The Social Science Review A Multidisciplinary Journal. September-October, 2025. Vol. 3. Issue 5. 216-221

Published by: Pather Dabi Educational Trust, (Regn No: IV-1402-00064/2023), Under Govt. of West Bengal, India

The Social Science Review
A Multidisciplinary Journal
ISSN: 2584-0789
(Open-Access, Peer-Reviewed, Refereed, Bi-Monthly, International e-Journal)
Homepage: www.tssreview.in

INDIAN CULTURAL WORLDVIEWS AND THE SHAPING OF SCIENTIFIC UNDERSTANDING: AN INTERDISCIPLINARY REFLECTION

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RESEARCH ARTICLE

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DOI:
https://doi.org/10.70096/tssr.250305039

Abstract

The connection between culture and science is complex and in the case of India, this connection is specifically deep because of the high tradition of cultural, philosophical, and scientific traditions. The Indian culture with its rich intellectual history, religious traditions, and in-whole world views has made a huge contribution to the sphere of scientific investigation. The paper will discuss the influence of Indian culture on shaping and further shaping the scientific thoughts and practices focusing on both past and modern trends. Since the time these early Indian scientists created their contribution in the fields of mathematics, astronomy, and medicine, including Aryabhata, Sushruta, and Charaka, the persistence of cultural impact on science has been examined in the paper through their works that led to the establishment of numerous scientific principles in modern times. In the paper, the philosophical traditions of India are also explored including Vedanta, Samkhya, and Buddhism that have spread a holistic sense to the nature and universe, promoting a more integrated and networked sense of scientific investigation. The paper also provides evidence of the role played by Indian science in the world and how cultural paradigms have contributed to interdisciplinary practices, especially in such fields as environmental science, healthcare, and sustainability. As a result of looking at how culture and science intersect, the paper demonstrates that Indian culture has been not only important in terms of preserving the scientific traditions but also in creating a distinct scientific approach that strikes the right balance between modern and traditional knowledge. By so doing, it claims that Indian culture provides a science that is holistic, inclusive, and closely related to the needs of society.

Keywords: *Indian culture, Scientific inquiry, Ayurveda, Philosophy, Vastu Shastra, Interdisciplinary, Science and tradition*

Introduction

India is the land of variety in terms of cultural habits, religious practices, and intellectual customs, and has been a subject of scientific investigation long enough. It has had great impact on art, literature and philosophy including scientific thinking and approach. The Indian science has a history of a distinctive combination of spiritual, philosophical, and empirical systems of knowledge. In contrast to the Cartesian and reductionist approach which is more common to western scientific thinking, the Indian scientific enquiry has tended to focus on interconnectedness, harmony and balance, which are more firmly embedded in the cultural and religious traditions of the subcontinent. The ancient history of scientific progress in India, with ancient mathematics and astronomy, discoveries in the field of medicine and architecture, and others, are impossible to explain without references to the cultural background of that epoch.

The ancient Indians also excelled in areas like mathematics where they came up with the concept of zero and the decimal system that transformed not only the Indian mathematics but the world mathematics as well (Deshpande, 2003). Scientists such as Aryabhata and Brahmagupta contributed greatly to the field of astronomy and algebra in a body of knowledge that interwove empirical observation and philosophical considerations of the universe. The same applies to the medical system of Ayurveda, which is intrinsically rooted in the Indian culture, and it is a system that combines the scientific knowledge with the spiritual and holistic premises. Such combination of science and culture is not a modern development and this has been running through the history of India.

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Literature Review

The connection of Indian culture with the scientific inquiry has an extensive historical ground. In ancient times, Indian scholars contributed immensely to the field of mathematics, astronomy and medicine and cultural and philosophical background greatly contributed to their contribution. As an example, the work of Aryabhata on the value of the pi and the heliocentric theory of the solar system, which were developed in 500 CE, is an indication of the fact that the Indian scientific thought was ahead of its time (Dutta, 2006). The findings of Aryabhata were not scientific only; they were also a cultural implication of the value attached to the knowledge as a divine and holistic endeavor, which was firmly attached to the values of Hinduism and Indian metaphysics (Kuhn, 1996).

