Invited Article

Bharat's Timeless Legacy: Bridging Ancient Knowledge with the Modern Technology

Pawan K Dhar*

CVJ Centre for Synthetic Biology & Biomanufacturing
Kochi-682022, Kerala, India.
** Correspondence: pawan.dhar@cvjsynbio.org*
ORCiD: https://orcid.org/0009-0005-1635-7690

Received: *20th March, 2025;* ***Accepted:*** *23rd March 2025;* ***Published:*** *30th April, 2025*

Vantage: Journal of Thematic Analysis

A Peer Reviewed Multidisciplinary Publication of Centre for Research, Maitreyi College, University of Delhi. Volume 6, Issue 1, April 2025. *https://vantagejournal.com* , ISSN(E): 2582-7391

How to cite:

Dhar, P. K. (2025). Bharat's Timeless Legacy: Bridging Ancient Knowledge with the Modern Technology. *Vantage: Journal of Thematic Analysis*, 6(1), 3-9.
https://doi.org/10.52253/vjta.2025.v06i01.03

ABSTRACT

Bharat, a land where wisdom has flourished for millennia, carries a legacy of knowledge that has shaped its identity and left a lasting imprint on the world. These ancient systems—deeply rooted in philosophy, science, medicine, and arts—are not just echoes of the past; they hold immense value in addressing today's challenges. From holistic healthcare to sustainable living and cutting-edge innovation, Bharat's traditional wisdom offers a timeless foundation for a self-reliant and technologically empowered future. This article explores the enduring relevance of these knowledge systems, offering hope and optimism for how they can seamlessly blend with modern advancements to drive innovation, sustainability, and collective well-being.

1. AN OVERVIEW OF BHARAT'S HISTORICAL AND GLOBALLY IMPACTFUL CONTRIBUTIONS

For thousands of years, Bharat has been a land where philosophy, science, medicine, and the arts have flourished, shaping its own identity and influencing civilisations worldwide. These knowledge systems were not just abstract ideas but deeply woven into daily life, offering practical wisdom that remains relevant today. From exploring the mysteries of the cosmos to pioneering breakthroughs in mathematics and medicine, ancient Bharatiya thinkers have laid the foundation for intellectual progress. Their contributions still resonate, providing valuable insights into modern challenges, and connecting us to our shared intellectual heritage.

This holy land has long been guided by profound philosophical inquiry. The Vedas and Upanishads, ancient texts rich with insights on metaphysics, ethics, and cosmology, laid the groundwork for understanding the nature of reality. The Darśanas—philosophical schools of thought—each provided a unique lens through which to view existence. Nyaya emphasised logic and reasoning, Vaisheshika explored the nature of matter, Samkhya delved into the dualism of consciousness and matter, while Yoga focused on spiritual practice and discipline. Mimamsa interpreted Vedic rituals, and Vedanta explored the ultimate truths of existence. These intellectual traditions shaped spiritual and scientific thought and cultivated critical reasoning, logical inquiry, and deep introspection—essential for innovation and problem-solving today.

Bharat's mathematical genius is well known and has left a lasting mark on the world. The decimal system, the concept of zero, and pioneering advancements in algebra, geometry, and trigonometry originated here. Visionaries like Aryabhata, Brahmagupta, and Bhaskara revolutionised mathematical thought centuries before their European counterparts. Our nation's contribution to astronomy led scholars to developprecise planetary models, calculated eclipses, and mapped celestial bodies. Texts like the Surya Siddhanta showcase a sophisticated understanding of cosmic mechanics—knowledge that laid the groundwork for modern space science. Today, as our nation takes bold strides in exploring deep space, our timeless and ancient insights continue to inspire our journey into the unfathomable.

Thousands of years ago, Ayurvedawas conceived and fully developed by Rishis, who used mind as a lab, intent as an approach and intensity as the key. The concept of Ayurveda encompassed human well-being, including sick-care and health-care. The key concept was to integrate the science of body and the science of mind, beyond just treating illnesses. Charaka Samhita and Sushruta Samhita offer a wealth of medical knowledge—from preventive care to advanced surgical techniques. Alongside Ayurveda, Bharat has been the cradle for the development of Siddha and Unani systems of medicines.

