# SCIENCES



Ecology

Mathematics

Architecture

Cognitive Tools

Āyurveda

Astronomy

Yōga

Jyōtiṣa

## INDIAN KNOWLEDGE SYSTEMS

*based on*

**June 20 Friday & 21 Saturday, 2025**

*Seminar Organized by*

**THE ADYAR LIBRARY AND RESEARCH CENTRE**

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Based on Indian Knowledge Systems

(June 20 & 21, 2025, The Adyar Library and Research Centre, Chennai)

Indian knowledge systems are well-known for their deep and time-tested wisdom and application in all fields. For instance, Bharata's Nāṭyaśāstra, a treatise and encyclopaedia on the techniques of performing arts, was well-known and followed since a clear two centuries before the first Greek drama appeared in 500 BCE.

Western trigonometry defines sine of an angle as the ration of the side opposite to the hypotenuse in a right-angled triangle. Before them Indian mathematicians had offered as many as 25 values for sine of an arc, and nearly a dozen formulae for deriving the value of 'pi'. Western medicine as is known today is credited to be founded by the Greek physician Hippocrates of Cos (460 – ca377). References about medicines and medical practitioners in India date back to the Vedas. Cāraka and Suśruta were again several centuries earlier to Hippocrates. Mathematics, astronomy, architecture, alchemy, metallurgy, plant sciences, development of ecosystems, science of warfare,,, — name any science. The origin is traced back to some Vedic god or other. But, how far have we developed and sustained all this knowledge? Save for a few texts of negligible number, rest lie unexplored as manuscripts in various repositories around the world.

A major reason for this state is that Western knowledge systems have been explained and dispensed step by step, while all Indian knowledge systems have been handed down orally in aphoristic forms (sūtras) from one generation of practitioner to another. There is a dearth of scholars who know the languages in which these aphorisms are written, rarer are those who have practised the system fully or thoroughly, still rarer are those who have received the little knowledge that is being shared. More common is the absence of any documentation of our knowledge systems. But there are clues from fictional and art works. Really speaking, all is not lost. Indian wisdom remains. The latest is the case of a stitched sail ship.

The Indian Navy has recreated a sea-worthy sail ship 'stitched' from rope and coconut fiber, without rudders. The first cent. CE ship was recreated not from documented data of maritime history of Harappa or any technical treatise on maritime studies, but from a fifth century CE painting in the Ajanta caves, some historical texts like Yuktikalpataru, and testimonies of some ancient travelers who saw the Indian stitched ships when came to the Indian Ocean. This ship built at the Indian Navy base in Karwar, Gujarat, is named after Kauṇḍinya, the first recorded name among mariners. He undertook voyages on the Indian Ocean to

Cambodia and South Vietnam. His references are recorded in the sources of those Southeast Asian countries, not in India.

Today, the West seems to have more records about our heritage than we ourselves do and Āyurveda systems of medicine practitioners are relying on Western diagnostic tools like C.T. scans and such. Adopting tested knowledge from other sources is a positive approach to development. But there needs to be an awareness and alertness of preserving, sustaining, strengthening and propagating our native knowledge too.

The two-day seminar to be held by the Adyar Library and Research Centre on 'Sciences based on Indian Knowledge Systems' aims to explore the knowledge and practices of our masters of yore in scientific fields. The seminar is an attempt to bring out the relevance or obsolescence of such knowledge and practice to modern systems and the way ahead.

— Radha Raghunathan

Director and Gen. Editor

The Adyar Library and Research Centre

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## Contrasting Sciences: India's Knowledge Systems and the West

**Abstract** — **Mr. Tim Boyd**

Dating back to times before the idea of the "West" existed, India's systems of understanding and explaining the world were evolving. In the field of the sciences, the list of accomplishments is long.

Unlike later developments in the sciences in the West, Indian systems were intertwined with religious observation and thought. Many of its discoveries in all fields were employed to augment existing religious practice. The idea of a divinely maintained cosmos involving spiritual agencies at every level was embedded in scientific exploration. It required an integration of inner and outer worlds; the earth and its agents, and the heavens and its agents.

Western science developed out of a different paradigm. The novelty of a desacralized universe removed certain barriers to the exploration and description of phenomena of the natural world. In a universe devoid of deity and its agents a science whose focus was reduced to the material sphere became a possibility that was vigorously pursued. While insisting upon certain limitations, it allowed for a flowering of a new way of exploring the universe while also creating a world view in competition with religion, becoming in many ways like a religion itself - scientism.

