

Journal of Scientific Temper
Vol 4(3&4), July-Sep & Oct-Dec 2016, pp. 154-166

OPINION

Nehru's Vision of Scientific Temper

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ABSTRACT

Nehru articulated the concept of scientific temper in 1946. The term "scientific temper" is contemporary but appeals to rational enquiry are not new to Indian ethos. Nehru's vision of scientific temper should be seen in the context of his understanding of science and religion for a better appreciation. For Nehru science was not merely an individual's search for truth but it should be an integral part of one's thinking and action. He was more interested in social consequences of science than science itself. Science has made it possible to view traditional beliefs in a new light based on facts. Religion in its narrow sense discourage people in understanding natural processes rationally because it encourage 'an uncritical credulousness, a reliance on the supernatural.' He viewed religion's approach as totally different from scientific method. One should not accept tradition simply because it is tradition. Nehru insisted on giving up much of traditional ways of beliefs and living. Nehru wanted scientists should play more active role in spreading scientific temper in the country. Nehru's legacy of scientific temper got reflected in its incorporation as a fundamental duty of every citizen in Indian constitution. The importance of spreading scientific temper in the country was highlighted in various science and technology policy statements adopted by the government. There were other attempts in visualizing the concept of scientific temper in the present context and working out action plans. However, India is yet to achieve scientific temper that Nehru wanted. Serious attempts should be made to remove the obstacles that undermine scientific temper for inclusive and peaceful development of Indian society.

KEYWORDS: Jawaharlal Nehru, Scientific Temper, Religion, Tradition, Policy

Introduction

The existence of robust S&T infrastructure including huge pool of trained S&T manpower is largely due the foresight of Pandit Jawaharlal Nehru, the first Prime Minister of independent India.

He realized that to remove the combined mist of both social and economic backwardness, superstitious beliefs, and traditional ways of living that had engulfed the country it was essential to develop a strong S&T base in the country. He placed total faith in science and scientific approach towards life's problems for transforming the country. He believed that it is scientific method that alone offers hope in tackling the problems faced by the country. Nehru regarded science as the driving spirit of the modern age. Nehru believed the solution of all the problems India faced could be achieved by the applications of science, its method and spirit. Scientific method and approach alone could transform human life. Nehru's vision of the role of science in national reconstruction was reflected in the Scientific Policy Resolution adopted by the Indian Parliament on 04 March 1958. It stated: "It is an inherent obligation of a great country like India with its traditions of scholarship and original thinking and its great cultural heritage, to participate fully in the march of science which is probably mankind's greatest enterprise today." Nehru thought for realizing fruits of S&T development it is essential to first develop scientific temper or scientific approach and due emphasis should be placed on the scientific method.

The relevance of ideas and beliefs of Nehru has not diminished with the passage of time. In fact today they are more relevant than in the past.

Before we discuss what Nehru meant by the term 'scientific temper', it would be pertinent to reflect on his ideas on science and religion before we discuss his vision of scientific temper. Nehru's thinking on science, religion and scientific temper are symbiotically interlinked. While talking about science and its social consequences he often emphasized the importance of spreading scientific temper in the country.

Views on Science

Nehru was more interested in the social consequence of science than science itself. In his speech delivered at the 47th session of the Indian Science Congress he observed: "My own main interest in science arises naturally from the social consequences of science than science itself. We have to face major political, economic and in the main, social problems of a growing country and of raising

the level of hundreds of millions of our people. It is clear we cannot solve these problems without taking recourse to science and its application.” (Singh, Baldev, ed, p.73, 1986) To him ‘science was not merely an individual’s search for truth’ but it should be an integral part of one’s thinking and action. He said: “Science is not a matter of merely looking at test tubes and mixing different gases and producing things big or small gadgets. Science, ultimately is a way of training the minds and the mind’s working and their whole life functioning according to the ways and methods of science, of their whole structure, social and other, functioning according to it.” (Singh, Baldev, ed, p.75, 1988)

