International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Tenets of Indian Knowledge Systems: Epistemic Foundations and Civilizational Legacy

Ramya Kallur K V[1], Shrinidhi M[2]

[1]Assistant Professor, Department of English, Seshadripuram College Tumakuru, Tumakuru, Karnataka, India.
[2]Assistant Professor, Department of Commerce & Management, Seshadripuram College Tumakuru, Tumakuru, Karnataka, India.

Abstract:
The Indian subcontinent represents a wide spectrum of knowledge systems and cultural practices that have gone hand-in-hand with each other. India emerged as a distinctive civilization whose very foundation lies deep in the ancient philosophical vision of 'Vasudhaiva Kutumbakam' - where the whole world constitutes but as one single family. This created ideals of unity, tolerance, and respect for freedom and knowledge. The history of human society is always an interesting subject. It spans from primitive tribal communities to highly developed civilizations. Whether viewed from the point of view of material development, intellectual growth, or spiritual progress history exhibits the ideals pursued by humans throughout time. Thus, the history of any civilization tells the story of the ever-changing ideals of humanity and its ongoing struggle to realize those ideals. India's traditional systems of knowledge have developed over ages and through various cultures. These systems are known as aboriginal or native systems rooted in diverse populations, food habits, clothing, languages, lifestyles, and health care practices.
India's traditional systems and culture have been proved and accepted by a number of science and research organizations around the world. Those systems and practices are gaining popularity due to the available ancient and modern expertise, innovations, benefits and beliefs related to traditional methods. Rishis like Varahamihira, Aryabhata, Vagbhata, Charaka, and Sushruta played crucial roles in further developing knowledge and placing India at the forefront of scientific developments. Since ancient times, India has remained one of the finest nations providing a range of effective resources like multivitamins, minerals, and other essential supplements that help protect and strengthen the immune response.
In this paper we have tried to:

1. Summarize the nature and characteristics of traditional Indian knowledge systems, drawing particular examples from some branches of Science, Technology, Ayurveda, Astronomy, Mathematical Science, Yoga, and Therapies.
2. Spell out some scientific ways in which the traditional Indian knowledge system differs from the present counterpart.
3. Reflect on the possibilities of interlinkages & co-operation between these varying traditions, as they take place today and in terms of future possibilities.

In the paper, ancient Indian knowledge and culture have been reconceived in a light which is very important to create human values.

Keywords: Indian Knowledge System, Philosophy, Science, Varāhamihira, Rishis, Paradigm

1.1 Introduction

The philosophical idea of 'Vasudhaiva Kutumbakam', which envisioned the world as a single interlinked family (महोपनिषद्, VI.71) gives a profound form to the evolving Indian Society: वसुधैव कुटुम्बकम् ||. Such a universal approach brought about a level of pluralism, tolerance and easy co-existence of knowledge forms that allowed India to remain a driving force in international intellectual developments. The Indian Knowledge Systems (IKS) as enshrined in the form of the Vedas, the Upanishads, as well as the classical texts and the ever-unfolding traditions are a body of collective epistemological knowledge and experience over a span of thousands of years through the lived experiences of numerous groups and individuals (Hiriyanna, 1993; Subramanian, 2020). Sometimes designated as 'Indigenous knowledge' or 'Traditional knowledge' the IKS, an essentially practice-based body and range of practical knowledge, would include food habits, dress patterns, language, social structures, medicine, and the principles and practices of eco-sustainability.

1.2 Difference between Knowledge & Wisdom

If we revert to the pages of history, saints & sages have taught us that on the path to spirituality, it consists of 'Wisdom'. As T. S. Eliot observes the Four Quartets in his poem 'Little Gilding'.

We shall not cease from exploration
And the end of all our exploring,
Will be to arrive where we started
And know the place for the first time.

