



## Are we undermining our scientific temper?

This article is related to General Studies-Paper III (Sci & Tech)

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Yes

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**Science funding is inadequate and science management is problematic.**

There was much angst early this month about the disgraceful remarks that have been over the last few years at the Indian Science Congress (ISC) meetings, to the point where even the organisers felt the need to take a stand. This is unfortunate because the ISC has traditionally been a forum for scientists from all parts of the country to present their work. It is a forum where research that is grounded in rationality has always been given a hearing, even if it did not make it to peer-reviewed journals. The vast majority of Indian educational institutes actively discourage learning, not to mention research, and the ISC is the only venue where scientists meet their peers and get affirmation of their work. It is truly a shame that a handful have brought disrepute to the entire Indian science community, particularly to those at less favoured institutes who, if nothing else, spread scientific temper through their own actions to the broader community.

### **Nehru and scientific temper**

The broader question to be answered here is whether the nation is undermining its scientific temper. The British understood that scientific temper would result in a questioning of their rule and preferred to keep their subjects subservient. It was only after Independence that the need for scientific temper was considered to be important. It was even felt that scientific temper should be protected as a fundamental duty. For Jawaharlal Nehru, scientific temper did not mean that everyone had to study science; rather, it was a way of thinking, a way to break the hold of superstitions by applying rationality and thought. Educational structures in independent India were to spearhead the transition of the nation from a people stifled by the medieval darkness of the British to a people united in the pursuit of knowledge and a search that would bring prosperity in its wake. Superstitions hold

Unfortunately, the vision of the giants of our freedom struggle foundered in a morass of mediocrity. Even those educated in the best institutes in the country never lost their superstitions. They studied modern science, used modern devices, achieved material prosperity and yet held the most regressive views. 'God-men' catering to the educated middle class have used the power of the media and social media to spread their superstitions and broadcast messages that should have been laughed at by those at the kindergarten level.

It is now not only acceptable but fashionable for public figures to utter scientific nonsense. For instance, the Vice Chancellor of Andhra University, who represents the academics of not just his university but the country, feels no shame in talking about test tube babies in India's ancient history at the ISC. This man holds important roles in the science hierarchy and yet no one in authority finds the necessity to comment on this, let alone punish him. Even the science academies are silent. One may easily conclude that scientific temper is not important to the government and, perhaps even more tellingly, to scientists.

It is hard to know how to reverse this deterioration in scientific temper. While the Chinese are on the far side of the moon, Indians are busy treating cancer with cow urine and looking to the past for modern fighter jets.

### **Changing facts**

Funding for science is inadequate, the management of science is problematic, and the university system has failed. Teaching has become a political game in schools, with facts changing according to the government of the day. A few brave organisations, such as the Breakthrough Science Society (of which I am a part), are trying to break the chains of superstition, but they are lonely voices in the wilderness.

Writer - A. JAYAKUMAR (secretary general of Vijnana Bharati)

### **II of India's Prime Ministers have been strong protagonists of science and technology.**

From Jawaharlal Nehru to Narendra Modi, India's Prime Ministers have been strong protagonists of science and technology and have believed that the well-being of the common man is vested in scientific temper.

#### **Protagonists of science**

Nehru said: "Lots of people may not know, why such an emphasis is being put on science... this may not show immediate results, but will finally result in the upliftment of the country." India's second Prime Minister, Lal Bahadur Shastri, coined the slogan "Jai Jawan Jai Kisan (hail the soldier, hail the farmer)" after the war with Pakistan in 1965 to enthuse farmers and soldiers for the great task ahead, thus underlining the two core pillars of the nation.

When India successfully tested the nuclear bombs at Pokhran, Prime Minister Atal Bihari Vajpayee declared India a full-fledged nuclear state. In his address, he enunciated his priorities for the nation by adding "Jai Vigyan (hail science)" to "Jai Jawan, Jai Kisan". In this manner, the Indian government brought science to the centre of national discourse. Keeping up the legacy, Mr. Modi has also given extraordinary support to science and technology by further adding "Jai Anusandhan (hail research)" to the slogan.