Nehru highlighted that fact science has made it possible for us to see the traditional beliefs and practices in a new light based on facts. Everyone should be able to question and not to accept tradition simply because it is tradition. But this is yet to happen. Nehru wrote: “The impact of science and the modern world have brought a greater appreciation of facts, a more critical faculty, a weighing of evidence, a refusal to accept tradition merely because it is tradition. Many competent historians are at work now, but they often err on the other side and their work is more a meticulous chronicle of facts than living history. But even today it is strange how we suddenly become overwhelmed by tradition, and the critical faculties of even intelligent men cease to function...Only when we are politically and emotionally free will the mind function normally and critically.” (Nehru, 1981, pp.102-103)

The journey of science is an unending process. Science will continue to unravel the mysteries. It is an unending process. Even if it has not found answers for every question it has given greater content and meaning to human life. In fact it has revolutionized human life. He wrote: “...I am convinced that the methods and approach of science have revolutionized human life more than anything else in the long course of history, and have opened doors and avenues of further and even more radical change, leading up to the very portals of what has long been considered the unknown” (Nehru, 1981, p.31).

Among the most salient characteristics attributed to Nehruvian science by David Arnold are (Arnold, 2013):

1. It was a programme for sociocultural change, intended to transform society and the prevalent mind-set.
2. Nehruvian science was state science—science conducted for the people but at the direction and discretion of the state.
3. Nehruvian Science was an institution-building project.
4. Nehruvian science was primarily designed to inspire national pride and nurture India's development regime.
5. Nehruvian science was a historiographic project.

Nehru was an internationalist. He wrote in *The Discovery of India*: “What is my inheritance? To what am I an heir? To all that humanity has achieved during tens of thousands of years, to all that is thought and felt and suffered and taken pleasure in, to its cries of triumph and its bitter agony of defeat, to that astonishing adventure of man which began so long ago and yet continues and beckons to us. To all this and more, in common with all men” (Nehru, 1981, p-36). Such utterances of Nehru do not mean he denounces his identity as an Indian. As we know he was one of the champions of India's freedom struggle. He also wrote: “My reaction to India thus was often an emotional one, conditioned and limited in many ways. It took the form of nationalism. In the case of many people the conditioning and limiting factors are absent. But nationalism was and is inevitable in the India of my day; it is a natural and healthy growth, For any subject country national freedom must be the first and dominant urge; for India, with her intense sense of individuality and a past heritage, it was doubly so” (Nehru, 1981, p-52).

He believed that science had no frontiers. Science cannot be confined to national boundaries, it is something, which is bigger than countries. To him ‘there ought to be no such thing as Indian science.’ Siddiqi noted that “He (Nehru) warned the scientists repeatedly against succumbing to nationalism and nationalistic pressures from their governments and countrymen” (Siddiqi, 1993). Nehru's idea on nationalism needs to be debated in the context of science and scientific temper.

Views on Religion

Nehru admitted that religion significantly contributed in the development of humanity but at the same time he points out that

it discouraged humans to understand the unknown or it discouraged curiosity by trying to place human beings within the confines of set forms of norms and practices. He wrote: “Religions have helped greatly in the development of humanity. They have laid down values and standards and have pointed out principles for the guidance of human life. But with all the good they have done, they have also tried to imprison truth in set forms and dogmas, and encouraged ceremonials and practices which soon lose all their original meaning and become mere routine. While impressing upon the awe and mystery of the unknown that surrounds him on all sides, they have discouraged him from trying to understand not only the unknown but what might come in the way of social effort. Instead of encouraging curiosity and thought, they have preached a philosophy of submission to nature...The belief in a supernatural agency which ordains everything has led to certain irresponsibility on the social plane, and sentimentality has taken the place of reasoned thought and inquiry. Religion, though it has undoubtedly brought comfort to innumerable human beings and stabilised society by its values, has checked the tendency to change and progress inherent in human society” (Nehru, 1981, p. 511).