Another important offshoot of Bharatiya Intelligence is Vastu Shastra. Our science of architecture isn't only about creating visually appealing structures, we also focus ontheir mathematical aspects, environmental harmony, and alignment with cosmic energy, which is embedded in the science of Vastu Shastra.

As we move toward sustainable and smart cities, these principles offer invaluable lessons in designing eco-friendly, energy-efficient living spaces.

Long before the global push for sustainability, we practised organic farming, crop rotation, and water conservation. Ancient texts detailed methods for soil enrichment, pest control using natural extracts, and agroforestry— these techniques are now being recognised as critical solutions for climate-resilient farming. Traditional irrigation systems like stepwells, tanks, and check dams ensured water security even in arid regions. As modern agriculture grapples with soil depletion and climate change, Bharat's time-tested agricultural wisdom and AI-driven precision farming can create a blueprint for food security and ecological sustainability.

Bharat's artistic traditions have always been deeply intertwined with its intellectual and spiritual heritage. The Natya Shastra, a 2,000-year-old treatise, laid the foundation for classical dance, theatre, and music—art forms that continue to thrive globally. Our ancient literature, from the epics of Ramayana and Mahabharata to the lyrical poetry of Kalidasa, offers profound narratives on life, ethics, and the human experience. These artistic expressions are not relics of the past; they continue to evolve, finding new forms in cinema, digital storytelling, and global performing arts. The rise of AI-driven music composition, where algorithms are used to create music that mimics the style of classical Indian compositions, and virtual reality performances that recreate ancient dance forms, uses this template to design new and exciting variants.

2. INTEGRATING TRADITIONAL KNOWLEDGE WITH MODERN TECHNOLOGY

The past has been great, but we must write a new and inspiring history for the next generation. To achieve this goal, it is essential to bridge the gap between traditions and technology for better alignment and impact on humanity. However, this integration is not without its challenges. It requires a delicate balance between preserving the authenticity of traditional knowledge and adapting it to modern technological contexts.

This may be enabled through:

- Digitising ancient texts, manuscripts, and oral traditions making them accessible to a wider audience and ensure their preservation for future generations. Online platforms, mobile apps may be used to disseminate knowledge and facilitate learning.
- Applying data analytics and AI to analyse Ayurvedic data can help identify patterns, validate traditional treatments, and develop personalised therapies. However, this also raises ethical concerns about the potential

commercialisation of traditional knowledge and the need to ensure that the benefits of these technological advancements are shared equitably. Machine learning algorithms can also predict the efficacy of herbal remedies and optimise dosage recommendations in Vedic texts.

- Using remote sensing and GIS technologies can help monitor crop health, assess soil fertility, and optimise water management in traditional agricultural systems. This can improve productivity, reduce environmental impact, and enhance food security.
- Integrating renewable energy technologies with Vastu principles to create intelligent buildings that are energy-efficient and conducive to well-being.
- Using Virtua Reality technologies to create immersive experiences and bring ancient temples, historical sites, and cultural traditions to life. This can enhance cultural awareness, promote tourism, and preserve cultural heritage.
- Employing blockchain technology to ensure transparency and traceability in the supply chains of herbal medicines, ensuring quality control.

3. DESIGNING A SELF-RELIANCE AND HIGH-IMPACT FUTURE

To transform Bharat into a knowledge-driven society and achieve self-reliance, there is a pressing need to:

- Establish Centers of Excellence that integrate traditional knowledge with modern science and technology. These centers should focus on research, innovation, and education, bridging ancient knowledge with modern evidence-based approaches and technologies.
- Launch a national project to map the genomic profiles of individuals with different Prakriti (constitutions) and correlate them with Ayurvedic diagnoses and treatments, addressing issues of standardisation, dosage, and safety. Develop AI-powered tools for personalised Ayurvedic medicine to create jobs in genomics, data science, and healthcare.
- Developing Open-Source Platformsfor sharing knowledge, data, and tools related to Bharatiya knowledge systems can foster collaboration, accelerate innovation, and promote accessibility. We cannot rely on Western databases and tools to preserve and interpret our ancient knowledge. Bharat needs to develop her own system of capturing Vedic knowledge and designing search tools/apps for accessibility and authentic interpretation.
- Promote entrepreneurship and startups that leverage Bharatiya knowledge systems to develop innovative products and services. To gain control over our rich traditional knowledge, dedicated funding, mentorship, and incubation support must be provided to new startups that connect bright young minds with investors and shield them from entrepreneurial uncertainties.
- IntegrateBharatiya knowledge systems into school and university curricula. We remove life from the system and call its study Life Sciences! This needs to change. The need of the hour is to foster a deeper understanding of Bharat's intellectual heritage, enrich impressionable minds with the core knowledge of life's operating system, and inspire young learners to peak their innate potential.
- Create Digital Libraries and Knowledge Repositories that house ancient texts, research papers, and other resources related to Bharatiya knowledge systems and develop tools for translating them into various Bharatiya languages in real-time.
- Develop Standardised Terminologies and Ontologiesfor Bharatiya knowledge systems to facilitate data understanding, sharing, interoperability, and discovery.
- Buildpartnerships with international institutions to promote research and exchange knowledge related to Bharatiya knowledge systems.

