

181. Scientific Temper, Science Communication and Print Media

S. Anil kumar

Cochin University of Science & Technology, Kochi 682 022, Kerala
anilvadavathoor@gmail.com; Mob: 09447654235

Abstract. Scientific temper may be considered as a state of mind and behavioural outlook where a citizen undergoes an organic transformation with scientific awareness accrued through various channels of scientific communication. The attainment of scientific temper is a pre-condition for the development of any society. In traditional societies like India, the communication of science was poised by print media during the yester-years. But the advent of visual media posed a severe challenge to print media when the print concentrated more sensationalism, crime, politics and cinema, providing only less importance to science. The print media can again become an effective tool for science communication by solving various problems with respect to scientists, and science communicators.

Keywords: Chain reaction, Deadline, Interpersonal communication, Ivory tower approach, Mass communication, Media mix, Peer-review, Public awareness, Science communication, Scientific temper, Three pillar theory

Towards Scientific Temper

Scientific temper is an attitude of mind which calls for a particular outlook and pattern of behaviour. It is neither a collection of knowledge or facts, although it promotes such knowledge and rational thinking. Creation of scientific temper is more a matter on the social agenda than on the scientific and technological agenda. Hence its impact with respect to any traditional society is much greater than the spread of science and technology

Creation of scientific temper is not synonymous with mastering of science and technology or developing a highly industrialised society. It is rather an attribute of human mind and of social decision making process, than knowledge of various branches of science. The inculcation of scientific temper in our society would result in our people becoming rational and objective, thereby generating a climate favouring an egalitarian, democratic, secular and universal outlook. Hence it should become a part of human culture, a philosophy and a way of life which leads to pursuit of truth without prejudice.

People must be involved in the process of science. Public awareness and understanding of science and resultant public participation in the debate on issues of science, technology and environment having societal impact is a prerequisite for development and hence became very important for the progress of any society. That may be the reason why democratically elected governments all over the world is actively thinking on appropriate strategies to instil scientific temper in traditional societies. Only with the active involvement of the mass media, this onerous task could be undertaken. Unfortunately the mass media generally adopt an attitude which encourages an irrational outlook and thus become a stumbling block in the path of creating scientific temper.

It is not an easy task to create scientific temper in the minds of people. Scientific knowledge and scientific information could be imparted through the effective use of media and other mass communication techniques. But scientific temper is a sort of mindset which is totally different from scientific knowledge and awareness. Propagation of science through mass communication and inter personal communication in a simple style on a continuous basis will pave for the creation of scientific temper. Hence science communication can be considered as a means to achieve the ultimate target, establishing of scientific temper among the grass root level of the society.

Studies proved beyond doubt about the impact of media moulding the views of a society. Mass media is considered as the most potent form of communication to popularise science. Communication of Scientific knowledge through media is generally considered as science communication. There are a number of modes of communication to propagate science like interpersonal communication, group communication, mass communication or digital communication. But in traditional societies where literacy, customs and beliefs prevail, the effective channel for communication is Mass communication, using mass media where the messages are reinforced by interpersonal efforts.

The process of mass communication is having proven abilities to interact with people with different colours, races and cultures settled in different geographical areas. Inter personal communication helps to reinforce ideas and beliefs transmitted by various means of mass communication.

Though the general impression is that the visual media which synergised with audio and video inputs have a greater impact on members of traditional societies where rate of literacy is high. The educated elite as well as the poor believe the power and credibility of print media. Print is the oldest medium of communication having a permanent

format, longer storage life and an ability to cater the local communities. In a sense, it is interactive also. Further, print media has catered and is still catering science than other media and provide space to science and technology reporting in the past.