As pointed out by Obaid Siddiqi, “Religion as practiced by its followers seemed to Nehru, to be closely associated with superstitious beliefs and dogmatic practices” (Siddiqi, 1993). Nehru believed religion encouraged ‘an uncritical credulousness, a reliance on the supernatural.’ Nehru, in his *Discovery of India*, wrote: “Religion, as I saw it practiced, and accepted even by thinking minds, whether it was Hinduism or Islam or Buddhism or Christianity, did not attract me. It seemed to be closely associated with superstitious practices and dogmatic beliefs, and behind it lay a method of approach to life’s problem which was certainly not science. There was an element of magic about it, an uncritical credulousness, a reliance on the supernatural” (Nehru, 1981, p. 26).

Mysticism did not appeal to Nehru and he felt succumbing to it will result in surrendering mental faculties and living in self-delusion. He wrote: “There have been great mystics, attractive figures, who cannot be easily disposed of as self-deluded fools. Yet mysticism (in the narrow sense of the word) irritates me; it

appears to be vague and soft and flabby, not a rigorous discipline of the mind but a surrender of mental faculties and living in a sea of emotional experience. The experience may lead to occasionally to some insight into inner and less obvious processes, but it is also likely to lead to self-delusion" (Nehru, 1981, pp. 26-27).

He viewed religion's approach as totally different from scientific method. Thus he wrote: "Very different is the method of religion. Concerned as it is principally with the religions beyond the reach of objective inquiry, it relies on emotion and intuition. And then it applies this method to everything in life, even to those things which are capable of intellectual inquiry and observation. Organized religion, allying itself to theology and often more concerned with its vested interests than with things of the spirit, encourages a temper which is very opposite to that of science. It produces narrowness and intolerance, credulity and superstition, emotionalism and irrationalism. It tends to close and limit the mind of man, and to produce a temper of a dependent, unfree person" (Nehru, 1981, p. 513).

Nehru underlined the fact that "too much dependence on supernatural factors may lead, and has often led, to a loss of self-reliance in man and to a blunting of his capacity and creative ability."

Nehru argued that with progress of science it becomes possible to understand the process of life and nature in a better way and with such knowledge dependence on supernatural cause advanced by religion should have eventually disappeared but it did not happen. He wrote: "As knowledge advances, the domain of religion, in the narrow sense of the world, shrinks. The more we understand life and nature, the less we look for supernatural causes. Whatever we can understand and control ceases to be a mystery. The processes of agriculture, the food we eat, the clothes we wear, our social relations, were all at one time under the domain of religion and its high priests. Gradually, they have passed out of its control and become subjects for scientific study. Yet much of this is still powerfully affected by religious beliefs and the superstitions that accompany them" (Nehru, 1981, p. 514).

Nehru insisted on giving up of traditional ways of thought and living. But this does not mean a complete break from the past. He

wrote: “India must break with much of her past and not allow it to dominate the present. Our lives are encumbered with the dead wood of this past; all that is dead and served its purpose has to go. But that does not mean a break with, or a forgetting of, the vital and life-giving in that past... We have to get out of traditional ways of thought and living, which, for all the good they have done in a past age, and there was much good in them, have ceased to have significance to-day. We have to make our own all the achievements of the human race and join up with others in the exciting adventure of man, more exciting to-day perhaps than in earlier ages, realizing that this ceased to be governed by national boundaries or old divisions and is common to the race of man everywhere” (Nehru, 1981, p.509).

Scientific Temper

Nehru articulated the concept of scientific temper in his book *The Discovery of India* published in 1946. It has been argued that ‘the earliest usage of the concept of scientific temper was around 1890s. (Kumar, P. V. S., 2011). While the term “scientific temper” is contemporary, appeals to rational enquiry are not new to Indian ethos (Mahanti, 2013). The “Palampur Declaration” (2011) on scientific temper (reproduced in *Quest for Scientific Temper*, CSIR-NISCAIR, 2012, stated: “The tradition of skepticism and humanism is not new to Indian intellectual tradition. Such notions go back to antiquity—Jain, Sankhya, and Buddhist traditions have repeatedly emphasized the spirit of enquiry. During the Indian renaissance many leaders popularized the notion of scientific enquiry and gradually it became part of the Indian ethos.” The tradition of skepticism and questioning attitude in Indian intellectual tradition has been discussed by Amartya Sen in his much talked about book, *The Argumentative Indian* (Sen, 2005).