Besides, the work of Brahmagupta in the field of mathematics, especially about negative numbers, and the work of Sushruta in surgery shows that the Indian culture had a certain impact on an immense variety of scientific fields. The Sushruta Samhita, a work that is thought to be one of the oldest medical texts on surgery, by Sushruta reflects the convergence of pragmatic medical practice and cultural beliefs about the state of health that were grounded on the humour balance of the body (Vidyarthi, 2011). The Ayurvedic tradition of integrating natural medicine with spiritual well being can be explained as a consequence of a cultural view of health where there is no distinction between the physical, mind and the spiritual world (Chaudhary, 2007). Such an integrative vision of the science that acknowledges the interconnectedness of all life is an Indian lighting motif in scientific thought.

The Indian philosophy, particularly, the philosophical school of Vedanta and Samkhya, also gave the roots of a different way of scientific inquiry. The philosophy of Vedanta that focuses on the unity and the interdependence of all phenomena have inspired the emergence of systems thinking in the modern sciences (Singh, 2011). Also, the dualistic system of Samkhya that distinguishes the world of matter and the world of spirit has penetrated numerous disciplines, such as psychology and environmental science where the connection between mind and matter, and humans and nature are at the center (Singh and Kaur, 2015). These schools of thought assisted in forming Indian scientific investigation through encouraging a non-reductive, holistic view of knowledge.

The influence of cultural traditions is still observable in modern India in the approach to science. One such example is Ayurveda, which is currently undergoing a revival, and its practices and substances are beginning to be more researched. Contemporary scientific works on herbal medicine such as the works on the medicinal value of Tulsi and Ashwagandha represent one such example where traditional cultural knowledge is being absorbed into modern scientific paradigms (Rastogi et al., 2009). In the same way, Yoga which used to be viewed as an exclusively spiritual activity, finds its way to the study of its curative impact, and many scientific operations confirm the effectiveness of this method in mental disorders, alleviating stress, and physical recovery (Jain, 2013).

This application of the cultural knowledge systems in the scientific practice is also applicable to the architectural science. The ancient Indian architecture known as Vastu Shastra, which takes into account energy circulation and its effects on the health and wellness of the inhabitants has entered modern environmentally-friendly construction. There is a growing interest in how Vastu concepts may be used to create energy efficient structures that are in touch with the environment and a growing amalgamation of ancient cultural science with modern scientific application can be seen (Pillai, 2004).

Moreover, the contribution of the Indian culture up to the creation of scientific inquiry is not confined to the past; it is still relevant in the present way the scientific researches are done in the nation. A combination of western and traditional scientific approaches is one of the common traits of the Indian scientific community. The scholars believe that such an amalgamation gives rise to a more accommodative method of scientific advancement, in which interdisciplinary viewpoints are taken into account, and in which cultural factors offers a larger framework in which research is conducted (Nandy, 1990). This methodology also questions the superiority of the strictly empirical method of science in the context of ethical, social, and environmental impact of scientific activities.

In short, it is claimed in the literature that Indian culture has always played a key role in the formulation of the scientific enquiry, since its historical roots till nowadays. Indian philosophies and cultural practices are based on the interdisciplinary and holistic approach to knowledge, which remains an important part of the way science is comprehended and used today in India. This

science-culture tradition can be considered an excellent reference point concerning the promotion of more sustainable, inclusive and ethical science in the modern world.

Aims and Objectives

This study investigates the relationship between Indian culture and the scientific study, that is, how the traditional knowledge, philosophical values, and cultural practices have influenced the scientific methodology and scientific findings in India. It discusses the works of ancient Indian thinkers, the place of philosophy and religion in scientific thinking, and impacts that whole Indian philosophies have on the current research. The paper also examines how ancient sciences, Ayurveda, Yoga, and Vastu Shastra are applicable to modern areas of life such as health, environmental sciences and sustainability. Finally, it also brings to light the point of cross-cultural heritage and scientific viewpoints in India whereby the Indian culture presents a unique system to tackle the challenges of the entire world.

