even the strange, roiling conditions of the infant universe, an intense and volatile environment in which matter was created from pure energy. Impey gives us breathtaking visual descriptions and also explains what each landmark can reveal about the universe and its history. His lucid, wonderfully engaging scientific discussions bring us to the brink of modern cosmology and physics, illuminating such mind-bending concepts as invisible dimensions, timelessness, and multiple universes. A dynamic and unforgettable portrait of the cosmos, *How It Began* will reward its listeners with a deeper understanding of the universe we inhabit as well as a renewed sense of wonder at its beauty and mystery.

Book Information

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Customer Reviews

The best part of the book are the italicized sections at the beginning and end of each chapter that are devoted to his dream-like journey through space and time. Those sections stirred my imagination and made me feel like I was actually traveling through the universe and forward and backward time. The rest of the book is mostly interesting facts about the universe that are presented in a way that is easy to read and understand for the average person. The author has the ability to make complex concepts easy to understand. The book is well structured. The sentences and sections of the book flow together smoothly. The style of writing is very colorful, poetic, artistic and descriptive.

I never took a course in Astronomy, but had I , I would have wanted Chris Impey to teach it. He has a knack for explaining complex things in a manner that even I could understand. Ever since "Cosmos" was published I looked forward to another book that would take things a step farther, what with the incredible increase in knowledge that we have achieved through advanced imaging techniques and the Hubble space telescope and camera. And Impey teaches with a lingering background sense of humor that makes the reading that much more enjoyable. Want to learn and understand more of the formation of our planet, the moon, and of the rest of the universe - black holes and all - then this book is for you.

Not only did I get a well rounded update from the physics I learned in 1962, but also I really enjoyed Chris Impey's presentation of this subject. He's created both an educational and artful piece of work particularly attractive to non-scientists like me. He uses analogies to real world examples to communicate the vast scale of the universe and the relative size of sub-atomic particles. It was good to get an update on the current "Standard Model" of subatomic particles and forces. When I left the movie, I thought the Bohr model was all there was. His humorous anecdotes and one-liners are superb!

If you feel the universe is incomprehensible, this book will help make it comprehensible. Einstein allowed that the most incomprehensible thing about the universe is that it IS comprehensible! This great book by Dr. Impey proves the point. We find here a well written book that will appeal to the inquisitive novice, the armchair cosmologist and even professionals. Living in southern Arizona gives the opportunity to hear lectures by world class astronomers - Chris Impey's review of his book convinced me to buy this book, and I am not at all disappointed. Anyone else with a sense of

wonder will feel likewise.

This was an easy read and while I was given the hard copy (paperback) I enjoyed it so much that I purchased the Kindle version for greater accessibility. My Kindle is one of the early versions and graphs and diagrams are a bit poor so it was wonderful having the hard copy to refer to. As with other books of this type - for me - it led me to other books and exciting interests (vacuum energy for example and Guth's "ultimate free lunch".

A wonderful explanation of the beginning of the universe for the common man. This book is a thought provoking, challenging but understandable explanation of the beginning of the universe.

As I read this book, the most striking sense that I got was the overwhelming size of the universe. These are numbers that I can't even fathom, approaching infinite from both a large perspective and a small perspective. From the large perspective, here are some numbers quoted in the book. The size of the universe is 10^{34} light years where a light year is approximately 5.8 trillion miles. The total mass (weight) of the universe is 10^{54} kilograms. There are 100 billion galaxies (Milky Way is just one) in the universe. The universe is 14 billion years old. From a small perspective, in the process of finding out how the universe started, physicists have been pursuing smaller and smaller items, coming to the concept of a quark which can only be identified through collisions from these huge accelerator units. This is impressive stuff to the layman in the world of astronomy like myself and therefore very interesting. The book pursues the origination of the universe by starting with the earth, the moon, the solar system, our galaxy and continuing onto other galaxies in the universe that have been found via telescopes on earth and the Hubble telescope. Through this trip, the author shares stories of important physicists along the way, Hubble, Einstein, Lemaitre (sp?) etc. and stories regarding himself. The stories regarding himself are apparently provided for human interest and are not a highlight of the book. In these stories, we find how dedicated and eccentric these individuals are (including the author, I daresay), but I suppose that this is necessary to come to the conclusions that they have. The author comes to the "Big Bang" theory which originated from a Belgian Jesuit priest (Lemaitre) and is the most recognized theory today for the universe's origination. The author lays the reasoning why he would "give a limb as a bet that this theory is true" starting with the tip of a pinky to his arm. This is interesting as are some of the analogies that he uses. (One that didn't work for me was the importance of symmetry in marriage.) At times, the author bounces around these analogies and

stories giving the impression at times that he is lost in his story of black holes, quasars, quarks, neutrinos, etc. and he is hard to follow. He also uses numerous graphs and terms that are also hard to follow with the writing. It all seems to be so esoteric. Finally, there is even some math, including Euler's identity (which I enjoyed as a Math major) but is hard to determine in this context why it is important. At the end, the author pursues the current theories and future direction, none of which have really been proved, and more like philosophies than science, like string theory, M-theory, multiple universes, etc. And, the book ends in an almost ambivalent state after such a strong start - do I like this book or not? For making an attempt at defining the universe and the "Big Bang" theory, this is an interesting book. However, the analogies, the personal stories, the rambling, the use of graphs that are not clearly defined for the layman, etc. make this book a difficult read for anyone without a scientific background. Maybe, he should have made the book 200 pages and kept to the script. So, if you are so inclined and are interested in a book on the universe, jump in, but beware of the challenges.

Chris Impey is a great writer. I learned a lot about the universe from this interesting book. The universe. It's a lot to think about.

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