Nehru viewed scientific temper or scientific approach as way of life. Nehru wrote: “The applications of science are inevitable and unavoidable for all countries and people today. But something more than its application is necessary. It is the scientific approach, the adventurous and yet critical temper of science, the search for truth and new knowledge, the refusal to accept anything without

testing and trial the capacity to change previous conclusions in the face of new evidence, the reliance on observed fact and not on pre-conceived theory, the hard discipline of the mind—all this is necessary, not merely for the application of science but for life itself and the solution of its many problems. Too many scientists today, who swear by science, forget all about it outside their particular spheres. The scientific approach and temper are, or should be, a way of life, a process of thinking, a method of acting and associating with our fellowmen. That is a large order and undoubtedly very few of us, if any at all, can function in this way with even partial success. But this criticism applies in equal or even greater measure to all the injunctions, which philosophy and religion have laid upon us. The scientific temper points out the way along which man should travel. It is the temper of a free man. We live in a scientific age, so we are told, but there is little evidence of this temper in the people anywhere or even in their leaders” (Nehru, 1981, p. 512).

Further he wrote: “Science deals with the domain of positive knowledge but the temper which it should produce goes beyond that domain. The ultimate purposes of man may be said to be to gain knowledge, to realize truth, to appreciate goodness and beauty. The scientific method of objective inquiry is not applicable to all these, and much that is vital in life seems to lie beyond its scope—the sensitiveness to art and poetry, the emotion that beauty produces, the inner recognition of goodness. The botanist and zoologist may be wholly lacking in love for humanity. But even when we go to the regions beyond reach of the scientific method and visit the mountain tops where philosophy dwells and high emotions fill us, or gaze at the immensity beyond, that approach and temper are still necessary” (Nehru, 1981, pp. 512-513).

While laying the foundation stone of the National Institute of Sciences of India (later renamed as the Indian National Science Academy) at New Delhi on 19 April 1948 Nehru said “...The scientific method is the only right method of approach to life's problems; and in India today it is even more important than elsewhere, because we are backward with science...In India today we should pursue science in the right way and try our utmost to foster it. There is no other way except the way of science

ultimately for the development of human life and institutions. This is the scientific approach to life's problems...The fundamental thing is a scientific approach. You cannot change man legally. You can create an atmosphere where his actions are governed by a scientific approach, science remains the only right method of approach." (quoted in Jain, Ashok, J. K. Ahuja and Subodh Mahanti, 1989).

Nehru's scientific temper is opposed to pseudo science, religious bigotry and dogmatic beliefs, superstition and astrology. Nehru in his address to the 1955 Session of the Indian Science Congress said: "I myself am not bound by dogmas and am always prepared to admit my mistakes and to rectify them. I believe that such an approach is nearer to what may be called the scientific approach, and in that sense I consider myself having a scientific temperament, although I cannot claim to be a scientist." (quoted in Bhargava and Chakrabarti, 2010, p-41).

According to Hak-Soo Kim: "Nehru's popular notion of 'scientific temper'...seems to cover many things, including the spread of scientific knowledge for economic and spiritual development of India. Its essence is 'a questioning mind...not prisoner of any dogma, modern or archaic'. Therefore, scientific temper needs to be considered as a cultural product (e.g., scientific knowledge, disposition or predisposition), that which, behavior brings to science. It functions as the temper of a free man, as the approach of an open mind. It is what science is as behavior, not just what science brings to other behaviours—like problem solving. Especially, Nehru seems to have emphasized in the notion of scientific temper the battle against pseudo sciences such as religious bigotry, superstition and astrology" (Kim, Hak-Soo, 2012).

Nehru believed that spreading of scientific temper does not go hand-in-hand with development of science and technology in a country. However, he thought Indians have an advantage in this regard compared to western countries. He wrote: "Science has dominated the western world and everyone there pays tribute to it, and yet the west is still far from having developed the real temper of science. It has still to bring the spirit and flesh into creative harmony. In India in obvious ways we have a greater distance to travel. And yet there may be fewer obstructions on our way..."(Nehru, 1981, pp.514-515).

