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Review ArticleDOI: 10.58966/JCM2024324Communication of Science & Technology in Ancient India and itsRelevance in Contemporary Scenario

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ABSTRACT

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Keywords:

Communication, Social beings, Survival, Invention, Philosophy, Oral tradition, Copper plates, Astronomy, Knowledge sharing. Communication is an essential part of all social beings and humans especially have been successful in fighting adversities throughout their evolutionary history because they could communicate and invent necessary tools and procedures to help their survival. It goes without saying that a group as a whole can prosper only if it is able to think of ideas and communicate among them as well. Discovering and inventing concepts is something that falls under the domain of science whereas sharing it with others for them to be applied and executed comes under communication. Science and communication have come together to make great strides in our history of development. India's contribution is also unparalleled when it comes to science and communication. It is quite evident from old texts that our ancestors had exemplary communication skills. The knowledge of mathematics, medicine, and complex philosophy was majorly communicated through chants and verses. The oral tradition transitioned to written texts on copper plates, on barks and on leaves and eventually using paper by the end of 12th and 13th centuries AD. From verses and hymns, they turned to prose explaining Astronomy, Mathematics, Medical Science, Technology and Agriculture. Communication in the ancient past of India was abundant with discussions and debates adhering to rules and regulations. All these rules are quite applicable to the communication of science and technology, even in the modern era. Therefore, more research in ancient Indian communication pattern might actually be quite helpful in uncovering rich tradition of knowledge sharing.

INTRODUCTION

Ancient communication pattern is a vast subject requiring intense research across various civilizations. With limited resources at hand, this task may be easier said than done. However, researchers may contribute towards collating and documenting information using first-hand knowledge of their culture's history and curating data on ancient communication tools and strategies employed. This repertoire of research may lend insight into communication patterns, networks, methods of cross-talk and knowledge-exchange utilized in ancient times.

While the West has contributed immensely towards documenting communication patterns through research articles and books, historical research from the East on this subject has been sparse. A civilization as primeval as the Indian civilization warrants extensive research and exploration into the archetype of communication methodologies and patterns employed. Study of old texts substantiates that not only complex philosophical ideas but also the mathematical equations and medical prescriptions were communicated through enchanting verses. 'Sadharanikaran' is a word of Sanskrit that is synonymous with the concept of communication (Yadav, 1986). 'Sadharanikaran' translates to simplification. Sadharanikaran's Latin equivalent is 'communist' and the English equivalent is 'communication', which means oneness or commonness through sharing. Natyashastra written by Bharat Muni in around 2nd century BC finds first mention of Sadharnikaran.

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METHODOLOGY

Historical research methodologies include study of historical handwriting, which is known as Palaeography, the study of documents, records and archives. Chronology (establishing the dates of past events), which is known as Diplomatics. The study of publications, a study of ancient inscriptions which is known as Epigraphy; the study of individuals and families, which is known as Genealogy. Historical geography a study of weapons, which is known as Heraldry; the study of handwritten documents, which is known as Codicology; the study of coins which is known as Numismatics; study of seals which is known as Sphragistics.

The body of literature that has been referred to for collating this article has employed some or all of the methodologies mentioned above. This study undertaken, however has two primary purposes. The first is to study the ancient Indian communication pattern, especially in context of science & technology. Secondly, this study aims at finding out its relevance in contemporary scenarios and how it could be put to better use in modern times. Owing to the qualitative nature of the study, historical records and sources of various types needed to be explored. A special mention of the Indian National Science Academy (INSA) must be noted here. An objective analysis of the 'Science and Technology in Ancient India' was attempted by INSA which has published studies in various disciplines of sciences, including a large volume titled, 'A Concise History of Science in India'. They have gone through the original manuscripts wherever possible to find references to basic and applied sciences.

FINDINGS

Indian concept of communication

According to JS Yadav Indian concept of communication lays down three important tenets.

Sahridaya (shared compassion)

"Emotion is about relationship, not individual. Sahridaya denotes the common compassion between the source and receiver. It represents the relational aspect of communication and emphasizes the need for common compassion before any "real" communication can occur.

Rasa Utpathi (emotional arousal) &Rasa Swadan (aesthetic pleasure)

Emotional response emphasizes the reaction invoked in the audience. To achieve rasa utpathiemotions have to be aroused. The source should evoke reactions in the audience that lead to a feeling of well-being, happiness and harmony.

