

# SCIENCE FICTION AND ITS IMPACT ON SCIENCE & TECHNOLOGY EDUCATION AND AWARENESS

A Report by  
QET Council of India



Quantum Ecosystems Technology  
Council of India

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## **About QET Council of India ( QETCI)**

QETCI is a not for Profit- Section 8 company which is bringing Industry, Academia, Government, Partner Councils/Associations in Quantum together, based on a membership approach.

**Mission:** To enable and accelerate the Quantum Science and Technology Ecosystem in India.

- **Goals:** To serve as a Think Tank, Advisor and Enabler to the Quantum Technology Stakeholders in India for the purpose of accelerating the Quantum Computing Ecosystem in India
- Identifying strengths and gaps in the current Ecosystem in India
- Identify Best practices from across the world.
- Identify the highest potential use cases for the use of Quantum Technology in India
- Make Policy Recommendations for easing filling of gaps and enabling International Collaboration.
- Make Recommendations for filling gaps in Education and Workforce Development in Quantum Technologies
- Make recommendations for specific clusters and COEs based on the strength and commitment of the Council members.
- Communicate the long-term impact of Quantum for Industry, Society, and Geopolitical situation.
- Provide a collective voice to inform and recommend with the intent of influencing, the Indian R&D Investment priorities, Standards and Regulations, Quantum Education, and Quantum Workforce Development
- Communicate and guide on potential Economic and Social Impact of Quantum Technologies
- Forecast Development in Quantum and recommend environment for better ecosystem levers like Supply Chains, Management of Intellectual Property, etc
- Lead specific Industry consortium led projects to advance Quantum technology in specific areas identified by QETCI and in line with the National Interests.
- Collaborate with other Consortium and similar bodies around the world

### **Current Large Voting Members**

- **Microsoft India Pvt Ltd**
- **Amazon Web Services**
- **Reliance Jio Platform**

## **Introduction and Context Setting**

QET Council of India (Quantum Ecosystems and Technology Council of India) organized a Roundtable titled “Science Fiction: Imagination and Innovation” to:

1. Explore the area of science fiction and its linkages to Science and Technology
2. Examine the state of science fiction in India
3. Make recommendations which can help strengthen this genre in the publishing and media Industry, create channels (television and other media) for enabling more widespread awareness and interest for science in the country through science fiction.

The Roundtable had speakers from multiple disciplines – Authors, Scientists, Technologists and Policy experts.

The following is a list of speakers with their introduction:

### **1. Kiran Manral**

An accomplished, acclaimed prolific and versatile writer – Has written books on Parenting, Romance, Psychological Thrillers, a touch of Horror, non fiction as well. Her latest book Rising tells the stories of 30 remarkable Women who changed India.

### **2. Arjun Gaiind**

Arjun is the author of several graphic novels, including Empire of Blood, Reincarnation Man, The Mighty Yeti, Project: Kalki, Blade of the Warrior: Kshatriya, and A Brief History of Death. He is also the author of A Very Pukka Murder, the first installment in the Maharaja Mysteries? He is also working on a science fiction anthology

### **3. Tashan Mehta**

Tashan writes fantasy and Science Fiction. Her Short Story “Rule Book for creating the Universe” was very popular and got critical acclaim and is part of the Gollancz book of South Asian science fiction: Vol II

### **4. Anil Sharma**

Head Corporate Incubation and Digital Impact Square at Tata Consultancy Services. Working in Incubation he deals with Emerging and Futuristic technology areas

### **5. Nikhil Malhotra**

Chief Innovation Officer, Tech Mahindra. Manages several makers lab working to convert science fiction to immediate reality. He is also a very avid Science fiction fan.

### **6. Arun Bhardwaj**

Scientist from the office of the Principle Scientific Advisor to the Govt of India. He has worked on space sensors during his stint at ISRO. He is an avid Science fiction reader and fan.

**7. Indranil Chakrabarty**

Indranil is a quantum physicist, working as an Associate professor in the Center for Quantum science and technology (CQST). Apart from being a scientist he has also published 2 poetry books and writes science fiction short stories.

