

The Catastrophic hole

Jayant Narlikar

The screaming headlines of newspapers everyday resonate with the word 'Global Warming.' Eminent and world renowned Scientist Jayant Narlikar uses this thread to take us on a roller coaster ride of a fascinating science-fiction. With a masterly intermingling of known facts of space and the flights of imagination he literally pulls us into the vacuum of the unknown future.

At times, even an insignificant news may bring in its wake a life and death situation. Madhavrao was through his Sunday routine of dipping into the morning newspaper, followed by trifling with the crossword and sudoku. Finally, he finished with his weary chore at about half past eleven and handing over the newspaper to his wife pointed a finger to a

headline and muttered, "This government will fall for sure... within three to four days these disgruntled elements will pull out their support. Read this news."

Malatibai had the least interest in the headline "Are the government's days numbered?" She was shaken to read that her entertaining TV serial was just about to be wound up for want of funds. She too

failed to notice the small news item reading 'A cancer epidemic?'

The holiday makers who had travelled to the beaches on the southern Spanish coast with a leading travel agency, suffered from some carcinogenic onslaught. It flashed as the breaking news. Cancer otherwise was known to be personalized and non-infectious. The mass affliction perplexed the medical fraternity.

Though a tiny news item, it appeared in several newspapers and caught the attention of many. While most readers buried their heads in the sand, Vinayak Chaturvedi belonged to a different breed. Vinayak was not an oncologist and

Read...  Little Women by Louisa May Alcott - (The tale of the March sisters, this is a charming & insightful story of childhood and family)

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*Forget all the reasons why something may not work.
You only need to find one good reason why it will.*

Chhatra Prabodhan Deepawali 2009



not even a trained medical doctor. He happened to be an 'aloof' astronomer.

Vinayak thumbed through his telephone directory and dialled a number. "Hello Shanmukh, can you tell me something?" A few preliminaries over, Vinayak started.

"Ask me anything except the cricket score," said Shanmukh. That was a dig at Vinayak's craze for cricket. Shrugging off the repartee, Vinayak quipped, "I want info on the ozone hole for the past few days. Is it expanding?"

Switching on his PC, Shanmukh said "Wait a

minute, I will tell you." After hitting a few keys, he came across the ozone hole watch data with some images, graphs, bar charts and line diagrams on the monitor. Vinayak could clearly hear Shanmukh whistle at the other end.

"Hello, what could you find?" queried Vinayak.

"Scandal! Listen, on March 4, that is four weeks back, the ozone hole suddenly doubled in size. From then on, it continues to grow. Of course, it is not as spectacular as on the fourth, but nonetheless, it has grown six times and is still growing. But tell me, how come you asked this question? Obviously, you did not ask without reason," observed Shanmukh. "In fact, we did not monitor the ozone hole so regularly over the last few days. The system tracks and records it though. So, I could not notice at all.

"I have just mailed some details for you to study. People tanning in several places, on beaches, by swimming pools, even on

terraces, have been affected. How is that? It couldn't be an epidemic. And so must have some 'global' cause. It could be the ultraviolet emission. And I guessed, the culprit must be the enlarged ozone hole. That reminded me of you. Isn't that elementary, my dear Watson?" asked Vinayak.

"Yes Mr. Holmes, yet the doubt remains, why the ozone hole should start growing all of a sudden." Shanmukh paused for a while to say, "I have glanced through the details you sent, which seem to suggest that all these events are post March 4. The enlargement has caused a remarkable rise in UV rays. But as I asked before, who is responsible?"

"Shanmu, these CFC* people are apparently innocent in this regard. Whatever, in spite of their doing, the ozone cannot deplete all of a sudden as of now. There appears to be no other contribution from these developed

*Ozone sucks UV radiation and transfers it to oxygen. The Chlorofluorocarbon (CFC) that is released by refrigerators and many other gadgets on this planet rises straight high in the atmosphere and divides into free chlorine and fluorine. These gases attack and destroy the ozone. So, if you have to save the ozone layer, control the use of CFC. Developed countries like the US have not subjected themselves to any regulations in this regard.

*There is nothing wrong with people possessing riches.
The wrong comes when riches possess people.*

Visit...  Shri Chhatrapati Shivaji Museum,
Satara (A collection of weapons and armours
used in Shivaji Maharaj's period)

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countries for this catastrophe on March 4.”

Shanmukh endorsed. “As if some urchin pierced through a stage curtain - an aperture into a big hole...” The readers of this story will never find out what he was about to say, as Vinayak cut him short.

“Thank you Watson, you gave me a fantastic idea.” And he put the phone down.

Shanmukh nodded wondering what was on Vinayak’s mind. He had queer ways maniacal at times; but undoubtedly a genius.

Vinayak contacted Martand Sinh in IUCAA, Pune. The IUCAA was an acronym for the Inter University Centre for Astronomy and Astrophysics, a common usage to make it short. Martand Sinh headed the Virtual Observatory Project VO there. It had software to collate data from all major observatories in the world. Martand was exceedingly computer savvy and jocularly nicknamed a computer brain. “Yes Vinayakbhai, Why don’t you drop in here? We would find the answer to your query over a cup of coffee.”

“Yes Sardarjee, I would, but call for some sweetmeats also with the coffee.”

“You blackguard, why don’t you come here first?”

Vinayak was at the VO at the appointed time. Sardarjee offered him ‘Shira’ floating in pure ghee - his weakness.

Martand had kept two databases ready for Vinayak. One pertained to supernova and the other Gamma Ray Burst (GRB). He opened the relevant screens on a PC for Vinayak to start with his research.