**Profile**

**Mr Tim Boyd** (1953–) has been serving as international President of the Theosophical Society Adyar since April of 2014. He was born in New York City and lived there for seventeen years until he left to attend Brown University in Providence, Rhode Island. From there he transferred to the University of Chicago, where he was an honors graduate with a Bachelor of Arts degree in Public Affairs. He joined the Theosophical Society in America in 1974. Together with Bill Lawrence, a TS member and mentor, and others he founded a Theosophical spiritual community in Chicago's inner city. The group held classes on the Ageless Wisdom, meditation, and healing. They worked with at-risk and disadvantaged youth, transformed vacant lots into award-winning organic food gardens, and placed beehives on the roofs of local buildings.

The group formed a business (Royal Associates) that initially focused on reclaiming and renovating deteriorating residential buildings in their area, creating housing for low- and middle-income families. Their work helped stabilize neighbourhoods through the training and employment of local youth and the creation of affordable homes for area residents.

In 1988 Tim became a national lecturer for the TS in America. From 1996 to 2000 he worked in hospice services as a volunteer in a team that involved doctors, social workers, and nurses. In 2007 he became president of the Theosophical Order of Service (TOS) USA, and in 2011 was elected President of the TS in America. Tim's involvement with the Theosophical Order of Service and the Chushul orphanage in Tibet led to an audience with the Dalai Lama, which resulted in the TS in America sponsoring his visit to Chicago in July of 2011 — a two-day event attended by 10,000 people. The event raised $400,000, all of which was donated to educational projects aiding Tibetan communities worldwide.

In 2014 Tim was re-elected as TS in America President and also elected President of the Theosophical Society Adyar. He currently shares his time between the headquarters of the TS Adyar in Chennai, India, and his home in Chicago, Illinois, USA, where he lives with his wife, Lily, and daughter, Angelique.

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## *Bhāvanā* – Rule of Composition

— **Dr. Sita Sundar Ram, Secretary, The KSRI, Chennai**

**Abstract**

Indian algebraists were the first to evolve and describe algorithms for finding all integer solutions of linear Diophantine equations or what in Indian Mathematics is termed as *kuṭṭaka*. From the time of Brahmagupta, mathematicians in India were attempting the harder problem of solving equations of the second degree. As early as 628 A.D., Brahmagupta gave a partial solution to the problem of solving $Nx^2 + 1 = y^2$. Thereby, as Michal Atiyah, a leading mathematician of the present times, has aptly put it, he has "made important contributions to what is now known (incorrectly) as Pell's equation." The fact that the equation has infinite solutions was also known to Brahmagupta is evident from his method of *bhāvanā*.

Brahmagupta made significant contribution to arithmetic including advancements in the understanding of zero and negative numbers. He introduced methods to solve linear and quadratic equations. In geometry, he gave the area of a cyclic quadrilateral and provided a formula based on the side lengths. This is called the Brahmagupta formula.

In her paper titled '*Bhāvanā* – Rule of Composition', Dr. Sita Sundar Ram shall discuss the work done by Brahmagupta, Bhaskara II whose text *Bījaganita* continues Brahmagupta's 'Brahmasputasiddhānta' and Kṛṣṇa Daivajña who wrote *Bījapallava*, a commentary on *Bījagaṇita*.

**Profile**

**Dr. SITA SUNDAR RAM** is Secretary, The Kuppuswami Sastri Research Institute, Chennai – 600 004, and Secretary, The Samskrita Academy, Madras, Chennai – 600004. She holds a B.Sc. Mathematics (University of Madras), M.A. Sanskrit (Karnataka University, Dharwar) and Ph.D. in Sanskrit (University of Madras). She teaches the Online course in Sanskrit conducted by The Madras Sanskrit College, Chennai, and Classes for UGC in Indian Mathematics for B.A Sanskrit. Besides, she lectures on mathematics in schools and colleges. She has talked on 'Paṇṭaya kālattil gaṇita śāstram (Mathematics in Ancient India)' for the All India Radio. She has conducted national conferences on History of Mathematics for The Samskrita Academy, Madras, and the Society of History of Indian Mathematics.