Nehru was a great champion of freedom of expression and a true democrat. Both of these attributes are in tune with his idea of scientific temper.

Comments on Nehru's Concept of Scientific Temper

Du Plessis states that, "Nehru saw the role of scientific temper to assist in the progress and development of the country as a whole and introduced the notion of scientific temper as the theoretical underpinning of a system approach towards the development of science and Technology (S&T)" (Du Plessis, 2013).

As pointed out by Siddiqi, Nehru wanted that 'the scientific way of thought, the scientific temper, must spread all spheres including politics.'

Nehru wanted that scientists should play an active and meaningful role in spreading scientific temper in the country. As pointed out by Bhargava and Chakrabarti: "Nehru was acutely aware of the changes that had come about by the end of World War II and the Indian independence, in respect of rights and responsibilities of scientists. He also was fully cognizant of the hold of irrationality, religious dogma and superstition amongst our people, including the scientists. He, therefore, rightly realized that for the scientists to give their best to science and to society, they must have scientific temper, and he expected to be the main instrument for disseminating the temper of science amongst the people of our country" (quoted in Bhargava and Chakrabarti, 2010, p-36).

The Palampur Declaration stated: "Scientific Temper is essentially a world-view, an outlook, enabling ordinary citizens to choose efficient and reliable knowledge while making decisions in their individual and social domains. It is not the content or extent of knowledge base of one acquires, but rather the pursuit of rational enquiry, which is the hallmark of Scientific Temper."

The Post-Nehruvian Period

Nehru's legacy of scientific temper got reflected in the incorporation of scientific temper as one of the Fundamental Duties of every citizen of India through the 42nd amendment in the Indian Constitution: "It shall be the duty of every citizen of

India to develop a scientific temper, humanism and the spirit of enquiry and reform” (Fundamental Duties of every Indian Citizen vide Part IV-A, Article 51-A(h)—introduced as a part of 42nd Amendment to the Constitution of India in 1976).

The post-Nehruvian period witnessed the Government’s commitment towards spreading scientific temper in its various science and technology policy statements. For example the Indian Science and Technology Policy 2003 states: “To ensure that the message of science reaches every citizen of India, man and woman, young and old, so that we advance scientific temper, emerge as a progressive and enlightened society, and make it possible for all our people to participate fully in the development of science and technology and its application for human welfare. Indeed, science and technology will be fully integrated with all spheres of national activity.”

There were other attempts in highlighting the need to spread scientific temper in the society. In 1981, a statement on scientific temper was issued by a group of individuals, which underlined the fact that ‘the scientific temper has to be fostered with care at the individual, institutional, social and political levels.’ The statement evoked support as well as criticism from different quarters. In 2011, an attempt was made to revisit the 1981 scientific temper statement, now known as Palampur Declaration. This was followed by two international conferences (Mahanti, 2013).

If we look at the present scenario of the Indian society it is obvious that scientific temper talked about by Nehru is not a dominant factor in our society. Thus Narlikar writes: “...we are still a long way from achieving that scientific temper which Nehru considered so essential for our future well-being.” (Narlikar, Jayant V., 2003, p-136). Similar concerns were expressed by Kumar: “Although enunciated by the first Prime Minister of India, Pandit Jawaharlal Nehru, in 1946, the concept of Scientific Temper remained elusive in its implementation. This is even more ironical because Scientific Temper was incorporated as one of the Fundamental Duties of every citizen of India through an amendment in the Indian Constitution...” (Kumar, 2011). There is no denying the fact that there is not much evidence to prove that the lives of Indians are being governed by scientific temper, the spirit of enquiry and the scientific method, as Nehru

would have wanted. Rather it appears that the Indian society is largely in the hold of tradition, superstition and irrational beliefs.

