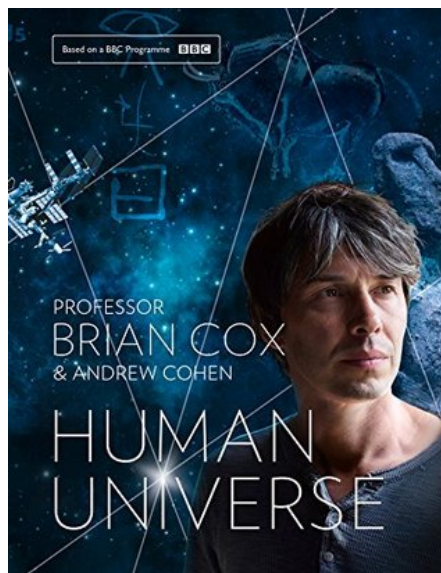




# Human Universe

*Brian Cox , Andrew Cohen*

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## Human Universe Brian Cox , Andrew Cohen

The nation's favourite scientist looks at the origins of life in our Universe. For somehow the laws of nature conspired to create a naked ape that can look up at the stars and wonder where it came from.

What is a human being? Objectively, nothing of consequence. Particles of dust in an infinite arena, present for an instant in eternity. Clumps of atoms in a universe with more galaxies than people. And yet a human being is necessary for the question itself to exist, and the presence of a question in the universe – any question – is the most wonderful thing.

Questions require minds, and minds bring meaning. What is meaning? I don't know, except that the universe and every pointless speck inside it means something to me. I am astonished by the existence of a single atom, and find my civilisation to be an outrageous imprint on reality. I don't understand it. Nobody does, but it makes me smile.

This book asks questions about our origins, our destiny, and our place in the universe. We have no right to expect answers; we have no right to even ask. But ask and wonder we do.

Human Universe is first and foremost a love letter to humanity; a celebration of our outrageous fortune in existing at all. I have chosen to write my letter in the language of science, because there is no better demonstration of our magnificent ascent from dust to paragon of animals than the exponentiation of knowledge generated by science. Two million years ago we were apemen. Now we are spacemen. That has happened, as far as we know, nowhere else. That is worth celebrating.

## Human Universe Details

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## From Reader Review Human Universe for online ebook

### Nicolas Peeters says

Basically a 250 paged love letter to humanity and science

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### Book says

Human Universe by Professor Brian Cox

"Human Universe" is a very good complementary book to the BBC documentary series of the same name. Professor Brian Cox takes the reader on an uplifting journey of the big questions that has taken humanity from ape-man to space-man. This entertaining 256-page book is broken out by the following five sections: 1. Where are We?, 2. Are We Alone?, 3. Who are We?, 4. Why are We Here?, and 5. What is Our Future?

Positives:

1. Innate ability to make science accessible and fun for the masses.
2. An excellent topic, answering big philosophical questions based on the best of our current knowledge. "This book asks questions about our origins, our destiny, and our place in the universe."
3. Cox is a gifted author and educator; his books are fun and educational. His passion for science and love of humanity is exuded throughout the book.
4. Great use of charts and illustrations to assist the reader.
5. Excellent, easy-to-follow format. Each section begins with a big philosophical question followed up by bite-size supporting topics.
6. As you would expect, the book is full of interesting factoids. "The Sun is one star amongst 400 billion in the Milky Way Galaxy, itself just one galaxy amongst 350 billion in the observable universe."
7. The impact of the grand theory of General Relativity. "Many physicists regard General Relativity as the most beautiful piece of physics yet devised by the human mind."
8. Great examples where science clashed with religion, handled with the utmost respect and care. "Catholic dogma asserted that the Moon and the other heavenly bodies were perfect, unblemished spheres. Previous astronomers who had viewed the Moon, either with the naked eye or through telescopes, had drawn a two-dimensional blotchy surface, but Galileo saw the patterns of light and dark differently. His training in chiaroscuro revealed to him an alien lunar landscape of mountain ranges and craters."
9. The beauty of science at work, evidence for the Big Bang Theory. "It is sufficient to say that the discovery that the universe is still glowing at a temperature of 2.7 degrees above absolute zero was the final evidence that convinced even the most sceptical scientists that the Big Bang theory was the most compelling model for the evolution of the universe."
10. The science method applied. "It is scientific only to say what is more likely and what less likely, and not to be proving all the time the possible and impossible."
11. A fascinating discussion on the possibility of extraterrestrial civilizations. The Drake equation. "If there are any civilisations making a serious attempt to contact us with technology at least as advanced as our own within a thousand light years, the Allen Array will hear them."
12. The recipe for life discussed. A look at alien worlds and what's considered the habitable zone.
13. A brief history of life on Earth. "We are mammals, which first appeared 225 million years ago in the Triassic era."
14. A look at space exploration.
15. Human evolution. "It is believed that around 7 or 8 million years ago we split from the chimpanzees and the process of evolution into bipedal Homo sapiens began as these monkeys started to spend more time on

the ground than in the trees.”

