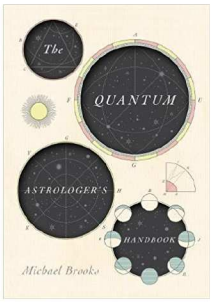
The Quantum Astrologer's Handbook by *Michael Brooks*. Scribe, 2017 (248 p.) isbn 978-1-911617-35-8





Michael Brooks

In a former life Michael Brooks obtained a PhD in theoretical physics, but he switched career and became a journalist and successful science writer. This is his seventh book which is an unusual mixture of a novel, a popular science book about quantum physics, and a biography of Gerolamo Cardano (1501-1576). The general public knows Cardano from the Cardan shaft in their car, although this idea of the universal shaft is much older and Cardano only mentioned the gimbal in his books. Since 2015, Cardano is also the name of a netwerk used to distribute the Ada cryptocurrency, named after Ada Lovelace. Among mathematicians, Cardano is most famous for his dispute with Tartaglia about the publication of a formula to solve the cubic equation. Cardano was the illegitimate son of a respected jurist and mathematician, and so his mother had tried to abort him. He was often sick as a child but he survived the plague to which all of his siblings perished. He studied medicine in Milan and Padua. To earn some money after his father died he gambled and so derived the principles of probability theory. With the formulas to compute the solutions of the cubic, he at least implicitly used the square roots of negative numbers and thus contributed to the foundation of complex analysis. Because he was rather outspoken, he was not a beloved person, but he was an excellent physician, and became a well respected professor of mathematics consulted all over Europe. His youngest son was a gambler and a thief so that he had to disinherit him and his oldest son got sentenced to death for poisoning his wife. Add to this Cardano's character and jealousy from colleagues so that after he had cast a horoscope of Christ, he fell from grace and was imprisoned by the inquisition at the age of 69. Eventually released he moved to Rome where he compiled his autobiography in which he wrote that there was a guardian angel visiting him in prison.



Gerolamo Cardano

In this novel Brooks breaks into Cardano's prison to join him. He plays the role of this guardian angel, and while having a conversation with Cardano, he explains the principles of quantum theory to him. Not unreasonable because Cardano laid the foundations of both complex numbers and of probability, the essential ingredients of quantum physics. We, as the reader, learn not only about the eventful life of Cardano, but are also instructed about the basics and the mysteries of quantum theory. Brooks gives not only the classical Copenhagen interpretation of the quantum phenomena, but includes a sizable survey of all the other possible interpretations that have been given.

This mixture makes this book unique. It reads like a novel, and Brooks smuggles in some surprising twists, because he comes from the future and thus knows facts that Cardano does not, but there are also private facts that Brooks asks Cardano that he pretends not to know, or things that he just guessed because they were not in the biographies about Cardano that he has read. So there is some element of a fantasy and a Sci-Fi story in it too. Brooks explains this impossible meeting by presenting it as a quantum physical entanglement of two personalities that can stretch over time and space. Perhaps in a century from now we shall look upon our understanding of quantum theory just as we now look upon Cardano's astrology as being unscientific.

Brooks has written several popular science books with a more classical structure about quantum theory and probability, about mysteries in cosmology and life sciences, and about science and fiction in fantastic movies. This book however stands out with its unprecedented composition. A recommended read.

Adhemar Bultheel