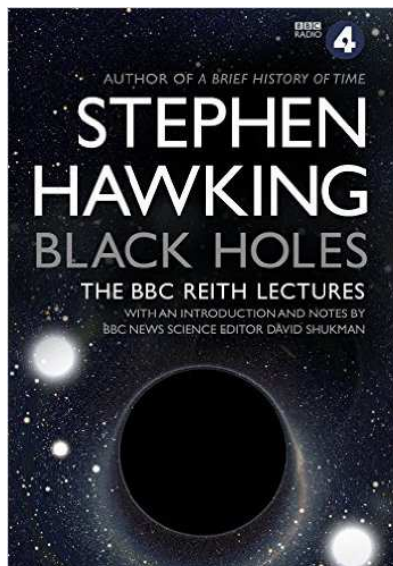


Book Corner

Black Holes: the BBC Reith Lectures, 2016, Stephen Hawking, Penguin Random House (UK)

US\$1.85+ from Amazon, NZ\$15 from Unity Bookshop, Auckland, and the full transcript is available online as detailed below.



Review:

This is a 50+ page C6 paper size tiny booklet consisting of BBC's prestigious Reith lectures (delivered on 26 January and 2 February 2016) by the brilliant theoretical physicist, Stephen Hawking. It is aimed at the general public and summarises his insights into black holes, the main area of work in his remarkable lifetime. Hawking opens his talk with *"It is said that fact is sometimes stranger than fiction, and nowhere is that more true than in the case of black holes"*. He takes us on a tour of the evolution of our knowledge and understanding of black holes, the science and personalities associated with it and touches on related topics such as the theory of general relativity, quantum mechanics, singularity, space-time, alternate histories, scientific determinism - to name but a few. These complex concepts are explained in simple ways, all in the space of 40 minutes.

The lectures are presented in a succinct and accessible manner describing the science without going too deeply into their physics or mathematics. They are accompanied with wit and his irrepressible sense of humour. He seeks to explain *"How black holes challenge the most basic principle about the predictability of the universe, and the certainty of history"* and discusses his famous contribution to the study of black holes viz. black hole emissions now called "Hawking Radiation", stating playfully that should CERN discover micro black holes, he could be considered for a Nobel Prize. He also discusses his current area of research based on a mathematical idea called "super-translations" dealing with the paradox of information inside a black holes *"with the aim of explaining the mechanism by which information is returned out of the black hole"*.

He ends the lecture with the statement *"If you feel you are in a black hole, don't give up: there is a way out!"*. In particular this rings true of how he lives his personal life with courage and optimism despite being diagnosed with motor neurone disease and given only 2 years to live 50+ years ago at the age of 21. In the question and answer session, it is very moving to hear Hawking say *"although I was unfortunate to get motor neurone disease I have been very lucky to work in theoretical physics at a fascinating time, and it's one of the few areas in which my disability was not a serious handicap. I think my work and a sense of humour have kept me going"*.

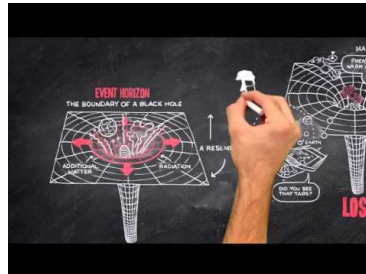
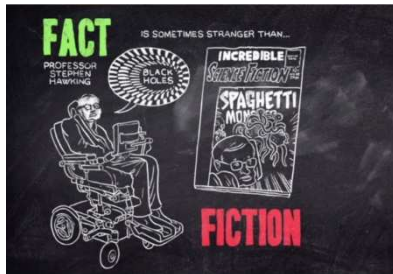
Hawking's use of metaphors coupled with the annotations provided by BBC's science editor, David Shukman, helps with understanding these complex cosmic objects which cannot be seen but whose existence is indirectly inferred, most recently by gravitational waves.

BBC's Online Presentation of the lectures

After reading the book, I discovered that the entire lecture can be heard at <http://www.bbc.co.uk/programmes/b06pttqf#play> (28 minutes each) and that the annotated complete transcripts of the two sessions are available at <http://www.bbc.com/news/science->

environment-35354313. Both of these include question and answer sessions at the end which enhance the lectures and provide an insight into the inspiring personality of the legendary Professor Hawking. It was interesting to learn that the BBC had received applications from more than 20,000 listeners for tickets to this lecture by Stephen Hawking but was only able to accommodate 400 of them.

Figure Credit: Andrew Park in the BBC Website



The piece de resistance here is the animated version of the key points of the two lectures illustrated on a blackboard by artist Andrew Park in sync with Hawking's delivery of the lecture which is available at

<http://www.bbc.co.uk/programmes/p03gl17j> - I was mesmerised by it and recommend it as something not to be missed.

Nalayini Davies, 25 June 2016