Sadharanikaran(simplification)

Sadharanikaran means "simplification without dilution". The principle of simplification implies that communication requires presenting content in an "entertaining" manner to reach a large audience. The process of simplification has been operationalized through the ages in India with the use of folklore, metaphors and illustrations. Says Yadava (1987) "this approach makes communication a dynamic, flexible, practical and effective instrument of social relationships and control".

Medhatithi's science of bricks and numerals

'Istaka' or 'Istika', is the Sanskrit term for the English word brick which was used in the construction of an altar. 'Medhatithi''s commentary on Manusmriti, a collection of Sanskrit verses finds mention of bricks and their use. His contribution to the science of numerals involving powers of ten in enumeration is also quite significant. The verses related to bricks and numerals are given in Yajurveda. (Sharma, 2002)

Sulba Sutras

'Sulba Sutras' considered to be the appendices to the Vedas contain knowledge on bricks and their shapes which include geometrical figures of square, round, oblong and diagonal. The mechanical devices connected with the grinding, pounding, macerating with water, allowing to ferment, squeezing out juice or extract, filtering through various types of strainers, collecting it in receptacles, preserving in suitable containers under favorable conditions and similar other processes laid the foundation of the pharmaceutical practices in connection with medicinal herbs. The 'Yajnasala' was thus a primitive laboratory and the utensil described in this connection became the basis of a chemical laboratory in the alchemic and iatrochemical period.(Ray P. C., 1956)

First Scientific Symposium

Ayurveda is a system in the field of medicine that exists as a form of treatise in the 'Charak Samhita'. The 'Charak Samhita' it seems, was the first ever symposium on different subjects related to medical sciences (Ayurveda). The world's first symposium held on medicinal plants in relation to diseases was presided over by sage Bharadwaja, somewhere in Himalayas, 700 BC. The Charak Samhita contains the whole account of this symposium, including the names of different participants. A number of fundamental questions regarding life and death were also raised in this symposium.

Other symposia recorded in Charak Samhita are related to the following subjects: The salutary and the unsalutary influences of 'Vata', The origin of man and disease, Taste and its enumeration, Growth of fetal limbs and use of the emetic nut and dose of the enema.

Charak Samhita also lays the rules for debates and discussions. It says, discussion with a person of the same branch of science is indeed what makes for the increase of knowledge and happiness. It contributes towards the clarity of understanding, increases dialectical skill, expands reputation, dispels doubts regarding things heard by repeated hearing and confirms the ideas of those who have no doubts." (Ray & Gupta, Caraka Samhita (A Scientific Synopsis), 1985).

Shastrartha or scientific discussion

Such discussion with the men of the same branch of science was divided into two kinds (i) friendly discussion and (ii) the discussion of challenge or hostile discussion.(Ray & Gupta, Caraka Samhita (A Scientific Synopsis), 1985)

The friendly method of Discussion

"The friendly discussion is held with the person who is well versed in the subject and has experience. Someone Who does not lose temper easily, someone who is receptive to logic and arguments, someone who is adept in the art of persuasion, someone who has tolerance and pleasantness of speech."

The Hostile Method of Discussion

"The person who is about to hold an unfriendly discussion must find out beforehand the points of merit and demerit of the opponent, and the difference, in competence between himself and the opponent. He must investigate well the nature of the assembly."

Some of the most important statements found in the 'Charak Samhita' are very relevant to the communication of science. Here are some statements for example: "Proof - first a proposition is to be made, then it has to be proved. For example, there is a proposition 'Man is eternal', Its Cause is stated - no one makes him. For example - even as space is not made and is eternal so is a man. Deduction - hence man is eternal." "As regards counterproof - it is one which establishes the contrary of the opponent's proposition. For instance, there is a proposition that 'Man is not eternal'. Its Cause is stated - Man is sense object. For example – even as a pot is a sense object and is not eternal so is man. Deduction - hence man is not eternal." "As regards cause - it is the means of acquiring knowledge. That is of four kinds - sense perception (direct experience), inference, tradition and analogy. "The knowledge that is obtained by these means is 'Truth.' As for instance, 'fire is hot', 'water is fluid', 'earth is firm' and 'the sun illuminates'." This is how Direct Perception has been defined in 'Charak Samhita': "Direct perception is that which is perceived by the mind and the senses directly. Of them, happiness, sorrow, like the mind perceives the senses perceive and dislikes, etc., Sound and other objects."

Buddha's Teaching

Gautam Buddha had always preached that one should not believe in what the teacher said without experiencing it. His teachings form the basis for the scientific method of collecting information (Bose, Sen, & Subbarayappa, 1971).