As such, 'seeing anything clearly' is 'wisdom' (anubhava). Yet we keep seeing everything. Any path is but a process of our own unique life experience from moment to moment. If we question what is Wisdom? It can be defined as, "an unfolding understanding & corresponding emotional maturity discovered through living. Any information is always known but Wisdom is embodied & it is lived". Whereas, knowledge is 'an information, understanding & skill that has been gained through learning or experience. It is the state of knowing about a particular fact or situation'.

1.3 Meaning & Definition

The 'Traditional Knowledge' is apprehended by "the knowledge possessed by the aboriginal or native people and communities in one or more societies and in one or more pattern with, but not reserved to art, dance & music, medicines & folk remedies, folk culture, biodiversity, knowledge & protection of plant varieties, handicrafts, designs, literature and many more." The word 'Tradition' is 'hereditary', which is handed down from generation to generation and the word 'Knowledge' is 'useful information'. Therefore, "it is that useful information which passes from one generation to another" (UNESCO, 2022; Government of India, 2020).

1.4 Nature & Characteristics of Traditional Indian Knowledge System

Traditional knowledge has a very significant place regarding preservation and sustenance of diversity. Indian civilization has always laid an immense importance on 'knowledge'. It has experienced its incredibly large number of intellectual texts, the world's biggest manuscript collections & its thinkers & schools in several areas of knowledge. In the Bhagavad Gita (4.37–38) Lord Krishna says to Arjuna that, 'Knowledge is the great purifier & liberator of the self'. It has also been noted in one of the Punjab University lectures as 'India's knowledge tradition is ancient and uninterrupted like a flow of river ganga, from the vedas (Upanishadas) to Sri Aurobindo, knowledge or jnana has been at the center of all rational & speculative inquiry in India' (Radhakrishnan, 1951). Traditional Knowledge is a central component for

the daily life of millions of people. It constitutes the ancient knowledge of humanity, the deepest layer on which our science & culture has developed, the local solutions that have allowed the creation & management of ecosystems & cultural landscape on the entire surface of the planet. So, 'Traditional knowledge' is learnt through continuous observation, experience & practice. It is the inseparable part of communal & cultural life of its holders & it is usually associated with the biological resources where it is not limited to any specific field of technology or of the arts.

2.1 Traditional Knowledge System v/s Present Counterparts

The traditional Indian Knowledge Systems differs from the modern systems more or less in terms of holistic epistemology and worldview which seeks knowledge not merely for its use and usefulness but also for compatibility, morality and well-being. These systems are based on various pramāṇas (Hiriyanna, 1993), that is the perception, inference, authoritative testimony and experience reflected in systems like Ayurveda, Yoga, Jyotiśa mathematical and scientific systems. On the other hand, modern systems tend to be objective and experimental (Subramanian, 2020). They are applicable to only specific fields such as physics, chemistry, and biology. Much as this has led to phenomenal progress in matters relating to technology and scientific discoveries, they are apt to ignore wisdom, nature, and morality. The traditional Indian systems are oriented more to sustainability, preventive medicine and moral-based education as applicable only through innovation and its transmission via 'guru- śiṣya paramparā' system. In fact, these two systems complement one another and have great potential in adding together to counter effectively the present challenge thrown up by global issues relating to healthcare, education, sustainability and human values.