Concluding Remarks

Science is the spirit of modern age and the scientific method encourages us to question and help us to arrive at decision based on rational reasoning. The concept of scientific temper envisioned by Nehru encourages the adoption of scientific method in resolving problems and thus rational decision-making process. Mere progress of S&T itself will not ensure inclusive social development. This will be possible only when scientific temper is spread all spheres of human activities including politics. For maintaining peace, prosperity and freedom of expression and to ensure steady progress of S&T in the country it is essential that we revisit Nehru's ideas and beliefs with regard to science, religion and scientific temper. Change is the cornerstone of human civilization. To progress we must change. We should discard those traditions which are hampering progress and which come in the way of social harmony. As the 1981 Statement of Scientific Temper states: "We must understand the meaning as well as the imperatives of scientific temper, representing as it does, humanity's assertion of being in charge of its destiny and not a passive victim of malevolence of stars. To do so, we need to actively combat beliefs which erode scientific temper and undermine its growth. Only then shall we illuminate our darkening national horizon and provide our people, once again, with a vision..."

References

- Arnold, David (2013), "Nehruvian Science and Postcolonial India", *ISIS*, Vol. 104, No. 2, 360-70.
- Bhargava, Pushpa M., and Chandana Chakrabarti (2010), *Angels, Devil and Science: A Collection of articles on scientific temper*, New Delhi: National Book Trust, India.
- Du Plessis, Hester (2013), "A Comparative Perspective for Functional Application of Scientific Temper in Southern Africa", *Journal of Scientific Temper*, Vol. 1, No. 1&2.
- Jain, Ashok, J. K. Ahuja and Subodh Mahanti (1989), *Nehru: The Architect of Indian Science*, P-3, New Delhi: National Institute of Science, Technology and Development Studies.

- Kim, Hak-Soo (2012), "Nehru's Scientific Temper as Battling against Pseudo Sciences", in Khan, Hasan Jawaid, Gauhar Raza, Surjit Singh and Subodh Mahanti (Eds), *Quest For Scientific Temper*, New Delhi: CSIR-National Institute of Science Communication And Information Resources (NISCAIR).
- Kumar, P. V. S. (2011), "Cultural Nature of Scientific Temper" in Gauhar Raza, REN Fujun, Hasan Jawaid Khan and HE Wei (eds), *Constructing Culture of Science: Communication of Science in India and China*, New Delhi: CSIR-National Institute of Science Communication And Information Resources (NISCAIR).
- Mahanti, Subodh (2013), "A Perspective of Scientific Temper in India", *Journal of Scientific Temper*, Vol.1, No. 1&2.
- Narlikar, Jayant V. (2003), *The Scientific Edge: The Indian Scientists from Vedic to Modern Times*, New Delhi: Penguin Books India (P) Ltd.
- Nehru, Jawaharlal (1981), *The Discovery of India*, New Delhi: Jawaharlal Nehru Memorial Fund (original published the Signet Press, Kolkata, 1946).
- Science Policy Resolution -1958, Government of India, New Delhi.
- Scientific Temper Statement Revisited: The Palampur Declaration (2011),
- Sen, Amartya (2005), *The Argumentative Indian: Writings on Indian Culture, History and Identity*, London: Penguin Books Limited.
- Siddiqi, Obaid (1993), "Science, Society, Government and Politics—Some Remarks on the Ideas of Jawaharlal Nehru", in Yash Pal, Ashok Jain and Subodh Mahanti, *Science in Society in Perspectives*, New Delhi: Gyan Books.
- Singh, Baldev, ed (1986), *Jawaharlal Nehru on Science: Speeches delivered at the Annual Sessions of Indian Science Congress*, New Delhi: Nehru Memorial Museum and Library.
- Singh, Baldev, ed (1988), *Jawaharlal Nehru on Science and Society: A Collection of his Writings and Speeches*, New Delhi: Nehru Memorial Museum and Library.
- The Indian Science and Technology Policy (2003), Department of Science and Technology, Government of India.
- The Palampur Declaration (2011) reproduced in Khan, Hasan Jawaid, Gauhar Raza, Surjit Singh and Subodh Mahanti (Eds), *Quest For Scientific Temper*, New Delhi: CSIR-National Institute of Science Communication And Information Resources (NISCAIR).