But the growth of visual media, raised a challenge to print media in reporting science and it is losing interest in reporting science gradually, perhaps due to their growing attention to counter the emerging challenges of visual media. Journalists attributed the reason for this antipathy as the disinterestedness of readers. As in the case of crime, cinema and politics, there is no persistent demand from readers for science news. The failure to create such an interest is due to the lack of vibrant grass root level agencies. A joint effort of scientists, science journalists (communicators), and the readers who are the three pillars of science communication is needed to boost science coverage. These three pillars are interdependent, though seem to be independent.

In many countries, especially developed nations world-wide, the growth of, science communication has a direct link with scientific advancement, research activity and allied S&T progress. They are mutually dependent to a large extent. But there are exceptions to the general rules as in the case of Kerala which is a state in the Indian Union, having very high literacy level, where even journalists who shows disinterestedness to publish matters on scientific programmes on the pretext that their readers have no interest. But no serious media research has been conducted so far to prove the veracity of this point, or to test the veracity of the age-old myth. Kerala state is a classical sampling unit to conduct such research because it is the first state in India achieved 100 percent literacy. Besides Kerala is having an age old tradition of science communication through print media. The first science periodical, agricultural periodical and health periodical in any of the Indian regional languages were originated in Kerala in the regional language Malayalam during the beginning of 19th century.

While analysing the Kerala society as a whole, we have to come to a conclusion that the print media had played a yonon role in the social transformation in Kerala. The agricultural revolution as part of the Grow More Food campaign (in connection with the Green revolution) became a success, only due to the organised campaign of print media during 1950's. The spread of health consciousness, sanitation and awareness in modern medicine including vaccination and application of antibiotics which increase the health expectancy of average Keralate is also due to the committed effort of print media. But when the visual media coupled with digital media reign the scene, the scenario the print media slowly withdrew from the area of science popularisation.

The ABC (Audit Bureau of Circulation) figures and readership surveys categorically asset the fact that print media commands a better influence and circulation in such traditional societies. Though the society depends the visual media for entertainments, the people are looking print media as the source of information on science, literature, arts and even politics.

The failure of creating scientific literary and scientific temper is due to the absence of vibrant agencies functioning in the society. Though the Government and other agencies are pumping a lot of money for propagating and popularising science, the grass-root level organisations including voluntary agencies have failed in their duty. The messages transmitted through the media would only be cemented with the help of interpersonal communication and group communication organised by voluntary agencies and committed and efficient science teachers. Unless the grass root level voluntary agencies are not functioning with a missionary zeal and social commitment, science popularisation would continue to remain as a distant dream.

Three Pillar Theory

Parliament, Executive, Judiciary and Press are known as the four pillars of democracy. These four estates are independent and interdependent. The synergy formed by the effective functioning of the four pillars is the basis of any healthy democracy. Similarly science communication also needs the synergy formed by the collaborative activity of the three pillars for its success. They are scientists, science journalists (communicators) and the readers. Synchronisation of all these three elements is the key for successful science communication through print media. This process can generally be concluded as the three pillar theory of science communication.

The non-interest of journalists in reporting science which is a recent phenomenon is due to the lack of a pressing demand from the readers and general public. It is the habit of Kerala society to read at least a newspaper in the early morning. They would usually react only if the issue reported is volatile and totally against the basic tenets of society. Since science reporting is generally cold and inert in the hands of an inefficient writer, as there is not much scope for such a reaction from the society. Unless and until there is a pressing demand from society or public, journalists or media management would not act. The pertinent question is why people are not keen on science and why they are not demanding for science in a palatable way from the newspaper which they subscribe.

Such a demand would be evolved only if the citizenry in general is well aware of the implications of science

reporting. They do not know the way through which science transform their lives by lock, stock and barrel. Without a sense of scientific temper and awareness, we can't expect a positive and pro-active response from the society.

Lack of understanding and mutual credibility between the three pillars, will upset the noble intention of science communication for sustainable development and the ultimate result is the erosion of credibility. Concrete steps have to be designed to fill the lacunae created between the three pillars of science communication. Otherwise the creation of scientific temper among the masses would still remain a mirage, even though Kerala society is at the threshold of scientific development and the citizens have nearly-cent percent literacy. Strengthening the activities of science communicators and voluntary agencies are the need of the hour for propagating scientific thinking which ultimately prompt the media to devote more and more space for science news in their editorial-mix.