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Dr. Sundar Ram published many articles and reviews in reputed international journals. She has presented papers in many National and International Conferences. She published *Bījapallava of Kṛṣṇa Daivajña: Algebra in Sixteenth Century India – A Critical Study*, and *History of Ancient Indian Algebra*. Both were published by The Kuppuswami Sastri Research Institute in 2012 and 2023 respectively.

Dr. Sundar Ram completed an INSA project on Sūryadāsa's *Sūryaprakāśa* from *vargaprakṛti* to *granthi-samāpti.* She was Research Associate in the INSA's completed project on *Siddhāntaśirōmaṇi* under Prof. M.S. Sriram, Dept. of Theoretical Physics, University of Madras from 2012 to15. She is currently engaged in the *Aṣṭādaśī* project editing and publishing of Ramakrishna's *Bījaprabōdha*, an unpublished commentary on Bhāskaracārya's *Bijaganita*, and Translation and Study of Mahavīra's *Gaṇitasarasaṅgraha* with the Special Grants for Sanskrit / Pali / Prakrit from Central Sanskrit University.

# Scientific understanding of Sūrya's rays in Sanskrit Literature

— **Dr. S. Renganayaki**

## Abstract

The *Sun* is worshipped from the Vedic times as one who shines forth — *Vivasvān*, creating his own light — *Bhāskara*, and who is the lord of the universe — *Bhuvaneśvara*. Also, ancient seers deeply observed the sun and have recorded its various facets as the nourisher of all life forms, energy generating source, the curative force of illness and destroyer of the universe during the deluge. The seers studied also the various aspects of solar energy. The change in the colour and intensity of the solar rays at the different periods of the day from dawn to dusk, as well as the months and seasons and their measurements are documented periodically and detailed in the *Purāṇas*. Today, climatology is the most studied field of science world over. The Pyranometer is the primary instrument used to measure global solar irradiance. Many researches are being conducted based on solar irradiance and the recorded findings are revised and improved. But it is not known how the seers studied and gathered their information about the sun. It is interesting and astounding to know that many of the modern findings have similarity reflect the information recorded by the ancients in the *Purāṇas*. Dr. Renganayaki's paper focusses on a comparative study of solar energy mentioned in the *Purāṇas* and that calculated at Pokhara in Nepal, and also analyses some of the spectral aspects of the sun's rays mentioned in the *Purāṇas vis-à-vis* the modern findings.

## Profile

**Dr. S. RENGANAYAKI** is Research Associate at Kuppuswami Satri Research Institute (KSRI), Chennai 600004. She holds M.A. in English (Madurai Kamaraj University, 1981) and B.Ed. (Annamalai University, 1983). She earned her Ph.D. from University of Madras in 2024 for her thesis titled 'Sūrya in Sanskrit literature vis-à-vis modern concepts.' She served as a teacher of English for two decades at L.M. Dadha Senior School, Chennai, until she retired in 2014, the same year when she earned M.A. in Sanskrit (Karnataka State Open University, 2014). Since then, she has been a researcher at KSRI. During the past decade, Dr. Renganayaki specialized in Sanskrit and Cultural Studies. She has presented papers on various topics in her areas of specialization at national and international seminars. During April and May 2025 she shared her insights on *Sūrya-śakti-māhātmya* at the invitation of Prasar Bharati.

# Ecological Wisdom in Sanskrit Literature: Integrating Ancient Wisdom in the Modern World

— **Smt. Lavanya Pravin**

## Abstract

Sanskrit literature reflects a deep reverence for nature, ecology and environment. It reveals that our ancestors looked upon forests, domestic and wild animals, human beings and environment not as isolated from one another but as a biological live landscape with a perfect rhythm and harmony. Vedic hymns glorify every element in nature. *Dharmaśāstras* prohibit disturbing the ecosystem as an act against religion and as a sin. Sanskrit literature envisions environmental harmony as a sacred duty, not just as a practical concern. In contrast, advancement in technology has increased the modern man's cravings for a luxurious life even at the cost of depleting the natural environment. Here arises the need for modern environmental ethics which is the study of moral principles guiding human interactions with the natural world. Sanskrit literature provides a spiritually grounded ecological vision that complements modern scientific and ethical frameworks. It contributes emotional, spiritual and cultural depth to modern environmental ethics. Together they form a holistic ecological philosophy balancing reverence and responsibility. By integrating the ancient wisdom in the modern world, we can foster a sustainable, ethical and spiritually enriching relationship with nature. Smt. Lavanya Pravin's paper highlights how the ecological wisdom revealed in Sanskrit literature can enrich modern environmental conditions, offering a unified vision for sustainable and ethical living.