2.2 Contributions of Indian Knowledge Systems: Legacy, Contemporary Interfaces and Future Scope

The contributions of the Indian Knowledge System represent a continuing civilizational heritage, linking the past and the present and offering enormous possibilities for the future. Bhārata has been a 'knowledge society' based on openness, inclusivity and intellectual humility from time immemorial. Thus goes the Vedic saying, आ नो भद्राः क्रतवो यन्तु विश्वतः । ā no bhadrāḥ kratavo yantu viśvataḥ. (Rg. Veda 1.89.1) meaning 'Let noble thoughts come to us from all directions'. During colonial rule however, Indian modes of knowing were systematically devalued. Knowledge had to be validated by the West. In consequence, many indigenous ideas have been appropriated, reprocessed through Western blinkers and then sold back as validated knowledge. In the face of this historical neglect, Sanskrit scientific literature is still voluminous and diverse ranging from astronomy, mathematics and medicine to metallurgy and zoology including alchemy. As Friedrich Creuzer places it, 'India can rightly claim to be one of the earliest centers of human civilization and a significant source of knowledge that supported the ancient world'. Indian scientific thought rooted in vedic and post-vedic literature is remarkable for its observational precision and profound concepts. Texts such as the Pañcavimša Brāhmaṇa and the Vedas refer to an early understanding of the cosmic distances, the nature of time, the movements of stellar bodies and the events in nature. The Indian concept of time is cyclical and eternal expounded through the theory of the four yugas Krta, Tretä, Dvāpara and Kali. Here, continuity and regeneration hold the key. Astronomical insights including heliocentric theories, the motions of the moon, eclipses and gravity, can be seen in the works of Aryabhata, Brāhmagupta and Bhäskarācārya among scholars. These contributions made calendrical sense not only within the country but also influenced scientific thinking elsewhere in the world as translations of these works spread into Arabic and Latin.

In ancient times, India contributed much to the field of mathematics in the field of algebra, arithmetic, geometry, and trigonometry. Quadratic equations, irrational numbers, permutations-combinations-the least common multiple, and the value of pi-all were studied in India centuries before they appeared in Europe. Geometric knowledge includes what is now known as the 'Pythagorean theorem' well in advance of Pythagoras. The Sulba Sütras are truly sophisticated geometry. One can also consider mathematical innovations such as Meru Prastāra known more famously now as 'Pascal's Triangle' or 'Madhava's infinite series for pi', both a testament to India's analytic powers. Physics and optics likewise developed in ancient India as a search into motion, elasticity, and light with logical reasoning and analogy. Varahamihira's remarks on lenses and rainbows among others stand out.

The applied sciences in India, including civil engineering, architecture, chemistry, and medicine, lay strong emphasis on human welfare and sustainability. Vedic hymns and writings refer to soil testing, brick-making, construction methods and town planning. Temple architecture and Västu-based urban designs are manifestations of how science and beauty blend. Chemistry in ancient India developed primarily to support healthcare, metallurgy, and medicine. The prevalent techniques of the time included distillation, alloy formation, and drug preparation. This tradition of Ayurveda, with texts including the Atharva Veda and systematized by scholars including Cäraka, Suśruta, and Vägbhaṭa, evolved into lasting practices in surgery, internal medicine, pediatrics and gynecology. Such contributions ensure that Indian Knowledge Systems are not mere relics of the past but active and interlinked traditions relating to modern science with a high potential for relevance in today's world as well as for future innovation.

3.1 Methodology

The study adopts a qualitative, descriptive and interpretative research method. Primary sources would consist of selected Vedic, post-Vedic and classical Sanskrit texts related to IKS. These would include the Vedas, Brāhmaṇas, Śulba Sūtras and important scientific works of Āryabhaṭa, Varāhamihira, Brahmagupta, Cāraka and Suśruta. Secondary sources would comprise scholarly books, peer-reviewed journal articles, translated texts and recent related research on IKS and its scientific relevance. A comparative analytic approach provides insights into traditional knowledge systems in relation to modern scientific systems. We use textual analysis, conceptual interpretation and thematic categorization to identify keynote principles, similar methods and therefore points of connection within the traditional and modern frameworks.

3.2 Review of Literature

Discussion on IKS has evolved from early orientalist and philosophical interpretations to interdisciplinary and comparative frameworks. Early thinkers like Max Muller, S. Radhakrishnan stressed the spiritual and metaphysical dimensions of Indian thought and dealt with Vedas, Upaniṣads and the classical schools of philosophy. Although, these studies were indeed pioneering in making Indian philosophy better known to the world, they decidedly separated Indian knowledge from its scientific, technological and socio-cultural applications. Later contributions by Indian philosophers and historians of science, notably M. Hiriyanna, D. M. Bose, S. N. Sen and B. V Subbarayappa tried to indicate the holistic and practical dimension of Indian Knowledge. Hiriyanna's writings reflect the unity of knowledge, ethics and aesthetic experience-anubhava. The history of science has documented India's major contributions to the development of astronomy, mathematics, medicine and metallurgy through scholars like Āryabhaṭa, Varāhamihira, Suśruta and Cāraka. The studies discussed above, contradict the assumption that the ancient Indian science was only speculative and biocentric in its conceptions. They demonstrate that it is empirical and systematic