In the case of sports, cinema, crime and politics, the public awareness is so strong and the media cannot evade the responsibility of reporting such events. Omissions in the follow up of stories on hot issues will not be tolerated by the readers. Hence the media personnel are trying to provide even the minute details of such events with a pinch of sensationalism. Creation of scientific awareness is not an easy task. The genesis and development of awareness can be affected only through vibrant and grass root level organisations. The awareness will ultimately leads to scientific temper. The conclusion is the theory of chain reaction, where Poor Awareness on science leads to zero science news which ultimately results to

zero supply of Science News. It is interesting to note that the growth of science coverage has become inversely proportional to the growth of literacy and scientific advancement in the typical literate society like Kerala. A media observer could well understand the fact that a sharp decline in the science coverage in print media occurred during the recent times when compared with the previous century in Kerala. The phenomenon happened at a time when science and technology are advancing by leaps and bounds. The literacy rate of Kerala at present is around 100 percent compared with a meagre 10-15 percent in the previous century. This paradox indicates a peculiar tendency in the print media scenario in areas like Kerala. Perhaps, the people are not demanding for science coverage and that may be the reason why journalists are not interested in science coverage.

There are many other reasons for the lack of science coverage other than the affinity for sensationalism, lack of mutual respect or erosion of credibility between science communicators and scientists. The lack of empathy among the journalists towards their target audience is another problem. Failure of a journalist to link his science reports with its impact on society is detrimental for his report. Journalists are generally not interested in logically analysing the scientific issues or contributing to the issues by way of research and reference. Even if some factual errors are occurred in science reports, the 'gate keepers' of the society are not interested in making corrections or providing interpretations to the needy public. The writers are not interested in simple writing by avoiding jargons. The lack of persons with scientific back ground and absent of regular science beat in newspaper offices is another problem. During the past century, newspapers were widely considered as a vehicle for social transformation and anything published in it were considered with great reverence and credibility. Unfortunately the media mix has changed and science is getting lesser importance. But readership surveys in traditional societies proved that the print is most potent medium in mass communication.

Problems with Journalists

It is generally believed that the reason for the lack of science coverage in print media is the non-interest of the journalists. Science reporting is time consuming and it needs more effort and research. A fairly good background in the area of reporting is also necessary. The process of science writing also warrants more attention rather than writing on crime, politics, cinema or culture which are comparatively easy to report. However, there are many more reasons attributed to the media allergy to science reporting.

The general criticism against journalists is their innate affinity towards sensationalism. It is attributed as a force with potential to boost readership and hence the circulation. The tendency may be considered as an effort to combat the increasing influence of visual media with all its entertainment channels. But science is a subject having less scope for sensationalism. Epoch making inventions are rare. However, journalists celebrate such scientific events with much fanfare and enthusiasm. The newspapers are ready to publish news and features on a commendable invention in science with due or rather undue importance. On such occasions every effort shall be made to simplify the matter by avoiding technical jargons and the news is presented with a lot of illustrations and comments if necessary. But the phenomenon is not regular and the scientists as well as journalists never tried to pursue the trail of such incidents in a continuous manner, thereby maintaining the scientific-tempo created with such events. If a joint effort could be mooted, we would have good, simple and interesting science coverage throughout the year in a sustainable manner. There is no regular science beat in majority of language newspapers.

Non-availability of journalists with proper science background and understanding to cover science and technology events is yet another problem. Journalists usually approach science reporting with a pre-conceived notion that the same is totally alien to them. So they are not ready to apply their logical mind which ultimately resulted in the publication of a bad report. Even if some persons have scientific bend of mind, they also ignore logical thinking, sense of interpretation and inquisitiveness in science coverage. People have a general tendency to ignore global issues like Global Warming or climate change on the presumption that such issues never affect them. The reason is the laxity of communicators in conveying the message in an appropriate format to the general public. Science journalists should take the pain to describe how such global issues would affect an individual (or his kith and kin) wherever he be.