SankhyaKarika

Sanskrita and Ayurved, ScholsarVachaspatiMisra has written a commentary on 'SankhyaKarika' titled

'SankhyaTatwaKaumudi Tika', It gives guidelines on how one should go about investigating the various theories and propositions before reaching any conclusion. The research method proposed by him includes five stages. The first is called 'Taram' where one is required to study the whole issue under a bonafide 'Guru' - the teacher. Next is 'Sutaram', which specifies that the researcher must understand the terminology very clearly. The third stage of 'Tartaram' requires the collection of data and analyzing them critically. The fourth step was named 'Ramyak'. It means that the results of the analysis should be discussed in a seminar with other experts in the field or at least with the teacher. When all the doubts have been cleared and the questions have been answered then one can present his findings in the final form. This fifth step is named as 'Sadmuditam'. (Virupakshananda, 1995)

This was specially prescribed for the students of 'Ayurveda' which emerged as the medical science by about the 6th century BC. The two foundational texts of 'Ayurveda', the 'SusrutaSamihita' and 'CharakSamihita', present cogent accounts of the medical knowledge and surgical practices which were in vogue about 2,500 years ago. The 'SusrutaSamihita' has 184 chapters under its six categories dealing with fundamental postulates, pathology, embryology and anatomy. It describes more than 300 different operations and 121 (20 sharp and 101 accessories) surgical instruments tongs, and forceps. Scalpels, catheters, trocar, syringes, speculums, needles, saws, lances, hooks, scissors and probes. The 'SusrutaSamihita' is regarded as the earliest document that gives a detailed account of rhinoplasty the plastic surgery of nose (Ray & Gupta, Susruta Samhita (A Scientific Synopsis), 1980).

The 'CharakSamihita' consists of 150 chapters under its eight categories including the 'materia medica' with over 600 drug-compositions of plant and even of animal and mineral origins. Both these treatises of Ayurved are good examples of the science communication skills of the ancient people of India.

CONCLUSION

It can be inferred from above findings that ancestors had started communicating science and technology under the pretext of religious sayings, first orally in the form of hymns and verses and later they started writing on plates of copper, on the bark of the 'Bhurja' tree and on the leaves of palm. After that they used paper and also developed impactful prose. From the Vedic times they were keen observers of the sky and were aware of the sun's path, the motion of the moon, eclipses, and solistics and developed lunisolar calendars with methods of intercalation. They tried to explain the maximum of phenomena with the minimum of postulates. There were leading mathematicians, like Aryabhata I (5th century AD), Bhaskar I, Brahmagupta (7th century), Mahavira (9th



century), Aryabhata II, Sridhara and Sripati (10th – 11th century) and Bhaskaracharya-II (12th century). Many Indian mathematicians were also astronomers. They wrote verses to explain various equations and concepts.

All the rules regarding debates and discussions discussed in Charak Samhita may be applied to the communication of science and technology even in modern times. The significance of the concept of Sahridaya, where people come to a common state of compassion to understand the intricacies of the physical world, can't ever be understated. The other two tenets of Indian communication, Sadharnikaran and Rasa Utpati& Rasa swadan emphasize simplification of communication and emotional involvement, which is helpful in widening the reach of science communication. Agriculture of ancient India witnessed the effective use of ploughs and, the cultivation of rice and other new grains. Improvement of technology in agricultural implements produced plows, sickles, spades, iron rods and bond pins of better quality and this technology was passed on from one generation to

the next generation of village carpenters and blacksmiths, proving again their skills in passing on scientific and technological information to the lowest strata of the society. There is quite a lot to learn here also when it comes to development communication. (Randhawa, 1987)

REFERENCES

- 1. Bose, D., Sen, S., & Subbarayappa, B. (1971). A Concise History of Science in india.
- 2. Randhawa, M. S. (1987). *Agriculture in Ancient India*. New Delhi: Publications and Information Division. ICAR.
- 3. Ray, P. C. (1956). *History of Chemistry in Ancient and Medieval India.* Kolkata.
- Ray, P., & Gupta, H. (1980). Susruta Samhita (A Scientific Synopsis). New Delhi: Indian National Science Academy.
- Ray, P., & Gupta, H. (1985). Caraka Samhita (A Scientific Synopsis). New Delhi: Indian National Science Academy.
- 6. Sharma, R. (2002). Communication of Science and Technology in Ancient India. *Indian Journal of Science Communication*.
- 7. Virupakshananda, S. (1995). Samkhya Karika of Isvara Krsna.
- 8. Yadav, J. (1986). Communication Theory from Eastern and Western Perspective. New York: American Press.

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