16. A brief explanation on how the laws of nature allow for human beings to exist. “The Standard Model of particle physics is a theory that explains the interactions between subatomic particles in the form of the strong, weak and electromagnetic forces.” “General Relativity and the Standard Model are the rules of the game. They contain all our knowledge of the way that nature behaves at the most fundamental level.”

17. An amusing look at the snowflake.

18. Was the universe made for us? An excellent response worth repeating, “Our universe appears to be made for us. We live on a perfect planet, orbiting around a perfect star. This is of course content-free whimsy. The argument is backwards. We have to be a perfect fit for the planet because we evolved on it.”

19. A great case for science. “Science and reason make the darkness visible. I worry that lack of investment in science and a retreat from reason may prevent us from seeing further, or delay our reaction to what we see, making a meaningful response impossible.”

20. A picture section included.

Negatives:

1. Solid effort but not quite to the standards of previous outstanding books.
2. The book is quite ambitious and loses focus.
3. Let’s face it some topics even at its simplest (quantum mechanics) are a challenge to follow.
4. No formal bibliography or book recommendations.

In summary, this is an inspirational and fun book to read. Brian Cox is one of my favorite science personalities and his books reflect his warm, engaging personality. However, this is not his best effort. This book though very good does not live to the standards of some of his previous outstanding books like Wonders of the Universe. That aside, this is an excellent complementary piece to the documentary series of the same name and is worth your time. I recommend it.

Further recommendations: “The Quantum Universe”, “Wonders of the Universe”, “Wonders of Life” by the same author, “Origins: Fourteen Billion Years of Cosmic Evolution” by Neil deGrasse Tyson, “Faith vs. Fact” by Jerry A. Coyne, “The Vital Question” by Nick Lane, “Sapiens” by Yuval Noah Harari, “The Big Questions” by New Scientist Collection, “To Explain the World” by Steven Weinberg, “The Universe” edited by John Brockman, “A Universe From Nothing” by Lawrence Krauss, “The Upright Thinkers” by Leonard Mlodinow, “The Neanderthals Rediscovered” by Papagianni and Morse, and the Grand Design by Stephen Hawking.

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## Jim Whitefield says

I have read many books, fiction and non-fiction. I love science and learning all I can about life. This latest offering from Professor Brian Cox, based on the very latest scientific understanding as of right now, in late 2014, expanding and developing the TV series (now available on DVD) of the same title, left me astounded, amazed and actually breathless. It is beautifully illustrated and brilliantly written. It is by far the very best and most compelling book that I have ever read on anything. It is probably the most important (simply explained) read for anyone who wants to at least try to understand ‘us’. There are no words I can use to describe it adequately and I can only say there are not enough stars available to rate it highly enough and I recommend it beyond any other work I have ever read. Saying that it is a ‘must read’ simply isn’t enough – it is a ‘must read now’, without delay, so you can at least die with an understanding of life that most people may never come to appreciate.

## Rachel says

I've got a confession to make: I'm having a love affair. The name of the one that's stolen my intellectual heart - science, and in particular, physics. And I've primarily got one man to thank for that. Professor Brian Cox.

Brian Cox writes, speaks and explains vast, mind-bending complexities with the air of a man who, to coin a term, knows his stuff. Thanks to him, I've started to grasp the very corners of physics, from Einstein's theories of special and general relativity to white dwarf stars and black holes to the tiniest quarks and the Standard Model that makes the cornerstone of our existence.

Human Universe is just what the book says. It is a conscious, intellectual human beings process of trying to understand how and why we've ended up as so on a tiny speck in a nondescript galaxy in an ever expanding universe.

This book is somehow comforting and terrifying at the same time. Comforting to know that, despite 13.45 billion years, I have somehow come to exist by pure coincidence or luck and can live in an age where man can understand himself and the stars he inhabits. But also terrifying because it could just be us - alone on a rocky planet with no other civilisations (or, slightly more optimistic, none that are near enough for contact). Where does that leave us? With our capacity for choosing precisely what is bad for us and an unnerving trend towards stupidity as the norm, how long can we last? I suspect not long in the grand scheme of things.