Reporting day-to-day affairs like politics and crime are comparatively easy. It is somewhat routine too. Consider the example of sports reporting. In sports, the rules of the game are known. Change is only in the players and the places. But science is new and the situations as well as the players are changing always. Further, the details and implications of scientific developments are known only to a few and hence science coverage demands more effort. Scientists generate ever-newer knowledge and reporters should keep up with such developments. Research, reference and sometime interviews are necessary to make a good science story. Research is the systematic investigation and study of materials and sources for establishing facts and to reach conclusions. Hence it is cumbersome and difficult to achieve deadlines for a science reporter.

The general complaint about science news reports and articles is the excessive use of jargonised language. The reckless use of jargons, clichés and technical language in writing science for newspapers made the reader tired and distanced himself from reading such pieces. Tendency of making the news story complex and complicated kills the interest of subscribers in reading science. The tendency of making science news complex is due to the lack of empathy, rather than the so called inability of journalists to do research or reference.

If an error appeared in a science story, or something is misquoted or misrepresented, generally no newspapers in the regional language come forward to set matters right with correction and proper clarification, as in case of political or crime reporting. It may be due to the absence of genuine reactions from the scientific community or from less vigilant subscribers. Such mistakes may appear in plenty in science stories which erodes the credibility of popular science reports among the right thinking persons in the society.

The media people are not much interested in writing follow-up stories in science and technology. Journalists have a presumption that nobody in the society is interested in science reports. Most of the journalists are not even ready to think about the possibility of linking science reports with its social significance and its role in alleviating the miseries of the common man. An orientation and social commitment from the part of the journalist is the basic necessity for an effective science report.

Responsibility of Scientists

Journalists are not the only culprits who deprive the right of citizens to know more on science through various columns of a news periodical; but scientists are equally responsible. Scientists are ignorant of the impact of their inventions on society and are not ready to share their knowledge; many researchers are reluctant even to speak to the popular press, for fear of having their carefully chosen words twisted beyond recognition. Communication through conventional channel of peer-review and acceptance are their priority. Lack of understanding of people's priorities and inability to write for public, keeping them away from popular science and the ultimate tax-payer is ignored. Further, the scientists are quite unaware of the news value of their findings and its impact among the citizens. Hence they are bound to share the responsibility for the never-ending ignorance of people and lack of scientific temper. Most of the scientists prefer to remain silent in their ivory-towers leaving the taxpayers at dark. Perhaps, it may be due to their fear to communicate with the press or the anxiety about the sensationalism and speculative type of reporting adopted by many reporters which may cause embarrassment, and putting 'black marks' in his profession. In between the widening clash of interests, the worst sufferer is science journalism and the loser of the game is none other than the common man. In such a situation the noble intention of the government to propagate science among the masses will continue as an accomplished dream. And the scientific inventions and research findings would end in the cupboards of scientific institutions.

Conclusion

The most effective means of science communication to establish scientific temper is print media. In the past, it had nurtured the curiosity of mankind and there by pave way for the popularisation of science. The English language press is still continuing this rich legacy. Unfortunately the so called regional press which is having more power

to transform the society is lagging behind. Science coverage in print media can be initiated only on the basis of a push originated from the ultimate readers, and that too is possible only with the help relentless efforts of scientists, journalists non-governmental organisations in the grass root level of society and good science teachers in schools. Unless readers demand for science news, journalists will not respond affirmatively. Mere science news for the popularisation of science won't help to achieve the target of creating scientific temper. A mental transformation or metamorphosis is needed to sow the seeds of scientific temper in the minds of citizens for making their life better. Science Communication and popularisation are a prologue for such thinking.

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