in its methods. Recent works deal with the IKS in connection with some contemporary concerns, namely sustainability, health, value education and ecological balance. Interdisciplinary research increasingly validates traditional Indian practices such as Ayurveda and Yoga using the methods of modern science. This brings forward their relevance to preventive health care and wellness. Yet, researchers mentioned the lacuna in methodology and institutions involved in integrating IKS with the modern system of knowledge. Current research thus advocates a judicious and thoughtful approach representing the IKS not as a static tradition but as dynamic, complementary ways of understanding that can enhance the contemporary knowledge base and help to address the global challenges.

3.3 Gap in Research

The literature on IKS is mostly focused on philosophical interpretations or identifies certain scientific and technological achievements, often as relics of the past or as a part of cultural curiosities. This approach separates IKS into rigidly compartmentalized areas and loses sight of its interrelated structure and overall world view. Thus, Indian Knowledge Systems are seldom studied as a 'unified knowledge framework' which could be compared with or added to modern scientific theories. There is little academic discussion regarding the methodology, processes of validation and practical use of traditional knowledge today. In the absence of clear comparative models, methods across disciplines and empirical studies, the IKS cannot be recognized as a dynamic and constantly evolving system. This interval in studies brings into sharp focus the requirement for linking traditional wisdom to contemporary science through strong evidence. This effort will help IKS emerge as a living tradition of continuing relevance in the present and with a promising future.

3.4 Reviving Indian Knowledge Systems

Reviving IKS in present-day India will ensure continuity of culture, unity amongst the people and harmony in the perception of religion. For more than three thousand years, India has nurtured a pluralistic culture that embraced various religions, philosophies, and traditions. Whereas religions are the causes of conflict in many societies. Indian history presents a healthy model for co-existence and conservation. Reconnecting ourselves with IKS has the potential to contribute to national integration and international efforts towards peace. The traditional knowledge systems of India have been affiliated mainly with oral traditions, stories and the practices of a particular community. According to UNESCO (2022), they represented a core part of the social, cultural, and economic life of local communities. For a long period of time, however, particularly through the influence of Western scientific thought these systems were perceived as 'superstition' or 'unscientific'. This trend has changed over the last few decades. Indigenous knowledge has lately been increasingly acknowledged and promoted even by the international scientific community due to its practical insights into ethical foundations and benefits. The systems known as IKS have developed over centuries to overcome environmental and social challenges and include sustainable technologies, health practices and value-based wisdom. These approaches are culturally rooted yet scientifically grounded which includes their revival, documentation and application, in order to empower local communities and get an advanced solution to the modern challenges (Government of India 2020; NEP, 2020)

4.1 Scope for Future Work

This review therefore highlights key future opportunities for integration of IKS with modern education, science and policy frameworks through various routes, as discussed in Nayak & Dash (2021) and Sharma & Singh (2023). Future research may focus on the validation of traditional practices against modern

scientific methods to meet the standards of quality and relevance. Embedding IKS perspectives into the curriculum at various levels and systematically recording and preserving classical texts could enrich academic engagement and access. Furthermore, there is enormous potential to use IKS principles in addressing the challenges of the present time with regard to sustainable development, holistic healthcare, environmental ethics and value-based education. A systematic research methodology involving interfacing of traditional wisdom with modern knowledge could further enhance the intellectual conversation at the global level. In doing so, this dialogue has the potential to make the Indian Knowledge Systems a vibrant and responsive tradition offering sustained and humane solutions for the needs of today and tomorrow.