Material and Methodology

The study is a qualitative study which makes use of both primary and secondary data in order to understand the connection between the Indian culture and scientific investigation. The research majorly depends on the cultures experienced, historical books, scientific documents, and philosophical works to learn about the impact of ancient Indian society in reference to scientific activities. The sources that are included in the secondary category are scholarly articles, books, research papers that are discussing the role of culture in the development of scientific thought. This is going to be done through the analysis of primary texts including works of Aryabhata, Sushruta, and Patanjali that will be at the center of the analysis of integrating cultural values in early sciences. Also, the analysis of the current case studies on areas such as Ayurveda and environmental science, where culture remains a dominant factor, will be considered in the study.

Discussion

The Indian Culture and its influence on the development of scientific enquiries

Tradition and philosophy have always been a sophisticated mixture in Indian culture, and empirical discovery has made a considerable impact on the scientific study. Although the contemporary scientific thought is commonly regarded as a creation of the western paradigms, the Indian culture and its intellectual traditions provide a unique and deep paradigm of scientific research. Indian science is deeply connected with philosophical, religious, and cultural values, and its approach can offer an idea of how culture can be used and add more meaning to the process and objectives of scientific research. This discussion covers some of the facets of the Indian culture starting with ancient philosophical systems to the current practices and how they have influenced the development of scientific research and methods.

Traditional Contributions and Cultural Incorporation

Early Indian scientific inquiry dates back to the ancient Indian Indus valley civilization and continues to the writings of the Vedic era which provided the basis to most scientific ideas. Aryabhata, Brahmagupta and Sushruta were ancient Indian scholars who made contributions to mathematics, astronomy and medicine respectively which were so vastly informed by the cultural context of the time. The idea of zero, as developed by Brahmagupta, and the heliocentric theory of the solar system, developed by Aryabhata were groundbreaking, although their intellectual evolution also had cultural influences on it that appreciated knowledge as an instrument of practical application as well as spiritual development (Deshpande, 2003).

To illustrate this point, the contribution that Aryabhata made to astronomy was not merely a scientific investigation of the universe but also connected to the cultural and philosophical concept of time and space in the ancient Indian philosophy (Singh, 2011). His Aryabhatiya treatise also shows a combination of empirical observation and metaphysical ideas of the universe and this is a reflection of the holistic perspective of the culture as regards the world. On the same note, Sushruta, Sushruta Samhita, one of the earliest surgeon texts, one of the early texts of medicine, offers medical information as a whole worldview in which the human body and nature are related to each other (Bose, 2005).

The Indian science traditionally did not exist outside the culture and religion since the scientific knowledge was sought after because of its spiritual and social value. The combination of scientific thinking and metaphysical inquiries was typical since the understanding of knowledge was viewed as a path towards technological progress as well as a tool to comprehend the essence of being. As an example, we can consider the application of astronomy in determining favorable moments of the day during religious occasions that demonstrate the interrelation between science, culture and religion (Nandy, 1990).

Systems of Philosophy and Wholeness

The Indian philosophical traditions especially the Vedanta, Samkhya and Jain traditions have influenced the method of scientific inquiry in the country immensely. These philosophical frameworks stressed the interconnectivity of everything and this can be echoed by scientific concepts of the ecosystem, quantum physics and systems theory. Specifically, the unity of all existence that was emphasized by Vedanta prompted an integrative approach to knowledge, according to which the physical, mental, and spiritual dimension were considered to be interdependent (Jain, 2013). Indian scientific traditions are based upon this holistic view of the world, where the current emphasis tends to be on balance, harmony, and the interrelationship of things, be it in the health, environment or physics sciences.