## Profile

**Smt. LAVANYA PRAVIN** serves as Librarian at the Kuppuswami Sastri Research Institute (KSRI), Chennai 600004. In the past, she was a lecturer at M.O.P. Vaishnav College for Women (2002–2003) and Stella Maris College for Woman (2004–2005). Since 2015, Smt. Lavanya is assisting M.Phil. students, Ph.D. candidates and international scholars at KSRI. During the same period, she has involved herself with all the publications of KSRI, including their Journal of Oriental Research. She has presented papers at various national and international seminars and published in reputed research journals. She has judged several competitions at various schools and colleges. During 2016 – 2017, Smt. Lavanya conducted a series of twelve lessons on 'Kauṭilya's *artha-śāstra* and *dharma-śāstra*' and 'Survey into the literature on *artha-śāstra*, *dharma-śāstra* and *nīti-śāstra*.' This series was conducted under the UGC's NME-ICT Project for Undergraduate Students of India.' She is a member of the Board of Studies in the Department of Languages – Sanskrit, at the M.O.P. Vaishnav College for Women. Smt. Lavanya Pravin has submitted her thesis titled 'A critical study of the *vairagya* and *mumukṣu vyavahāra prakaraṇa* of the *Yōgavāsiṣṭa* in the light of the *Tātparyaprakāśa* of Ānandabhōdēndra Sarasvatī' to the University of Madras and awaits the *viva-voce* examination to defend her thesis.

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## Science and Jyōtiṣa

— **Dr. S. Murali**

### Abstract

In his paper titled 'Science and Jyōtiṣa,' **Dr. S. MURALI** discusses—

What is Science? What is Jyōtiṣa? What is *vijñāna*? Science versus vijñāna; A study of the *Apparent* Parts of Jyōtiṣa, namely Siddhānta, Saṁhitā and Hōra; A discussion on some findings of Āryabhaṭa, Bhāskarācārya and Varāhamihirācārya; An understanding of the concepts of gravity, solar system, algebra and zero from Āryabhaṭa's *Āryabhaṭṭīya;* An understanding of the dimensions of planets, their orbital cycles, measurement of time — as in Bhāskarācārya's treatise *Siddhānta-śirōnmaṇi* and a comparison with *Sūrya-siddhānta;* An understanding of clouds, wind, lightning and their effects on rainfall, earthquake, measurements used in buildings, finding of water in the moon — as in Varāhamihirācārya's *Bṛhat-saṁhitā;* The development of the foetus over ten months in the womb, the menstrual cycles in women from attaining puberty to menopause

### Profile

**Dr. S. MURALI** is Assistant Professor in Jyōtiṣa at the Madras Sanskrit College, Chennai 600004. He holds M.A. in Jyōtiṣa (University of Madras), B.Ed. (Rashtriya Sanskrita Vidyapeetha, Delhi), and Ph.D. in Jyōtiṣa (Sri Chandrasekharendra Saraswati Vishwa Mahavidyalaya, Kancheepuram) for his research on Praśna-śāstra. Dr. Murali teaches Phalita, Praśna and Muhūrta at the Madras Sanskrit College and the various courses offered online by the college. He has presented papers on Jyōtiṣa at various for a including one before Śrī Viduśēkhara Bhāratī Swamiji, the Ācārya of Śrī Śṛṅgēri Maṭha, when His Holiness visited Chennai in Nov. 2024 and another at Sri Sathya Sai Baba Ashram, Puṭṭabarti, in Feb. 2025. He has guided the team from his college at competitions like All India Elocution Competition (Haridvar, 2025), Ekalavya Kreeda Manch (2024), and Youth Festival South Zone (Śṛṅgēri, 2023).