4.2. Conclusion

The Traditional Indian Knowledge Systems have their culmination in the form of oral traditions that have been in practice for centuries. They appear in the form of legends, myths, and community practices. This rich heritage underlines the immediate need to document them properly, provide them legal protection and patent them on fair terms and conditions. At the same time, we must ward off its overuse and abuse by companies. There is a need for method formulations that will ensure these knowledge systems benefit the local communities who have preserved them and practiced them over generations. Initiatives such as the sustainable cultivation of medicinal plants and herbs-especially in the ecologically rich areas of the Himalayan foothills can go a long way in creating jobs and contributing much to regional economic growth.

Science and technology, though improved so much in today's world, often falter in handling the emotional, ethical and spiritual dimensions of human life. Ancient Indian wisdom traditions offer a large number of nearly forgotten approaches that are yet relevant today for emotional management, character building and life based on core values. The engagement with Indian Knowledge Systems goes beyond religion and falls within the frame of a new educational vision that relates inner values and intellectual development. Since, education has moved out of monastic centres to modern Institutions today's education should bring about a proper balancing of material progress with personality growth. As Swami Vivekananda quotes, "Anything that is of Indian origin, first accept and then question; anything that is of Western origin, first question and then accept". Keeping this in mind, it is now high time to reflect upon, contemplate and receive India's knowledge systems as a living tradition to enrich our national identity and contribute to the global deliberations.

References

1. Āryabhaṭa. (1976). Āryabhaṭīya (K. S. Shukla & K. V. Sarma, Trans.). Indian National Science Academy. (pp. 1–45)
2. Bose, D. M., Sen, S. N., & Subbarayappa, B. V. (1971). A concise history of science in India. Indian National Science Academy. (pp. 45–112, 156–210)
3. Eliot, T. S. (1943). Four quartets. Harcourt, Brace & Company. (pp. 39–41)
4. Hiriyanna, M. (1993). The essentials of Indian philosophy. Motilal Banarsidass. (pp. 1–22, 312–329)
5. Hiriyanna, M. (2000). Art experience. Motilal Banarsidass. (pp. 3–18, 67–92)
6. Mahopaniṣad. (1985). In S. Radhakrishnan (Trans.), The principal Upaniṣads (p. 780). HarperCollins.
7. Radhakrishnan, S. (1951). Indian philosophy (Vols. 1–2). George Allen & Unwin. Vol. 1 (pp. 22–48); Vol. 2 (pp. 412–430) Ṛg Veda. (1983). Ṛgveda Saṃhitā (R. T. H. Griffith, Trans.). Motilal Banarsidass. (1.89.1, p. 78)

8. Śulba Sūtras. (1979). The Śulba Sūtras (S. N. Sen & A. K. Bag, Trans.). Indian National Science Academy. (pp. 25–37)
9. Suśruta. (1999). Suśruta Saṃhitā (K. K. Bhishagratna, Trans.). Chowkhamba Sanskrit Series. Vol. 1 (pp. 1–56); Vol. 2 (pp. 287–310)
10. Vivekananda, Swami. (2006). The complete works of Swami Vivekananda (Vols. 1–8). Advaita Ashrama. (Vol. 6, pp. 108–110)
11. Government of India. (2020). Indian knowledge systems (IKS): A policy perspective. Ministry of Education, Government of India.
12. Nayak, B. K., & Dash, S. (2021). Indian knowledge systems and sustainable development: A civilizational perspective. Journal of Indian Philosophy, 49(4), 617–635.
13. https://doi.org/10.1007/s10781-021-09472-9
14. Singh, S. K., Rajoria, K., & Sharma, S. (2022). Principles of Rajayakshma management for COVID-19. Journal of Ayurveda and Integrative Medicine, 13(1), Article 100349. https://doi.org/10.1016/j.jaim.2020.08.002
15. Subramanian, R. (2020). Indian knowledge systems: Epistemology, pedagogy and relevance. Journal of Dharma Studies, 3(2), 123–140. https://doi.org/10.1007/s42240-020-00061-3
16. UNESCO. (2022). Indigenous knowledge and sustainable development. UNESCO Publishing.