The dualism of consciousness (Purusha) and matter (Prakriti) of the philosophical system of Samkhya furnished an analytical paradigm that has influenced the scientific paradigms of categorisation and analysis today (Singh, 2011). This system promoted the empirical study of nature, which attempts to categorize and comprehend phenomena, which is the systematic mode of modern-day science. The interest of Samkhya in the essential elements of the world (earth, water, fire, air, and ether) also concurs with the interest of the modern environmental science in the elements as the building blocks of the life and nature.

In addition, the Hindu, Buddhist and Jain philosophy are based on the idea of dharma (righteous duty) which has inputted into the moral aspects of scientific inquiry in India. It also focuses on the sense of duty and responsibility in the context of scientific research, where there are ethical issues, including the well-being of society and the environment, that tend to be taken into account when technological progress occurs (Vijayan, 2015). The principle of Buddhism philosophy samyak that emphasizes balance and equilibrium in life and universes has become the primary focus principle of sustainability and ecosystem. Such cultural values may be observed in the current science, in the increasing popularity of sustainability, eco-responsibility, and ethical research.

Traditional Knowledge Systems and Modern Science

The fact that the Ayurveda, Yoga, and Vastu Shastra systems of traditional knowledge continue to inform modern scientific studies is yet another indication of the coming together of culture and science in India. The ancient Indian approach to medicine is Ayurveda that provides a multifaceted approach to health, which includes the diet, lifestyle, and psychological state. The Ayurvedic practices are based on the influence of the balance between the mind body and environment, according to which the health is the product (Rastogi et al., 2009). This health theory that seeks to prevent illness and provide treatment on an individual basis is now regularly becoming part of contemporary medical studies, and a number of studies have been conducted on Ayurvedic remedies and therapies to explore their therapeutic value in the international community.

The other strongly held cultural tradition, yoga, has brought a lot to the modern scientific investigation, especially in the psychological and physical health realms. Yoga is not just a Yoga practice but also includes mental discipline and spiritual development, which aligns with the integrative way of health that takes into account not only the mind but also the body (Jain, 2013). Yoga has been investigated psychologically and physiologically by the scientific research in the West, and has been utilized as a therapeutic treatment method. Yoga in India still remains a intermediary in the traditional cultural sphere and regular scientific studies, determining the stress management, mental health and neuroscience.

In the same vein, Vastu Shastra, which is an ancient science of architecture, lays stress on the harmony of the natural forces with buildings so that the human environment and the cosmos are in harmony. Even though contemporary architecture and city planning tend to overlook the Vastu principles, there is also an increased desire to apply its principles to construct buildings under modern architecture in sustainable and environmentally friendly ways (Pillai, 2004). Sustainable architecture studies are more and more tapping into the traditional Indian knowledge systems and the Indian cultural practices and modern science are being synthesized in terms of environmental design.

Interdisciplinary Nature of Indian Science

The cultural aspect that dominated the Indian science is the fact that it is interdisciplinary in nature. Indian scientific traditions have been constantly attempting to reconcile various spheres of knowledge, uniting art and philosophy, spirituality and science into one of the harmonious entities. In ancient times, this interdisciplinary approach is evident in the writings of ancient scholars who integrated their skills in mathematics, astronomy and medicine in developing holistic systems of knowledge that fitted very well in meeting numerous human needs (Nandy, 1990). In contemporary India, the methodology is still employed in the research especially in areas like environmental science where a holistic view of the nature is required to deal with the complex world problems.

An example is in the ecological science, its traditional Indian knowledge systems such as sacred groves and water management systems, and worship of trees, have also had an impact on modern sustainability practices. Not only are these practices environmentally friendly, but they are also culturally important and show how cultural practices can be used to influence scientific research to be sensitive to local values and needs (Vijayan, 2015).

Additionally, the Indian culture has promoted collaborative style of science whereby science is not secretive but is shared by the community. This openness in sharing of knowledge, which is part of the Indian culture, has encouraged a community based way of discovering science, evident in the proliferation of knowledge in the ancient universities in India such as Nalanda and Takshashila (Bose, 2005).