**8. Enrique Solano**

Prof Solano, apart from working on creating Usable quantum Computers is also working on the intersection of art and quantum. CEO, Kipu Quantum, Munich; CEO, Quanvia, Bilbao; Honorary Professor, Ikerbasque, Bilbao. He is a member of the International Advisory Board for QETCI. His startup Kipu Quantum

**9. Urbasi Sinha**

Dr. Urbasi Sinha heads the Quantum Information and Computing (QuIC) laboratory at RRI. This is one of the first labs in India to manufacture and establish the usage of entangled and heralded single photon sources towards various applications in quantum science and technologies. One of the key projects being led by the lab is a collaborative project between RRI and the Indian Space Research Organization (ISRO) called "Quantum Experiments with Satellite Technology", which is India's first funded project on satellite based long distance quantum communications. She is also an affiliate member at the Institute for Quantum Computing, Waterloo, Canada as well as the Centre for Quantum Information and Quantum Computing at the University of Toronto. She is also a Homi Bhabha fellow from the year 2017 to 2019 and a Simon's Emmy Noether Fellow at the Perimeter Institute, Canada from 2020 onwards.

**10. Reena Dayal Yadav**

She is the Founder Chairperson of the Quantum Ecosystem and Technology Council of India. She has a 20-year career working on Emerging and Futuristic Tech, Innovation Management and Ecosystem Enablement

## **Purpose of the Roundtable**

The purpose of this roundtable was to bring the Authors, Scientists, Technologists and Policy Makers together to deliberate on the unique role that science fiction plays in the Science and technology focus of a society, and hence the nation. The organizers wanted to explore the fact that there seems to be a dearth of popular science fiction in the Indian media and publishing and whether it is important to address this. If yes, what could be the recommendations towards it.

Before we list out the recommendations, through this writeup, we intend to provide some high-level overview of Science Fiction and the context of science fiction around the world.

## **Authors**

The report has been compiled by

1. Reena Dayal Yadav
2. Tashan Mehta
3. Rachna Singh

Rachna has a rich professional experience of 25+ years woven around building and leading new initiatives in the areas of Innovation, Strategy, Tech Promotion, Policy interventions, Intellectual Property management and Leadership development in different industry segments with a flair for managing international engagements.

## **Science Fiction Definition and Types with examples**

As per the Merriam Webster's dictionary Science fiction is fiction based on imagined future scientific or technological advances and major social or environmental changes, frequently portraying space or time travel and life on other planets.

There are any categories of science fiction, but the most suitable and usable definition seems to be that on Wikipedia, which divides science fiction into the following 3 sub genres

**Hard science fiction**—a particular emphasis on scientific detail and/or accuracy. A good example of this is Interstellar Greg Keys and Jonathan Nolan

**Mundane science fiction**—a subgenre of hard sci-fi which sets stories on Earth or the Solar System using current or plausible technology. A good example is Orwell's 1984

**Soft science fiction**—focus on human characters and their relations and feelings, often exploring psychology, sociology, anthropology, and political science, while de-emphasizing the details of technological hardware and physical laws. In some cases, science and technology are depicted without much concern for accuracy. The Star trek franchise, the Star Wars are all examples of soft science fiction Isaac Asimov's The foundation series is a good example. Another example is Dispossessed by Ursula Le Guin. The Dispossessed is often cited as an example of how to effectively reimagine social structures and the inherent issues with them.

## **Science Fiction and its role in developing Science: Examples from around the World**

### **Science Fiction in Britain**

Though science fiction is often thought of as the exclusive province of Hollywood blockbusters, Britain has really made significant contributions to the field. It is widely agreed that H.G. Wells' books played a significant role in the development of contemporary science fiction (or, as it was known at the time, Scientific Romance). The fact that Wells initiated Britain's enduring love-hate relationship with science fiction as a visual medium.

### **Science Fiction in the USA**

Many of the most well-known and well-liked science fiction shows in the world have their origins in U.S. science fiction, which is a prominent genre in the United States. The Star Trek franchise, which consists of the legendary Star Trek and its several spin-off episodes, is perhaps the most well-known and influential science-fiction series in history. The Twilight Zone, a 1960s anthology series, the highly popular The X-Files, and several television movies and ongoing series over the course of more than 50 years have all had a significant impact.

### **Science Fiction in China**

Chinese science fiction is a literary genre that explores fictitious social and technical advancements in the Sinosphere. Chinese science fiction explores ideas, politics, geography,

history, traditions, and trajectories that are unfamiliar to most of us in the West. Sci-fi may be a genre that foretells the future or creates another alternate reality, but it does it with experience and inspiration from the real world. Chinese science fiction and Chinese literary fiction are both intriguing for the same reason: they come from worlds we haven't yet imagined, therefore to us, they are fresh, daring, and exquisite. A genre revolution has occurred.