By embracing the wisdom of the past and integrating it with the present innovations, Bharat can unlock its full potential and emerge as a global leader in knowledge, innovation, and sustainable development. While the traditional narrative of Bharat's knowledge systems often celebrates its profound contributions, we must acknowledge the inherent complexities, historical biases, and contemporary challenges that

have shaped and continue to influence the application of these systems.

4. STUDYING FIVE KOSHAS AND PRANAS USING MODERN TECHNOLOGY

(a) Koshas: The ancient Bharatiya concept of the Panchakosha (five layers of existence) structuredly describes human consciousness and well-being, ranging from the physical body to the highest level of spiritual awareness. These layers—Annamaya Kosha (physical), Pranamaya Kosha (energy), Manomaya Kosha (mental), Vijnanamaya Kosha (intellectual), and Anandamaya Kosha (blissful)—form a holistic understanding of human experience.

The question is whether these Koshas are amenable to scientific inquiry or can be understood only through personal experience.

- **Annamaya Kosha (Physical Body):** It represents the material body that is an outcrop of the planet and is built when food nourishes cells and tissues. To detect the language of cells, wearable devices are helping monitor vital signs, physical activity, and even nutritional habits. Building predictive computational models of health can help forecast chronic diseases by analysing parameters associated with the Annamaya Kosha.
- **Pranamaya Kosha (Energy Body)** – The EEG technology has the power to capture brainwave activity. The AI-powered apps could take this a step further by adding parameters like breath patterns and heart rate variability. The energy body detection tools like Kirlian photography have been used to study aura patterns both in health and disease conditions.
- **Manomaya Kosha (Mind & Emotions):** Given that the body is composed of four layers: physical, thoughts, emotions and consciousness, the Manomaya Kosha represents thoughts, emotions, and overall psychological well-being. AI-driven tools can assess emotional layers by using data inputs from voice tone and facial expressions. With reliable, machine-readable data, one can analyse Manomaya kosha and take corrective measures accordingly.
- **Vijnanamaya Kosha (Higher Intelligence & Consciousness)**: This layer governs wisdom, intuition, and deep self-awareness. While sufficient understanding and tools are not available to delve into the layer of consciousness, one may use closest approximations emerging from Brain-Computer Interface technologies to understand thought patterns and deep dive towards a quantum mechanics centric understanding of the human system. Irrespective of this hypothetical connection, it is highly challenging to bring personalised experiences into machine readable data.
- **Anandamaya Kosha (Bliss & Transcendence)**: The deepest layer, representing ultimate bliss, self-realisation, and fulfilment of life journey is highly personalised, comes from inner experiences and cannot be captured by any technological armour.

Though scientists talk about self-aware AI and self-aware robots, these are merely data loops feeding into decision making algorithms and generating partial and inaccurate virtual versions that companies love to call ‘digital spirituality.’ Nevertheless, to lend authenticity to scientific plug-ins at the final frontier, one may consider developing a new field of sonic biology that connects frequencies and wavelengths with physiological experiences.

On a related note, it may be time to establish a Global “Panchakosha Research Institute,” dedicated to integrating ancient yogic science with AI, neuroscience, and quantum biology, create AI-Powered Personalised Wellness Systems offering personalised Yoga, breathwork, and mindfulness training, establishing standardised scientific validation methods for traditional practices.