However this book gives me hope. Hope to explore, to dream, to ask questions and to maybe, maybe, try to contribute some small knowledge about who we are against the vast unending backdrop that is our universe.

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## Andrew says

This is another sumptuous book from Professor Cox in conjunction with the BBC tv series of the same name. The book is full of amazing photographs and articles showing the amazing challenges and how we have excelled over them through the ages - from evolutionary imperatives to pushing the boundaries of our planet. Professor Cox is a very human face to what could be a very dry and antiseptic subject. My only possible criticism is that this time round they have chosen such a wide subject with so many possible avenues of study that you wonder who really chose the subject matter and what other details did they leave out (as compared to their other subject matters from previous projects - such as Wonders of the Solar System to Wonders of life).

As always the book is a brilliant spring board off in to further studies and subject - one thing I do like about the book and even Professor Cox himself - is that they do not assume they are the definitive source of all this information or that there is some exclusivity over studies - like some - but rather that human curiosity and motivation are the key requirements to learn about the world around us and that as long as that remains then all else is possible.

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## Jose Moa says

This book based on a BBC programme is one of the best popular science books I have read, it gives a very readable unified cosmic vision of almost all, the universe, its origins, the fundamental laws of nature, the emergence of life, the emergence of intelligence, the fine tuning, if we are alone etc...

The book explores, at least for me, two very interesting points: the fine tuning and the improbability of

emergence of a technological civilization ,and so solving the Fermi Paradox,and I personally believe that it success in the explanations and reasonings

It explains fine tuning as a result of the eternal inflation that leads to a infinite immortal universo growing fractal like without end,there is not fine tuning problema,given the infinite multiverse,we are inevitable.

As if we are alone,given the eucariotic and the oxigenic photosynthesis bottleneck the Galaxy could be teeming with life,,but it will be slime life,the emergence of complex multicelular not mentioning the emergence of the technological intelligence surely would be extremely improbable,we cannot comunicate with others because we are the first to emerge in the whole Galaxy,the Fermi paradox solved.

We as example emerged because a asteroid colide with earth giving the rise of mammals,the dinosaurs dont give proofs of much improving intelligence despite their 150 milion years of kingdom,and we are here surely by a particular Earths orbit features that trough the Milankovich cycles give way to ice ages that trigered as a consequence of strong climatic changes our emergence in the Rift valley.

A must to read for everybody book.

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## **Tim Pendry says**

If you are not deterred by very occasional moments of trite humanist polemic, special pleading for investment in hard science and a slight tendency to pander to an American readership, this is an absolutely brilliant introduction to current scientific cosmological thought.

It deals with big questions in an adult, uncompromising but clear way. Cox and Cohen have managed to offer us some seriously hard science (well above my comprehension) as jewels in a setting of explanation that mean we actually can understand what we need to understand.

Cox and Cohen do not over-claim for science. They claim for it only what it can do - give us the best framework 'to hand' for understanding what the world is really like out there and what makes us what we are or at least appear to be.

This highly probabilistic approach based on rational questioning of available hard evidence and using mathematics as a predictive tool is now giving us a vastly speeded up re-evaluation of our place in the universe to those prepared to listen to what is being said.

The book helps us ordinary Joes catch up with hard science and strip away some of the layers of presumption about our place in the universe. It avoids the tiresome tendency of many science writers to try to explain through speculation in order to force awe on us.

Awe and wonder do not need such rhetorical trickery - the facts now contain enough to make us wonder at the situation in which we find ourselves as accidental emergent consciousnesses in a corner of an incalculably vast multiverse who may or may not be alone in it.

Cox and Cohen look at five basic questions - where are we? are we alone? who are we? why are we here (not meaning why some man in a beard decided to put us here but what are the conditions that enabled our existence) and, the weakest section, what is our future?

Apart from their too pat dismissal (contradicted by some of the data in the rest of the book) of the likelihood

of our aloneness as emergent consciousness, there is nothing to argue with in their general conclusions - they have science at its best on their side.

The last section, however, should have been a better and more thoughtful disquisition on existential risk around which there is considerable contemporary hysteria.

One gets the impression that the expansion of the TV format fell apart here because Cox wanted to lobby for investment in the asteroid impact space programme. This is where the bulk of the irritating posturing noted in the first paragraph appears.

There is much to say on existential risk. I share the authors' puzzlement at our political classes' hitherto slow response to the asteroid issue, far more humanly serious than the threat claimed by the less secure science of climate change.