India is among the top 10 countries for scientific research, according to data released by Elsevier, a publisher of scientific articles and journals. There have been many indigenous programmes in scientific research. In space missions, India is counted among the top six in the world.

India cannot undermine the dreams of 1.3 billion people, which can only be realised through science. Both *Apara Vidya*, or knowledge of the intellect, and *Para Vidya*, or higher knowledge, are inseparably embedded in the Indian psyche.

#### **Science is for humanity**

Science has always been universal and neutral. Pseudo-intellectuals and people with unscientific beliefs masquerade as scientists to undermine Indian science. My opinion is that we should never burden our puranas and religious stories with India's scientific achievements. Both have their own destinies and realms to fulfil. Aryabhata invented his astronomical theorems without the help of any modern instruments 1,500 years ago, which scientists were able to unravel with advanced equipment only in recent times.

India's greatest slogan, *Vasudhaiva Kudumbakam* (the world is one family), which is engraved in the central hall of Parliament, calls for acceptance and respectful coexistence. Keeping up with our traditions, the Indian scientific community should declare that science is for humanity, and should avoid looking at science through the prism of religion and beliefs.

At the 106th Indian Science Congress, instead of focusing on the research findings of the three Nobel laureates, Avram Henshko, F. Duncan M. Haldane, and Thomas Christian Südhof, the media focussed on unimportant issues. The space for reporting their promising and positive thoughts was consumed by reports on the Kauravas and their "connection with stem cells" and the "missile technology of Lord Vishnu". India will definitely march ahead with scientific vigour, indomitable courage and technology in the years to come. The legacy of science and scientific temper can never be undermined in India.

### **It's Complicated**

Writer - SUNDAR SARUKKAI (teaches philosophy at the National Institute of Advanced Studies)

#### **Public rationality has to be ethical and humanitarian.**

The answer is complicated because the terms in the question are themselves ambiguous.

#### **Three ambiguous terms**

The first ambiguous term is 'scientific temper'. While much has been made of it, there is no clear definition of what scientific temper is. It may broadly refer to a scientific disposition (a way of knowing something), but that is a problem since ways of knowing in different sciences are quite different. For instance, the methods in physics, chemistry, biology, the medical sciences and engineering sciences are quite different. The scientific attitude in the 'social sciences' also has different characteristics from the scientific attitude in the physical and mathematical sciences. So which of these types of scientific temper are being undermined today?

The second ambiguous term is 'we'. Who is this 'we'? If it includes all the citizens of the country, then we could ask: why should all citizens possess scientific temper? And who are the people who actu-

ally possess scientific temper? It could be scientists but surely it does not include all scientists in all their interactions with their family, colleagues and society?

The third ambiguous term is the word 'undermining'. What exactly is being undermined? If all the citizens had some notion of scientific temper, then we can understand whether it is getting undermined today for various reasons. But we do not even know who has scientific temper, nor do we know how it manifests in their interactions. So what is really getting undermined? And if people do possess scientific temper, is it so easy to undermine it? One could argue that if one possesses scientific temper, then it is not so easy to undermine it because its nature is such that it will not be easily swayed.

Human truths cannot be reduced to matters of evidence and arguments alone. For example, even if all tests show a child to be lacking in some cognitive skills, it would not be correct to call the child an 'idiot'. Human and cultural truths need mediation of ethical values such as compassion and respect. The lack of these in scientific temper is what undermines it firstly.

### What is public rationality?

On the other hand, it is important to have something similar to scientific temper in our public discourse. It is important to realise that public rationality — the ways by which we can discuss and dispute public matters in a public manner — needs some codes of conduct. For example, using anger to influence a position, or holding on to a view independent of what others say, or what the evidence points to are some examples of what we should not do. To be dispassionate about arguments that might be critical of one's position or privilege is necessary. Being dispassionate, taking into account insights and information from different sources, and following an argument to its end even though its conclusions may not be pleasing to one are all characteristics of public rationality. If some scientists mistakenly want to call it scientific temper, thereby negating other influences on this attitude, then they are using this term in an ideological manner.