Virtual learning spaces offer interactive knowledge pathways combining neuroscience and Vedanta driving a new era of knowledge synthesis.Bharat has the unique opportunity to lead the world in blending deep-rooted knowledge with AI, biotechnology, and quantum science, paving the way for a future that is intellectually progressive, emotionally resilient, and spiritually enriched.

(b) Pranas: In yogic and Vedic traditions, human body has been beautifully abstracted based on five primary Pranas known as the Pancha Pranas (Vital Energies), and supported by five subsidiary Pranas

(Upa-Pranas). This elegant description is both logical and experiential and puts Bharatiya Knowledge System way above western science heavily based on machines.

The Five Main Pranas (Pancha Pranas) that govern different physiological and energetic functions have been identified in the traditional literature as:

- ***Prana*** – The upward-moving life force governs breathing, respiration, and heart function controlling oxygenation, sensory perception, and mental clarity
- ***Apana–*** The downward-moving energy governs excretion, elimination, and reproductive functions supporting the processes of digestion, urination, and menstruation
- ***Samana–*** The balancing energy governs digestion, assimilation of nutrients, and metabolism balancing Prana and Apana to maintain homeostasis
- ***Udana–*** The ascending and expressive energy governs speech, expression, growth, and spiritual elevation influencing vocalisation, enthusiasm, and willpower
- ***Vyana–*** The circulating and expansive energy governs blood circulation, movement, and nerve impulses. Located throughout the body, it ensures coordination of all bodily functions and muscular movements.

Likewise, the ancient text also identified five Upa-Pranas (Sub-Pranas) as Naga, which controls burping and hiccups and helps regulate speech; Kurma, which governs blinking, eyesight, and eye movements; Krikara, which manages sneezing and coughing for bodily defense; Devadatta, which is responsible for yawning and inducing sleep; and Dhananjaya, which regulates body decomposition after death and maintains subtle functions post-mortem.

In yogic science and Ayurveda, the entry and exit of Prana (life force energy) are closely associated with various physiological functions. The five major Pranas (Pancha Pranas) regulate specific systems in the body, and their transitions (entry, circulation, and exit) influence respiration, digestion, circulation, excretion, and cognition.

The next generation of learners needs to be trained to think of Koshas and Pranas in terms of scientifically measurable processes, as summarised here:

- ***Prana:*** At birth, the entry of Prana leads to the first inhalation, initiating lung expansion and oxygen absorption. Brain function begins; sensory perception awakens, and the autonomic nervous system controls breathing regulation. At the time of death, the exit of Prana leads to unconsciousness, and EEG flatlines. Lung function ceases, blood flow slows, and brain activity stops.
- ***Apana:*** At birth, the entry of Apana leads to first intestinal contractions initiating digestion and waste processing; kidneys start filtering and producing urine, the colon absorbs water, and excretory functions begin, leading to reproductive organs developing functionality for future use. At death, the exit of Apana leads to loss of bladder and bowel control, the digestive system stops, blood flow to reproductive organs ceases, and Final muscular relaxation may expel any remaining waste.
- ***Samana:*** At Birth, the entry of Samana leads to first nutrient absorption in the intestines, initiating metabolic activity; the liver starts processing glucose, fueling energy production, and digestive enzymes become active, aiding food breakdown, leading to gut microbiome and digestion. At Death, the exit of Samana leads to slowing of metabolism, dropping of body temperature, ceasing of enzyme activities, and liver and kidney functions leading to toxin accumulation – the rigor mortis sets in, indicating total cessation of energy circulation.
- ***Udana:*** At Birth, the entry of Udana leads to the first cry signals with air entering the vocal cords. Speech and motor control begin as neural pathways develop, and cognitive awareness begins. At Death, the exit of Udana leads to speech slurs and the inability to speak, body paralysis, fading of consciousness, and transition to an unresponsive state.
- ***Vyana:*** At Birth, the entry of Vyana into the body generates the first heartbeat and blood circulation, leading to nerve impulses, muscle,

and soft tissue activation. To strengthen immune system, the lymphatic system develops extending its reach to every nook and corner of the body. Expectedly, at death the exit of Vyana results in the cessation of heartbeat, blood circulation, and muscular activity, ultimately resulting in total body shutdown and ready for disposal.