# Ways and Means for a Happy Life through Ayurveda

— **Dr. S. Swaminathan**

## Abstract

Āyurvēda, the ancient system of Indian medicine, offers a holistic approach to health that emphasizes balance between body, mind, and spirit. Rooted in natural principles and centuries-old practices, Āyurvēda defines health (*svāsthya*) as a state of equilibrium in biological energies (dōṣas), digestive fire (*agni*), tissues (*dhātus*), and waste products (*malas*), along with mental and spiritual well-being. Key preventive and promotive measures include daily routines (*dinacarya*), seasonal regimen (*ṛtucarya*), and proper dietary habits (*āhāra-niyamas*) tailored to individual constitution (*prakṛti*). Therapies such as *Pañcakarma* detoxify and rejuvenate the body, while herbal medicines support natural healing. Yōga, meditation, and *prānāyāma* are integral for mental clarity and emotional stability. Āyurvēda also emphasizes ethical living (*sadvṛtta*) and stress management through lifestyle moderation. Its personalized and preventive focus makes it highly relevant in modern times, offering sustainable and side-effect-free solutions for wellness. Embracing Āyurvēda not only enhances physical health but fosters a harmonious connection with nature and inner consciousness. This traditional wisdom, when integrated with contemporary practices, holds immense potential in addressing modern health challenges and promoting a balanced, disease-free life.

## Profile

**Dr. S. SWAMINATHAN** is Dean, Faculty of Health Sciences, SCSSVMV Sri Jayendra Saraswathi Ayurveda College and Hospital, Nazarathpettai. He earned his degree in Bachelor of Ayurvedic Medicine and Surgery (BAM&S) from The Ayurveda College, Coimbatore, and

Ph.D. in Sanskrit and Ayurveda (Interdisciplinary) from SCSSVMV, Enathur. Dr. Swaminathan began his teaching career as a lecturer at the Sri Venkataramana Ayurveda College, Mylapore in 1988 and continues through several places till his present position at Sri Jayendra Saraswathi Ayurveda College and Hospital, Nazarathpettai. He has attended several seminars and presented talks in all media. Most impressive about Dr. Swaminathan are the honours he has received for his work in the field of Āyurvēda — Maruthuva-chemmal Award from Sri Saraswati Trust, Chennai (2015), Aatreya Award from Sri Sai Ram College and Research Centre (2016), Best Consultancy Award from SCSSVMV (2017), Deccan Dhanvantri Award from Sri Sukar Markandeyar Medical Research Foundation (2018), Vāgbhaṭa Award from All India Ayurveda Congress – Tamilnadu Chapter (2018), Best Teacher Award from SCSSVMV (2017-2018), Vadya Seva Ratna Award from Sri Kanchi Kamakoti Peetam Chennapuri Bhakta Jana Samajam (2021), Lifetime Achievement Award from Sarada Mahadeva Iyer Ayurvedic Educational and Charitable Trust, Derisanamcope (2021), Vishishta Ayurveda Acharya Award from Vishva Ayurveda Parishad – Tamilnadu Unit (2024) and Bhishag-ratna Award from Nagarjuna Ayurveda Company (2024).

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# Yōga and the Mind

— **Dr. K.S. Balasubramanian**

**Abstract**

Psychology essentially deals with the mind. Hundreds of scientists, philosophers, scientists and Yōgins have tried to unravel the secrets hidden in the mind, its potentialities, different states of consciousness, the modifications of the mind (*vṛttis*), causing problems in human life, means to control these vṛttis, the effect thereof, the inter-relationship between the mind and the vital air (*prāṇa*) and many other invaluable information. These are dealt with exhaustively in ancient Indian scriptures especially in the texts on Rāja Yōga, Haṭha Yōga, Laya Yōga and Mantra Yōga. Our ancient Upaniṣads and the *Bhagavadgītā* also describe various characteristics of the mind and its functions.

The role of the mind in human evolution has been well understood by our ancients and hence they have provided various means to regulate the mind, paving way for the human beings to lead a life endowed with moral and ethical values, for it is the mind which distinguishes man from animal.

The philosophy and practice of Yōga are indispensable when we discuss about the mind. Drawing from different texts on Yōga, Dr. K.S. Balasubramanian presents his Special Address with a glimpse of the above-mentioned features.

