

BOOK REVIEW

ABOUT THE BOOK

Michio Kaku (2012). *Physics of the future: The inventions that will transform our lives*. (Paperback), Penguin Books. ISBN: 978-0-141-04424-8, 389 pages, Price, £9.99.

REVIEWED BY

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BACKGROUND INFORMATION ABOUT THE BOOK AND ITS AUTHOR

Through his recently published book, *Physics of the future: The inventions that will transform our lives*, Michio Kaku unfolds an amazing virtual world in front of us through the imaginary journey into the technology dominated century. The book transpires through 300 interviews Kaku did with world renowned scientists in the field of physics and related areas including nanotechnology, medicine, computers and space. Being a quantum physicist himself, Kaku had first-hand information of some of the emerging technology inventions from the most sophisticated research labs around the world. In addition to writing, researching and teaching, Kaku is one of the most sought after hosts in the Sci-Fi Science channel. Through a researcher's keen eyes Kaku narrates some of the limitless possibilities of technology. Few of such predicted inventions are X-ray visions, space elevators and atom sized chips. He talks about micro machines which can perform complex surgeries. Those who are not keen on technology may find the book a bit dry to sustain until the last chapter. One of the negatives of the book for a layman reader is that the language used is not tuned for a science fiction. Most of the places Kaku depends on mathematics and complex algorithms to explain a phenomenon. While explaining on advance medical technology, Kaku brings about many an invention like pocket size MRI scanners, self-screening toilet sets, clothes which can act as embryonic etc. For Kaku, the future will fully be built on internet where with the blink of an eye one could log in and off. He says an extinct world can be re produced with the help of technology. Maybe T-rex and dinosaurs come alive one day and even Neanderthals is a possible options in Kaku's list.

SUMMARY OF THE BOOK

The immense potential of technology can even rearrange molecular structure to create literally anything. Replicators can create a mirror image from virtual world and transfer them to physical world. Kaku's predictions touch upon the Moore's law becoming invalid with chips finding the lowest possible size at atom level which eventually puts silicon valley out of business. As in any other science fiction, robotics seems to be a favorite topic for Kaku as well where he explains that emotions cannot be programmed to robots. For him, robots will remain as mere computer programs designed for specific purpose. Kaku warns that by the end of this century most of the American cities will be underwater due to the surging global warming.

Michio Kaku's book is segmented into 8 chapters each covering a unique stream of technology explaining what is going to happen in the next hundred years. Dr. Kaku's style of narration is very engaging and conversational for a common reader to understand complex scientific topics. The chapter titles in the book are self explanatory for a reader to browse through specific interest areas. The book is set in nine chapters:

1. Future of the computer: Mind over Matter,
2. Future of AI: Rise of the Machines
3. Future of Medicine: Perfection and Beyond,
4. Nanotechnology: Everything from Nothing,
5. Future of Energy: Energy from the Stars,
6. Future of Space Travel: To the Stars,
7. Future of Wealth,
8. Future of Humanity: Planetary Civilization, and
9. A Day in the Life in 2100.

All the chapters are formatted in three subsections to explain the growth of science through near future (until 2030), mid-century (2030 to 2070) and far future (2070 to 2100). Throughout the chapters Kaku maintains the simple style of writing with lucid language, picking up appropriate quotes and anecdotes here and there. Most part of the book Kaku exhibited his deep understanding of physics and dived deep into great details. The book is an excellent summary of thoughts from 300 great scientists coming under one roof. Many places Kaku displays his witty sense when explaining the effects of technology on humans.

EVALUATION OF THE BOOK

Kaku through his discussions with the space scientists predicts that humans will be able to find intelligent life in other planets, however he maintains that earth will remain a lonely planet. Kaku has put reasonable efforts to touch upon every aspect of human life in forecasting where and how the technology will prosper nations and economies. To explain this Kaku opens up an umbrella of technologies in front of the reader through structured interview with top scientists and researchers across the world from different fields. The narration of these experiences becomes even more interesting when it is presented by Kaku through his critical analytical point of view. Given the unimaginable advances in technology we have been witnessing in every walk of life, Kaku's predictions though seems bit far from reality, cannot be taken lightly. Some of his insights into robotics, augmented reality and nanotechnology are already available partially to the scientific world for development. His vision in genetic engineering wows us with the designer children on future and age reversing technology. Though scary an age of no death will be no distant reality, as per Kaku's predictions. Kaku feels that the chips will decline against Moore's law giving a deceleration to computing process, however at the same time; he feels that artificial intelligence will grow exponentially to create conscious machines which can even think before processing a command function. He says that repetitive activities in the world will be taken over by robots, leaving behind lots of humans unemployed. Services, cooking and even doctor's job can be performed by a sufficiently intelligent robot. When Kaku touches upon the social and economic process which is impacted by the scientific advancement, the book takes a philosophic turn. He feels that the GDP growth of a nation should not be the yard stick to measure its economic and social progress. He further states that the science only can convince us to ensure the equilibrium of justice and thus need to be maintained throughout the society at every level.

The book is a narration of scientific advancement and the probable extrapolation of the same in the coming decades and hence may not appease a normal reader who does not have flair for science and technology. Though the book's title says physics of the future, majority of the chapters do not feature the physics and its applications. Kaku seems to be inclined towards medicine, life science , genetics, robotics etc. through the book. It would have been apt if the book was named a Technology of the future instead of physics. Few of Kaku's predictions seems to have lack of research on the current status as the implementation

of the technology applications are coming live faster than the speed of thought. The application in augmented reality is one of such predictions. Kaku has overstated the death of Moore's law, a theory suggesting the proportionate decrease of chip size over time. He supports his statement by bringing out the fact that chips cannot grow less than an atom size. When predicting on advancement of technology, I feel that death of a particular theory is not relevant as the theories are designed for a specific period after which it should reshape itself to suit the newer environment. Kaku's take on artificial intelligence also seems to be somewhat outdated as the power of artificial intelligence is the whole total of the computing power in the universe which is beyond estimation. Artificial intelligence will further be powered with the internet and connected logic across the globe. When he talks about death of robots and limitations to bring built-in logic to artificial intelligence, he refers to the science fiction movies of eighties and nineties.

The book has a rich reference section at the end to find the who's who of the scientific research world. It is difficult to get in touch with large number of scientists from different streams of science and technology to get facts and figures and stitch all together to come up with a predictive narration of future. Kaku has done this well by connecting up with 300 top scientists across the world.

CONCLUSION

This book is a treat for those science and technology buffs that would like to see the pragmatic predictions of the technology applications in human life. Let our beliefs and qualms be challenged by the science and technology, for that is the only logical truth which can convince all of us objectively. The book is recommended for reading as it provides a treasure of information on science and technology extrapolated to future.