Vinayak commenced with Supernova. He did not expect to gather much here and so he did not waste much time on it.

“I am in my cabin; call me if you need to.” Martand left Vinayak alone. The navigation was very much straightforward for Vinayak.

Vinayak sought to verify if there was any explosion in the recent past in our galaxy. From the historical records, Tycho Brahe in 1572 and in 1604 Johannes Kepler had studied the stellar explosions. Since then there was no star explosion in the galaxy to Vinayak’s knowledge, yet

he wanted to be doubly sure. There are two known satellite galaxies in our neighbourhood – Magellan. The larger one experienced an explosion in 1987, which was observed from the earth.

The matter in the stellar explosions also carries elementary particles. The elementary particles known as cosmic rays also flood towards the earth. The long travel, almost 30 to 40 light years, weakens their intensity. But those emerging close by can pierce through the ozone layer.

The hypothesis appealed to Vinayak and he continued with the investigation. But it did not take long to rule out these possibilities. The astronomical observation of gamma radiation commenced 1960-70. Since then on and particularly after launching of the Compton Gamma Ray Observatory - CGRO in 1991 they succeeded in imaging gamma ray bursts. The mystery surrounding their origin continued to exist. Their appearance resembled two jets emanating - probably exploding in opposite directions. The observers in

Listen...  Raga Yaman

- Pratham Tula Vandito Krupala

(Singer - Pt. Vasantrao Deshpande)

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*Truth is the most powerful
force on earth
because it cannot be changed.*

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these two directions were exposed to the energy of these bursts while others saw only moderate.

Such GRBs took place in the universe, outside our galaxy. Though no claim was ever made of such occurrences in our galaxy, it could not dismiss the possibility.

Obviously if earthly observers were not within the ambit of the GRB jet, it would not be recorded.

Going through the GRB records, Vinayak chanced upon a remark. "This appears to be a moderate burst. The experts should decide on its documentation"

This was exactly the kind of record Vinayak was looking for... His mission was accomplished and yet his search was beginning anew.

Now it was beyond his gamut. He needed experts to assist him in search of his quest and once the findings were endorsed, specialists were required to execute a plan of action. Vinayak made a few phone calls to arrange a video conference. Shanmukh was also to be there.

Hamilton Beamish from Caltech, ISO Director Wolfgang Rohrich, Chief of Japan Aerospace

Exploration Agency - JAXA Hideki Tanaka, Mario Fernandez Director of Radio Telescope, Brazilian National Institute for Space Research at INPE and Chief of Anglo-Australian Observatory - AAO in Australia - were all invitees to the conference. It was an arduous task to bring these diverse personages together at a time. Yet, in view of its grave agenda, everyone agreed to be present. Some in different time zones had to keep awake in the night.

They had received all the relevant data, images and files beforehand to start discussion without protracted preliminaries. It lasted almost a couple of hours and the following minutes were confirmed for further action.

1. The GRB that took place twelve years ago in our galaxy seemed to be docile and amiable because its jet did not point towards the earth. But the spread of elementary particles nonetheless could have been equally severe in all directions. We must compute and gauge its intensity in the direction of the earth.

2. That would determine how long its effect could

last, piercing through the ozone layer.

3. The ozone layer within the stratosphere should henceforth be monitored carefully and frequently for its varying depletion rate.

4. The UN should ratify that the present ozone layer can no longer protect the life on this planet from the UV rays.

5. Scientists should educate the common man in safeguarding himself from the UV radiation.

Meanwhile, the death toll of UV radiation continued to rise. The pertinent news items appeared as headlines in the daily newspapers.

People knew they had to avoid exposure to sunlight. They switched daily chores in the night and rested during the day. The schools and colleges too followed night shifts.

"How long and how many days must we suffer like this?" Vinayak asked Shanmukh over and over. And Shanmukh repeated his plea, "At least for the time being, since the ozone layer is still weakening." The days and months passed, hoping for the better and fearing the worst. The hope was the

*It isn't enough to talk about peace.
One must believe in it. And it isn't enough
to believe in it. One must work at it.*

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Tribute...  The creator of the famous
'Varhad Nighalay London La' - Prof. Lakshman
Deshpande (23rd February 2009)

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ozone depletion would cease and the earth would be healthy, robust and well-protected again. The fear was that the protective layer would vanish altogether and the earth would be rendered an inhospitable planet, no longer able to sustain life, making impossible to continue existence.

With a perplexed state of mind, Shanmukh called Vinayak. "Vinayak," he said, "I have a glimmering of promise. The ozone depletion has come to a halt. This has been the case over a month now, before I

ventured to call you. I am confident it would stay."

Vinayak knew all the various 'models' by heart. The cosmic radiation remained unpredictable and the models came out with different forecasts. Vinayak tried some mental projections and said, "Shanmu, will you send me the ozone data for the last four months?"

"I will, but you will not be able to quote it publicly. That would go against the rules," warned Shanmukh.

"I accept," said Vinayak. Vinayak studied the data burning midnight

oil. (They still worked in the night.) Finally, he made his own ozone layer projections for the next twelve months based on his model and sent those to Shanmukh. It carried his remark.

"In two years, I am going to initiate you into the game of cricket. That would entail your watching a full-fledged five – 'all day' test match".

Jayant Naralikar

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(Translated by Vijay Rale)

Artist : Dattatreya Padekar

Praiseworthy... || Arjun Award

- Saina Nehwal (Badminton Player)

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*The real and lasting victories are
those of peace, and not of war.*

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