Truth Imitates Fiction

Good sci-fi tends to anticipate reality

By JAYANT NARLIKAR

Fred Hoyle, well known for daring ideas in astrophysics, once proposed that the space between stars is not empty but contains vast clouds of chemical molecules. His research papers on this topic, sent to reputed scientific journals, were rejected.

In the 1950s, most astronomers believed that the interstellar space contains hydrogen atoms only. They could not reconcile their beliefs to the idea that molecular structures can survive in space. Hoyle, faced with a blackout of his ideas, wrote a science fiction novel called The Black Cloud, in which he proposed the concept of vast clouds of molecules occupying interstellar spaces. The novel was immensely successful.

Through the 1950s, however, technology had advanced to a level where astronomers could probe the interstellar space with millimetre wavelength radiation received by suitably designed dish antennas. Analysis of the radiation revealed that it had been emitted by specific molecules in the interstellar clouds, precisely as Hoyle had anticipated in The Black Cloud. Today, the existence of giant molecular clouds is taken for granted. This was a case of sci-fi anticipating real science.

There are other instances of science fiction anticipating real situations, if not contemporarily, at a later stage. Jules Verne's novel, From Earth to the Moon, anticipated by a century, the reality of Apollo 11 mission of 1969. Writings of H G Wells, and later by Arthur C Clarke, Isaac Asimov and Ray Bradbury contain perceptive references to situations that developed later. In a futuristic essay written in 1945, Clarke looked at the possibility of geostationary satellites playing a role in communications technology. This became a reality some three decades later, when man created rockets that could launch satellites in such orbits.

It is more than a cliche to say that today's good science fiction is tomorrow's reality. I recall being present in the audience in the Beckman Auditorium, Caltech, to witness a debate between Hoyle and Bradbury. The subject of discussion was 'The Message of Science Fiction: Prophetic or Profane?' Bradbury pointed out that a person of his gene-ration, born around the time of the First World War, had lived to see many achievements of science translate from fiction to reality. Nuclear bomb, man in space, electronic computers, jet travel, easy worldwide communication, were on the pages of science fiction when Bradbury was born. They became a reality in his lifetime.

Computers, biotechnology and nanotechnology provide ample opportunities to

gaze into the crystal ball to decide where they will be in decades to come. Not all our guesses will be right; yet what we foresee should not be inconsistent with what we already know.

Sci-fi literature should be conscious of the interaction between science and society. Issues like stem cell research, cloning in biology, researches into nuclear devices and the spying capability of remote sensing satellites raise moral and social questions. By imagining future scenarios, a good science fiction story could alert us to dangers. We see today how the possibility of knowing the sex of the unborn child can raise horrendous issues, a possibility that I had written about in a science fiction story in the 1970s.

The success of science fiction lies in how subtly and painlessly the reader is made aware of scientific truth. Jules Verne's novel, Round the World in Eighty Days, reads like an adventure story till the reader discovers the fact of the shortening of the day as one travels East because of the West-to-East spin of the earth.

What is bad science fiction? One can and should take some liberties with known science, provided these can be justified within the context of the plot of the story. Several sci-fi stories around do not satisfy this requirement. In a science fiction novel I read recently, there were space ships travelling across the Galaxy within a matter of a few years. Astronomy tells us that the fastest entity so far known to physics is light and it takes nearly a 1,00,000 years to travel across the diameter of the Galactic disc. The typical time scale for traversing the Milky Way is thus of the order of a few thousand years. I can accept a faster-than-light space ship provided some background is given of the technology it is based on and how it circumvents the restriction imposed by special relativity. There was no such discussion.

Horror often masquerades as science fiction. It may generate irrational fear about science and the devices science makes. Good sci-fi warns society against harmful applications of a technology, but that warning is based on reasoned argument, not irrational fear.

In a science-dominated world, good science fiction has an important, if not indispensable, role to play. The offerings of science are many, and not all are benign. Society has to judge whether it would go for a nuclear bomb or a nuclear reactor, for rapid communication of infor-mation or using information to curtail personal liberty, for biological research to eliminate diseases or to create Frankenstein's monsters.

Science fiction can be a useful tool for enlightening society in these areas. In India, this genre of writing is relatively new and therefore not set in grooves that sci-fi in the West is. I hope our small community of science fiction writers grows and promotes good works in different languages.

The writer is an astrophysicist.