### **Science fiction and the metaverse (from a report by Credit Suisse on the Metaverse)**

The first vision and naming of the metaverse originated in the science fiction novel, *Snow Crash*, by Neal Stephenson in 1992. In it, the metaverse was a shared multiplayer online game made available over the world's fiber optics network and projected onto virtual reality goggles. Users could control avatars that could interact with other avatars and computer-controlled agents. An avatar in that metaverse could gain status through its technical acumen navigating the arena and gaining access to exclusive spaces. *Ready Player One* by Ernest Cline in 2011 and adapted into a film in 2018, followed on with this concept in a future view of the world in 2045 where users escaped the real world by entering a metaverse called Oasis accessed with a VR headset and wired gloves.

The metaverse is now evolving in a direction which seems to be a mix of these various scenarios predicted by science fiction over a period of time.

A Video curated by the Economist on how science fiction influences the real world, projects the significant impact that science fiction has played in enabling imagination of products by pioneering startups and products designed by scientists.

Science fiction movies also explore complex issues like ethics of some technologies, as well as emotional and social impact of some technologies. Many stories and movies explore various futures of a society which emerge with specific combinations of technologies and policies and regulations that are adopted in these societies of the future.

Yuval Noah Harari, author of the best-selling books *Sapiens* and *Homo Deus*, is a big fan of science fiction, and includes an entire chapter about it in his new book *21 Lessons for the 21st Century*.

"Today science fiction is the most important artistic genre," Harari says in Episode 325 of the [Geek's Guide to the Galaxy](#) podcast. "It shapes the understanding of the public on things like artificial intelligence and biotechnology, which are likely to change our lives and society more than anything else in the coming decades."



## **Science fiction in India: A History and Current Context**

Under this category the only recognition for science fiction from India is Bengali Science fiction. Given that we have had substantial progress in scientific research in the past from Bengal, the presence of a stronger group of science fiction writers in that region is not a surprise.

Science Fiction promotion is important for India:

- To promote a stronger affinity for Science in the General Population
- Build more contextual awareness for science and Technology and its applicability to human life
- Encourage young people to think about the impact that they can make through a career in Science and Technology
- Create a passion for deep tech in the students and professionals so that a more product-oriented focus can be brought in within India
- Make new technology adaptation a lot easier
- Drive awareness of new possibilities in medicine and healthcare and agriculture apart from other areas, so that people can seek the right solutions

## **Recommendations for the short term and long term**

- There should be Government programs to promote science fiction in India. These could be done by instituting separate awards for science fiction or including the Science Fiction Genre as a Award category for existing awards in publishing, movies and media industry
- Institutionalizing fellowships. Funding a writer to work on something is often the difference between a work being created and not being made at all. Encouraging innovation through such a fellowship is especially important: e.g. we want to create SF that doesn't follow the regular mode but imagines new ways of being and seeing.
- Collaborative discourses between Authors, Film writers, Directors and Scientists should be enabled so that more science fiction can be enabled [Specific examples of how this could be done comes from one of our authors: "I know of a writer who was on a NASA program where they invited writers to view what they were working on and then let them go home and writer anything inspired by that project. More recently, CERN is running a program where authors, scientists and academics are brought together at CERN to chat about CERN's programs and how to communicate them to the public. A large factor of this is place: actually, bringing the writers to where all the science is happening and \*showing\* it to them has an enormous impact on their imaginations, and what they're able to produce. It also generates open, vital discussions between scientists, academics and authors that isn't limited to time or an agenda: a lot gets done over dinner or drinks or open conversation. We need to make space for free association, and wilderness
- Short Science fiction stories to spark the imagination of kids should be made part of the reading material made available to students. These could leverage government channels

- Movies/Serials should consult Scientists for facts while making science fiction movies in India
- A Bookathon with prizes can be organized every year – similar to a Hackathon
- A special society could be created to work on promoting science fiction in India
- Inclusion of science fiction literature in the school textbooks to ignite joy of discovery in young minds.
- Translation of Indian science fiction literatures to various Indian languages We need to fund translators
- Build a website where Science fiction materials (if outside the copyright zone,) were easily available for any student or enthusiast to pick. This could be similar to the PARI sites (People’s Archive of Rural India)
- Create an annual event that features best and upcoming science fiction from the country along with international participation in different categories – books, movies, TV, Online Gaming etc.
- Explore translating more from rich folklore into science fiction.
- Promote the technology to support the science fiction in visual media

References:

1. Roundtable organized by the QET Council of India on Science Fiction and Science
2. [Metaverse – Credit Suisse \(credit-suisse.com\)](https://www.credit-suisse.com)