The authors present almost everything they offer us in an uncompromisingly scientifically-based way. They lapse rarely, for example by simply asserting in a few sentences the 'threat of climate change' - either they know and can explain or they cannot.

Still, this is not the bulk of the book. 95% and certainly the sections on the first four questions contain some of the best science writing currently available. It is highly recommended for that reason.

Nor should you be put off by the mathematical formulae. They are there for the clever ones with that sort of mind. The authors do not patronise us with noddly-and-big-ears versions of science but they do not try to take for granted the meaning of the formulae either.

They give brief explanations and then embed the complexity in a narrative that tells us what the science actually means and challenges us to challenge it. But the hidden sub-text of the work is not just scientific but cultural.

In a world in which the vast bulk of the population have no inkling of what the universe is really like or our place in it and in which a democracy of the ignorant is lauded as the right and proper means of conducting ourselves, what this book contains is dynamite.

It shows us that we are both significant and insignificant in different ways. We are significant to ourselves as the only or one of the few emergent consciousnesses capable of understanding its own situation across vast tracts of space and time.

We are insignificant because we are highly vulnerable to the workings of a universe of unpredictable moving parts that does not appreciate our planet-bound biology very much and whose scale is far beyond our imagining except in awesome mathematical and theoretical terms.

Even the 'Big Bang' (last refuge of the theistic scoundrel) is not merely under assault. Cosmology now makes it a blip amongst uncountable infinite blips. The conditions for life or not come into existence in a complex multiverse in which all things are possible.

A personal God will never go away for those whose minds are stuck on such matters but the last vestiges of a cosmological God are hurtling behind yet further barriers of multiversal infinity. Our insignificance in relation to such a 'system' is truly awe-inspiring.

The authors imply that the only option left (other than the cosmic existentialism that is always an individual's fall-back position) is a scientific humanism in which we become the measure of our own significance just because we are, in universal terms, insignificant.

## Mark says

Fascinating, compelling, uplifting and inspiring, this is a warm and humane exploration of science, the universe, and our place within it. As the author himself puts it, Human Universe is a love letter to humanity, filled with a light of optimism. Read it and be inspired.

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## Pippa DaCosta says

This was an amazing read. Brian Cox has a way of mingling mind-bending physics with his own brand of down-to-earth humor which results in a really entertaining read. I'm not a scientist by any stretch of the imagination, but the topics discussed in this book, from the moments before the Big Bang to 'Why are we here?' are explained and discussed in such a way, that anyone can follow the theories and enjoy discovering new science.

It's a really uplifting and engaging read, peppered with some punchy moments, such as why we pay footballers more money in a year, than it would cost to observe for known asteroids that WILL at some point hit the earth. Priorities people!? Cox reasons that we exist in an infinite number of galaxies in an infinite number of universes, which makes us both incredibly special as a species but also extremely rare. He marvels at the wonder of man, of what we can achieve.

**"We're both clever and stupid in equal measure."**

**"Our existence is a ridiculous affront to common sense...Our civilisation is a combination of seven billion affronts"**

A wonderful, thought-provoking read. I highly recommend everyone try this book, even if you're not heavy into science.

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## Allan says

I simply loved it, no ebook ever could be more beautiful than the hardcover version of this book, it makes you feel proud to be a human, it makes you to love astronomy, to want to reach the stars... It gives you hope about the future. It makes you like a child again looking forward to read each page and to look each picture without wanting to miss any detail; and when you finish this pleasant trip through the history... You feel like your new cool friend is now gone.

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## Jo-anne Atkinson says

In the book to accompany the TV series of the same name Professor Brian Cox links human evolution to the

development of our exploration of space - or tries to...

In fact this is a confused and confusing book. There are two stories trying to work together but they don't really manage it. The story of the development of space exploration and understanding is well put together and whilst some of the maths and concepts may be beyond the average reader, it doesn't become a 'textbook' of quantum physics. The parts about human development are also interesting but they don't seem to fit in with the physics.

This feels like a good idea that is in fact a rather self-indulgent vanity project and it's all about the 'rock'n'roll physicist'

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## Claudia says

This book is based on its namesake BBC documentary, Human Universe. If you did not see it yet, you should – totally worth it; the others in the series too. Brian Cox does an amazing job presenting it – his enthusiasm and joy are written all over his face and you can hear it also in his voice. Part of that excitement is present here, in the book, too.

The facts themselves aren't ground breaking but the way they are presented is a total different story. From Big Bang to quantum physics, from Lucy to Paul Young, from Giordano Bruno to Hubble, this book is an ode to science and humanity.