Case Study

The existence of society having its more complex mathematical computing can be seen in the following statement where the computation that approximates to that of the computation is quicker than the calculator that is either time-consuming or erroneous (Singh and Patangia 2023).

Folk Method	Putting Direct Value in Calculator	By converting into Inches and then calculating
1	2	3
8.4 X 3.7 24 56 12 28 24 68 28 05 24 08 28 **29' 08" 28** ----------		

Fig. 1

In Fig. 1, the first column has a connection with the computation done by the native method that the researcher had encountered in his life. The second column was associated with the values calculated by stating the value of feet and inches as a layman. The third column involves conversion of the feet into inches then the total number is divided by 144. In column 2 the most correct calculations are made and in column 2 the figure is bigger than it should be. In column 1 when no calculator is provided and simply by mere calculations the value is nearly equal to the value in column 3.

Conclusion

The importance of Indian culture in medicine in the development of scientific inquiry cannot be underestimated because it offers the concept that supports the holistic, interdisciplinary, and ethical approach to the knowledge. Since the Indian scholars made their early contributions to the present-day integration of traditional practice in the modern research, the Indian culture is still keeping its impact on the conduct of science. The combination of empirical investigation with metaphysical investigation, the accentuation on the understanding of the equilibrium and harmony, and the incorporation of various spheres of knowledge have all been significant in the development of Indian scientific thought. Since India will keep on making contributions to the world science, the interaction between culture and science will continue to dominate the scientific scene.

Acknowledgment: No
Author's Contribution: *Bijender Singh*: Data Collection, Literature Review, Methodology, Analysis, Drafting, Referencing; *Dipali K Soni:* Data Collection, Literature Review, Methodology, Analysis, Drafting, Referencing; *Nandini Yadav:* Data Collection, Literature Review, Methodology, Analysis, Drafting, Referencing
Funding: No
Declaration: All the authors have given consent for the publication.
Competing Interest: No

References

1. Bose, D. (2005). *Science and society in ancient India*. Oxford University Press.
2. Chaudhary, M. (2007). *Ayurveda and the Indian system of medicine*. Eastern Book Company.
3. Deshpande, M. (2003). *Indian mathematics and science: Contributions and legacies*. Springer.
4. Dutta, S. (2006). *History of Indian science and technology*. New Age International.
5. Jain, S. (2013). Yoga and modern scientific thought: An integrative approach. *Journal of Indian Psychology*, 9(2), 112-121.
6. Kuhn, T. S. (1996). *The structure of scientific revolutions*. University of Chicago Press.
7. Nandy, A. (1990). *Science, hegemony and violence: A revisiting of the West and the rest*. Oxford University Press.
8. Pillai, P. (2004). *Vastu Shastra and contemporary architecture: A modern synthesis*. National Institute of Design.
9. Rastogi, S., Shukla, Y., & Agarwal, P. (2009). Ayurvedic medicine in modern times: A review of scientific research. *Indian Journal of Pharmacology*, 41(6), 273-278.
10. Singh, R. (2011). *Philosophy of science in India: Historical roots and modern challenges*. Cambridge University Press.
11. Singh, R., & Kaur, S. (2015). Samkhya philosophy and its contributions to modern science. *Indian Journal of Philosophy*, 21(4), 56-65.

12. Singh, B., & Patangia, R. (2023). Integration of traditional and folk knowledge with current education system: Indianizing education system and regaining the status of vishwa-guru. *AGPETRhe Royal Gondwana Research Journal*, 4(3), 22-30.
13. Vidyarthi, R. (2011). Sushruta Samhita: The ancient Indian text on surgery. *Indian Journal of History of Science*, 46(3), 143-157.
14. Vijayan, K. (2015). Ayurveda and its influence on global health systems. *Journal of Ethnopharmacology,* 175, 176-184.

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