The reason I resist the reduction of these characteristics to scientific temper is that a scientific attitude has an intrinsic problem with ethical and humanitarian values. Public rationality is one that has to be ethical and humanitarian since it is about decisions and relationship with other humans. We need this larger public rationality, which draws on some ideas of scientific attitude as well as those derived from the practices of philosophy, literature, social studies and the arts.

GS World Team...

## Indian Science Congress (ISC)

### Why in the discussion?

- Recently, Prime Minister Shri Narendra Modi inaugurated the 106th Indian Science Congress.
- In the Indian Science Congress, the Minister of Science and Technology Dr. Harsh Vardhan, Textile Minister Smriti Irani, Policy Maker of Science and Technology, renowned Scientist, Research Scholar of various Universities and Child Scientist, in total 30,000 representatives participated.
- A time capsule with items representing today's technology and Indian's scientific powers was buried in the ground.
- The Prime Minister mentioned the major achievements of Indian science in 2018, including the following:
  - Production of biofuel that is used in aircraft
  - Divya Nayan - machine for sight impairments
  - Cheap equipment for diagnosis of cervical cancer, tuberculosis and dengue

- Real-time landslide warning system in the Sikkim-Darjeeling area

### What is it?

- Indian Science Congress is the top institution of Indian scientists. It was established in 1914. The purpose of its establishment was to promote science in India.
- From the very beginning of Indian Science Congress, the great scientist, educationist and politician of India remained associated with this institution.
- Indian Science Congress Association has played an important role in the development of Indian science and technology.
- The main objective of the establishment of the Indian Science Congress is to advance the modern science in India and to use it properly for the development of society.
- Another important feature of the Science Congress is that it also includes Nobel laureates from overseas. The scientific exhibition during this draws attention of the common people.
- This event has also helped the general public

to understand the importance of science education and scientific research.

### Time capsule

#### What is it?

- This time capsule includes 100 such items which represent the modern technology of in India.
- In addition to replicas of Mangalyaan, Brahmos missile and Tejas fighter jets representing India's scientific skills, this capsule includes laptops, landline phones, smart phones, drones, VR glasses, stopwatch, Amazon Alexa etc.
- It also includes consumer goods like Airfilter, Induction Couchtop, Air Fryer etc. which are part of our daily lives.
- Some other preserved products include solar panels, latest documentaries and hard discs including films, current science books used in the teaching of students of class 12, and a mirrorless camera.

#### Objective

- Capsule prepared by the students of various departments of Lovely Professional University has been buried ten feet below the ground which will remain under the ground for the next 100 years.

- A plaque is also installed here, in which it has been written that this time capsule will be opened on January 3, 2119.
- This time capsule has been developed to represent information about technology, because today it exists and will provide an opportunity for future generations and will show glimpse of today's technology after 100 years.

#### Previous Time Capsules of India

- The Indira Gandhi government wanted to celebrate 25th anniversary of independence. For this, a time capsule was buried into the ground of the Red Fort premises on August 15, 1973.
- It included important documents and historical facts about India's independence.
- In 2010, the Gujarat government had buried a time capsule in the foundation of Mahatma Mandir, built in Gandhinagar.
- There was some written material and digital content in this three feet long and two and a half feet wide steel cylinder.

### Expected Questions (Prelims Exams)

#### 1. 1. Consider the following statements regarding the "Time Capsule"-

1. It constitutes 100 such items, which represents modern technology being experienced in India.
2. It is kept 10 feet under the ground at the 106th Indian science congress which will be dug out in 2119.

Which of the above statements is/are correct?

- (a) Only 1                      (b) Only 2  
(c) Both 1 and 2              (d) Neither 1 nor 2

#### 2. 2. Consider the following statements

1. Indian Science congress is an apex institution of Indian scientists, which was established in 1914.
2. Since beginning of the Indian Science Congress great scientists, Scholars and Politicians were attached to it.

Which of the above statements is/are correct?

- (a) Only 1                      (b) Only 2  
(c) Both 1 and 2              (d) Neither 1 nor 2

### Expected Questions (Mains Exams)

- Q. What are the impediments in the development of scientific temper in India? Do you believe that religious and traditional prespective of Indians impeded the development of scientific temper? Analyze. (250 Words)

**Note:** Answer of Prelims Expected Question given on 24 Jan. is 1(a)