The next generation of learners need to learn medical textbooks and Vedic textbooks in parallel, integrating and synthesising knowledge from this interface and developing an enriched understanding of Koshas, Pranas, detectors and analytical methods. As described above, the entry of Pranas at birth leads to booting up of physiological processes. At death, the sequential exit of Pranas one after the other is represented by loss of speech (Udana), digestive system shutdown (Samana), excretory failure (Apana), halting of blood in the vessels (Vyana), and finally cessation of breath(Prana).This structured understanding of pranic connection with physiology offers an integrated scientific and spiritual understanding of life operating system.

5. BUILDING A NEW NARRATIVE

For centuries, India's rich traditions of oral storytelling and knowledge-sharing have been the backbone of wisdom passed down through generations. But without written records, much of this knowledge has been lost, altered, or diluted over time. Relying only on oral transmission makes it difficult to preserve knowledge in its true form. This issue became even more serious when colonial scholars started documenting Indian traditions, often interpreting them through their own perspectives. Their biases distorted many narratives, which is why we must now revisit these records carefully and reclaim the original essence.

During colonial rule, India's traditional knowledge systems were selectively picked apart and misrepresented. Many Western scholars only highlighted parts that fit within their intellectual frameworks, ignoring or undervaluing everything else. Over time, modernisation and the dominance of Western scientific thought further pushed indigenous knowledge to the sidelines. This led to a gradual erosion of traditional practices, loss of biodiversity, and a growing disconnect between communities and their cultural roots.

Today, there is renewed global interest in ancient Indian sciences, such as Ayurveda and holistic healing systems. While this is encouraging, it has also led to rampant commercialisation, with many foreign entities profiting from these traditions without truly understanding them. Preserving the authenticity of these knowledge systems requires a responsible and respectful approach—one that values their depth while ensuring they are not diluted, misused, or exploited.

A crucial step in restoring Bharatiya knowledge systems is to move beyond colonial narratives and build our own digital archives. By connecting this immense wisdom to real-world applications, we can make it more relevant today. Bridging traditional knowledge with modern science will require interdisciplinary research and collaboration between scholars, practitioners, and communities. Equally important is ensuring that indigenous communities have control over their intellectual property so that they directly benefit from their own knowledge. Documenting traditions, introducing educational programmes, and setting up cultural hubs can go a long way in preserving and strengthening these heritage systems.

At the same time, for traditional practices to be widely accepted, they must also be subjected to scientific validation. Using modern research methods to test the safety and efficacy of age-old treatments will allow us to integrate them responsibly into mainstream healthcare. Additionally, indigenous knowledge must be included in policy frameworks, something that has been neglected for far too long.

Reviving traditional agricultural practices is another crucial step. Embracing biodiversity and blending it with sustainable farming techniques can help us reconnect with our roots. Encouraging community-led seed banks, agroforestry initiatives, and empowering local farmers will be key. At the same time, it is necessary to address concerns around data privacy and intellectual property rights to prevent the exploitation of indigenous knowledge.

Moving forward, we must go beyond simply romanticising India's knowledge systems. True

progress will come from a balanced approach—one that respects tradition, embraces scientific inquiry, and ensures ethical practices. By committing to decolonisation, collaboration, and integrity, we can ensure that these ancient wisdom traditions do not just survive but thrive and continue to guide us towards a more holistic and sustainable future.

Authorship contribution: The sole author is accountable for the accuracy, originality, and integrity of the work.

Funding: No funding by any agency.

Conflict of interest: Author has no conflict of interest with anyone.

Declaration: It is an original data and has not been sent or published anywhere.

REFERENCES

1. Belal M., V. Vijayakumar , K.N., Jois, S.N. (2023). Perception of Subtle Energy " Prana", and Its Effects During Biofield Practices: A Qualitative Meta-Synthesis. *eCollection* 2023: 12.
2. Capra F. (2010). The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism. *Boulder: Shambhala publications*; 2010.
3. Joseph, G.G. (2010). The Crest of the Peacock: Non-European Roots of Mathematics. *Princeton University Press*. 3rd Edition. ISBN. 9780691135267, 2010, pp 592
4. Mahadevan B., Bhat V.R., & Nagendra P.R.N. (2022). Introduction to Indian knowledge system: concepts and applications. *PHI Learning Pvt. Ltd*. 2022, ISBN:9789391818210, pp 448
5. Rao S.S. (2006). Indigenous knowledge organisation: An Indian scenario. *Int. J Inf Management*. 2006: 26, 224-233.