Profile

Dr K.S. Balasubramanian holds M.A. in Sanskrit (First Rank Gold medal, Univ. of Madras), Ph.D. in Haṭha Yōga (New Delhi, 1999), and Ph.D. in Yōga (Univ. of Madras, 2005). He has

more than 40 years of experience since 1982 in conducting Sanskrit classes in both domestic and international locations, guides M.Phil. and Ph.D. Research Scholars in India and abroad. Dr. Balasubramanian serves as Director of the Kuppuswami Sastri Research Institute since June 2023. He has jointly edited more than 70 books, published many articles in leading Indological journals, and reviewed more than 70 books on Sanskrit Literature, Philosophy, Religion, Yōga, and such in Indological in journals / Magazines. His forthcoming publications are Śivasaṁhitā (Yōga) with English translation & notes, Gōrakṣa Samhitā (Yōga) with English translation and notes, Yōga Upanisads (20 Texts) with English translation, Śivasvarōdaya (A unique text on Svarōdaya branch of Yogic science) with English translation & notes, Critical edition and study of Hatha Saṅketa Candrikā of Sudaradēva, an unpublished manuscript, and more. He is presently engaged in composing (in Sanskrit verses with English translation) a big text on different branches of Yōga named Yōga Hṛdaya, a critical edition of Yōgasārasamuccaya, trans. Composition of Auvaiyar's Jñānakuṟaḷ into Sanskrit with English translation and notes, preparation of a Descriptive Catalogue of Yōga in Tamil Nadu, Encyclopaedic Dictionary of Yōga, a critical edition of Hatha sanketa Candrika of Sundara Deva (a mammoth encyclopaedic text on Haṭha Yōga (jointly). He has participated in several National and International conferences/seminars. Dr. Balasubramanian is a member in the editorial board of the publications of the Kuppuswami Sastri Research Institute, Samskrita Ranga and Samskrita Academy, all in Chennai. He has won several awards for meritorious achievements in his academics, Life time Award by the Heartfulness Institute, USA (2018) and Life Time Award by Indic Academy.

# Concept of Astronomical Instruments in Brāhmasphuṭasiddhānta

— **Dr. G. Raja Rajeswari**

## Abstract

A physicist, an archaeologist, and a philosopher — all have different perspectives on time. Indians had profound understanding and computation of time. When performing Vedic ceremonies in the past, time was a crucial consideration. Each ritual used to be carried out at a specific hour. The need for fixing time for study of time formed the basis of evolution of the branch of science 'Jyotiṣa', which is also known as 'Kālavidhāna-śāstra'. The smallest units of time in ancient Indian astronomy, as seen in texts such as the *Sūrya Siddhanta*, are *Truṭi*, *Rēṇu*, *Lava*, and *Līkṣaka*. According to the *Sūrya Siddhanta*, Truṭi is the amount of time it takes to use a needle to drive a pin through a lotus leaf. Brahmagupta, a 7$^{th}$ century mathematician, has devoted a chapter 'Mānādhyāya' for units of time. From the ancient times, numerous instruments have been used in India for measuring time. Brahmagupta mentions these astronomical instruments in the chapter 'Yantrādhyāya'. This paper intends to give an overview of time units and astronomical instruments as mentioned by Brahmagupta.

## Profile

With a strong interdisciplinary background in **Mathematics and Sanskrit, Dr. G. RAJA RAJESWARI's** expertise lies in interpreting and contextualizing traditional astronomical texts. She holds a Ph.D. in Indian Astronomy, with research centered on the evolution of the *Tripraśnādhikāra* in the Siddhāntic tradition. Previously she worked on a project at the Centre for Indian Knowledge Systems, IIT Madras, focusing on the *Kuṭṭakādhyāya* of an unexplored *Brāhmasphuṭasiddhānta* manuscript. Dr, Raja Rajeswari is currently engaged in studying cosmography as envisioned in Indian astronomical literature, particularly through the works of Bhāskara II and Brahmagupta, aiming to bridge historical insights with modern scientific perspectives.

## Ancient Epistemology Meets Modern Science: How *Pramāṇas* Can Enhance Experimental Design

— **Sri. Abhinav Kadambi**

Sri. Abhinav Kadambi's presentation explores the integration of classical Indian epistemological frameworks with contemporary scientific methodology, demonstrating how the ancient theory of 'means of knowledge' (pramāṇa**)** can enhance modern experimental design. The four traditional pramāṇas — direct perception (*pratyakṣa*), inference (*anumāna*), comparison (*upamāna*) and verbal testimony (*śabda*) — provide systematic approaches to knowledge validation that parallel and complement modern scientific methods.