Instead of making a summary of the book, I'll better leave you some fragments from it. If these do not convince you to read it, I don't know what will.

Enjoy!

*Bertrand Russell: 'Mathematics, rightly viewed, possesses not only truth, but supreme beauty – a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show. The true spirit of delight, the exaltation, the sense of being more than Man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as in poetry.'*

*Just have a look at something – the smallest, most trivial little thing – and enjoy trying to figure out how it works. That is science. In a famous BBC Horizon film broadcast in 1982 called 'The Pleasure of Finding Things Out', Feynman went further: 'People say to me, "Are you looking for the ultimate laws of physics?" No, I'm not. I'm just looking to find out more about the world and if it turns out there is a simple ultimate law which explains everything, so be it; that would be very nice to discover. If it turns out it's like an onion with millions of layers and we're just sick and tired of looking at the layers, then that's the way it is ... My interest in science is to simply find out more about the world.'*

(Lovely film, BTW. I read one of his books too, Surely You're Joking, Mr. Feynman!: Adventures of a Curious Character and it was amazing - can't recommend it enough)

*In the words of Georges Lemaître, 'Standing on a well-cooled cinder we see the slow fading of the suns and we try to recall the vanished brilliance of the origin of the worlds.' Our cinder is not special; it is insignificant in size; one world amongst billions in one galaxy amongst trillions. But it has been a tremendous ascent into insignificance because, by the virtuous combination of observation and thought, we have been able to discover our place. How Giordano Bruno would have loved what we found.*

*'Our obligation to survive is owed not just to ourselves but also to that Cosmos, ancient and vast, from which we spring,' wrote Sagan.*

*Science and reason make the darkness visible.*

*One of the central themes of this book has been to argue that the human race is worth saving because we are a rare and infinitely beautiful natural phenomenon. One of the other themes is that we are commonly and paradoxically ingenious and stupid in equal measure. I do not personally think that there is anyone out there to save us, and so it follows that we will have to save ourselves; at least, that would seem to me to be a good working assumption. This is why I don't feel naïve, idealistic or like a particularly radical member of the Student Union in a Che Guevara T-Shirt when I ask the question 'Is it reasonable to spend less on asteroid defence than on a footballer's annual salary?' When I look in the mirror and think about that, my face assumes an interesting shape – you should try it.*

*What a piece of work is a Man. So certain, so vulnerable, so ingenious, so small, so bold, so loving, so violent, so full of promise, so unaware of his fragile significance. Someone asked me what they thought was a deep question: What are we made of? Up quarks, down quarks and electrons, I answered. That's what a Man is. Humanity is more than that. Our civilisation is the most complex emergent phenomenon in the known universe. It is the sum of our literature, our music, our technology, our art, our philosophy, our history, our science, our knowledge.*

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## **Mostafa Gamal says**

another awesome book from Professor Cox ♥

after i watched the tv series "Human Universe" i love to read the book because i am melting from the greatness of episodes ♥♥

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## **Flapper72 says**

Ok. I have a bit of a science back group - A levels and then a bit more. Anyway, did I like this book? I didn't watch the TV series - love the pictures/scenery but Prof Cox I find a bit too 'media friendly' (look, tone of voice, etc etc) so tend not to want to see science bastardised that way. Anyway, this really wasn't dumbed down science. I found it took us through things but didn't stop in a patronising 'well, they won't understand it anyway' he continued, including explaining theorem and equations, and I found that really refreshing. He is obviously still excited and amazed by the world around us and, by the end of the book, I had that sense of awe again that I haven't felt for years. The sheer size and expanse and endlessness of the universe made me feel amazed rather than intimidated or overawed. Is there life out there? Prof Cox made me realise something I'd never thought of: if time is eternal, and the amount of time we (for example) as a race have lived is tiny, what are the chances of another living group to being alive at the same time and be able to be in contact for that, relatively, miniscule period of time. I really had never thought about it but once I did it's like, 'Of course. Why didn't I think like that before'. He's not 'preachy' in his belief of science being able to explain everything but is encouraging, light hearted in places but sits by well founded scientific explanation. To start with I didn't think I was going to enjoy the book but maybe I was trying to just trawl through it. Perhaps, reading a chapter and then assimilating and considering was a much better way of treating this book. It definitely allowed me to appreciate it, enjoy it and be overawed by the amazing universe we live in.

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## **Jennifer says**

Mind blowing! I didn't want this book to end, but I couldn't put it down.

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