Using the rubber hand illusion as a case study, we demonstrate how each pramāṇa contributes to robust experimental design in neuroscience. Pratyakṣa emphasizes rigorous observational protocols and awareness of perceptual limitations, while anumāna provides structured frameworks for hypothesis formation and logical reasoning, upamāna facilitates strategic use of analogical models and comparative studies, and śabda ensures proper integration of existing knowledge through literature review and peer validation.

The integration of these epistemological approaches addresses common experimental pitfalls such as over-reliance on single data sources and inadequate validation frameworks. This synthesis offers a comprehensive toolkit for improving research methodology by combining ancient wisdom with modern scientific rigour.

The presentation concludes that systematic application of pramāṇa principles can enhance experimental validity, reduce methodological blind spots, and promote more holistic approaches to scientific inquiry in neuroscience and beyond.

**Profile**

**Sri. ABHINAV KADAMBI** is a trained engineer with an academic research background in medical nanotechnology (M.Tech.) and cognitive neurosciences. He is a traditional student of Yōgaśāstra and Nyāyaśāstra. He is currently an academic teacher and researcher in Indian Knowledge Systems. He is pursuing his Ph.D. research in Sanskrit under the guidance of Dr. O.R. Devanathan, Post-graduate and Research Dept. of Sanskrit, Presidency College (Autonomous) Chennai, affiliated to the University of Madras.

# Planning, Resource Allocation and Preliminary Activities in Traditional Temple Construction – The Indian Way

— **Dr. Madhusudhanan Kalaichelvan**

## Abstract

This paper explores the foundational principles and cultural ethos embedded in traditional Indian temple architecture, with a focused examination of the norms governing site selection, patronage, and the sacred protocols of temple construction. Drawing from canonical texts such as the Śilpa śāstras, Vāstu śāstras, and Āgamas, the study reveals the intricate blend of metaphysical symbolism and pragmatic planning that underlies the temple-building process.

The paper begins with an analysis of site selection (*bhūmi-parīkṣa*), emphasizing geomantic suitability, environmental harmony, and ritual purity. It then delves into the role of patrons—ranging from monarchs and guilds to lay devotees—whose spiritual intent and socio-political standing shaped both the form and function of temple edifices. The discourse further explores how dhārmic ideals and practical feasibility guided the layout, orientation, and elevation of sacred spaces.

By contextualizing these practices within their historical and regional variants—from the Nagara and Dravida styles to the Vesara synthesis—the paper argues for a holistic understanding of temple architecture not merely as construction, but as consecrated enactment. Ultimately, this work highlights how traditional Indian temples served as microcosms of the universe, forged at the confluence of devotion, craftsmanship, and sacred geometry.

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**Profile**

**Dr. MADHUSUDHANAN KALAICHELVAN** is a Chennai-based architect, academic, and cultural historian specializing in conservation and temple architecture. A gold medallist in post-graduation, his doctoral research focused on ancient temple town planning in Tamil Nadu, particularly Tiruvannamalai. With over 14 years of teaching experience, he is also a faculty member in Śaiva Siddhānta at Sri Dharumapuram Adheenam and recipient of titles including 'Śaiva Siddhānta Ratnākaram' and 'Adheena Pulavar'. He served on the State Level Heritage Committee (2018–2022) and is part of the Academic Council of Tamil Nadu Dr. J Jayalalitha Music and Fine Arts University. An active writer and speaker, he founded **RATHAM** to promote heritage tourism and has authored books in Tamil and English, including a 2024 coffee table book on Tiruvannamalai. His awards include the Vedavalli Memorial Award, Ilakkiya Chemmal, and Prof. Swaminathan Award for contributions to art, culture, and heritage.

## Restoration of Lost Ecosystems Through Native Wisdom and Practices

— **Mr. Joss Brooks**

### Abstract

"The duty of humankind is to read landscapes and understand their language." This philosophy has long guided the work at Pitchandikulam Forest. The early civilizations of Tamil Nadu lived with deep ecological consciousness, shaping landscapes through traditional wisdom and sacred practices. The yeri system is a tangible example and an ancient practice which showcases sustainable water management in a monsoon climate where a network of ponds and tanks, was developed for water retention, flood prevention, and groundwater recharge. Similarly, forest conservation was traditionally practiced through sacred groves (Kovil Kadu), where communities protected patches of forest through customs and religious beliefs. These groves remain among the last refuges of the endangered Tropical Dry Evergreen Forest. India holds vast traditional medicinal knowledge, with over 8,000 plant species used in folk healing. But this legacy is threatened by the dominance of the Western biomedical system. In response, Pitchandikulam created a Medicinal Plants Conservation Park (MPCP) – a living repository of indigenous flora and a centre for learning local health traditions. The talk will share Pitchandikulam Forest's experience in restoring the vitality of land and community through native practices, because to restore ecosystems is not only ecological work - "it is also a cultural revival, a journey back to ancestral wisdom, and an offering for posterity".

### Profile

**Mr. JOSS BROOKS** Joss Brooks is an ecologist with five decades of experience in afforestation, lake restoration and currently focusing on creating Blue Green Centres across Tamil Nadu to educate the youth on environmental conservation and restoration. Having grown up watching the environmental movement in Tasmania, Australia, he absorbed a critical lesson: There was an urgent need to gain skills to protect what was left of nature and to restore what lay wasted.

SCIENCES

Based on Indian Knowledge Systems

(June 20 & 21, 2025, The Adyar Library and Research Centre, Chennai)

Mr. Brooks came to Auroville, near Pondicherry in 1969. He joined the early pioneering efforts in land restoration at Auroville and founded the Pitchandikulam community in 1973 which is now a vibrant 75-acre forest with 800 species of plants in the grasslands, a nursery and an ethno-medicinal forest.

Few of his notable works are mentioned below.

- From 2002 to now, as part of the project partially funded by UNESCO and Australian Government Aid, Mr. Brooks is leading the restoration of a 35-acre land in Nadukuppam which is now a young forest with water retention landscapes, indigenous plants nursery, organic demo-farm and training facilities. He also led the creation of Nadukuppam Environmental Education Center (NEEC) at Nadukuppam Higher Secondary School where children are involved in environmental education with help of a nursery, organic garden, water treatment systems and solar energy systems. There are around 35 workers from the villages employed to maintain the forest and to continue with the environmental programmes.
- Between 2001 to 2004, Mr. Brooks served as Co-Director for a European-Commission funded project to restore the Tropical Dry Evergreen Forest in the Kaluveli Bio-region of which Auroville is part of.
- During 2008 to 2012, he supervised the clean-up and restoration of the Adyar Creek in addition to creating the Tholkappia Poonga Eco-park for the TN Government. It is now 300 acres of restored urban wetland with many indigenous species of trees. The Poonga

was opened by then Chief Minister, Dr. Karunanidhi. It has ongoing environmental education programs.

- Notably in 2019, along with TCS and IIT Madras, Mr. Brooks directed the restoration of the 100-acre lake, Siruseri Twin Lakes, doubling their water holding capacity. He is now zeroing on the construction of a Blue Green Centre at the lake and subsequent implementation of environmental programmes for the schools in the area.
- In 2022, he led the restoration of Naganthaangal Lake in Pothur (15 acres, near Puzhal lake) which included planting 5000 trees, a Blue Green Centre building and environmental education programmes in 20 schools. It was opened by the collector of Tiruvallur, Dr. Alby John Varghese.
- Recently, Pitchandikulam, directed by Mr. Brooks, has done a master plan for a 50-acre eco park on the east bank of the Poondi Reservoir, under the guidance of the Tiruvallur Collector Dr. Alby John Varghese and the process is underway for its implementation.
- He has worked on many other projects including an Interpretation Centre at Rameswaram for UNDP for the Gulf of Munnar Biosphere Reserve, creation of 72 acres of Wetland and Forest for the Chettinad Group near Mahabalipuram, restoration of the 100 years-old GASS Museum at Coimbatore Forest College, planning and implementation of water retention landscapes over 25 acres at DJ Academy, Coimbatore; and more.
- Mr. Brooks is currently spearheading the Adyar Eco Development Project at the Theosophical Society, Adyar, focusing on the restoration of native ecosystems, sustainable landscaping, and environmental awareness outreach programmes.

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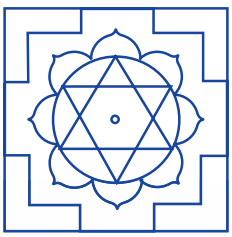

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