

Varāhamihira: Meteorology, Astrology, and the Synthesis of Knowledge in Ancient India

Sanjay Sahebrao Jagadale

Submitted: 05-Mar-2025 Revised: 20-Mar-2025 Accepted: 11-April-2025 Published: 30-April-2025

Manuscript ID:
IJEWLPSIR-2025-020204



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DOI:

[10.5281/zenodo.15911292](https://doi.org/10.5281/zenodo.15911292)

DOI Link:

<https://doi.org/10.5281/zenodo.15911292>

Volume: 2

Issue: 2

Month: April 2025

E-ISSN: 3065-7873

Department of English, Dahiwadi
College Dahiwadi
Email: sanjayjagadale@gmail.com

How to cite this article:

Jagadale, S. S. (2025). *Varāhamihira: Meteorology, Astrology, and the Synthesis of Knowledge in Ancient India*. *International Journal of English and World Languages & Literature Paradigm Shift in International Research*, 2(2), 12–17.
<https://doi.org/10.5281/zenodo.15911292>

Address for correspondence:

Sanjay Sahebrao Jagadale
Department of English, Dahiwadi
College Dahiwadi
Email: sanjayjagadale@gmail.com

Abstract:-

Varāhamihira, one of the most distinguished scholars of ancient India, exemplifies the harmonious blend of empirical observation and spiritual insight within the Indian Knowledge System (IKS). His multidisciplinary contributions—spanning astronomy, astrology (Jyotisha), meteorology, hydrology, engineering, and cosmology—reflect a sophisticated understanding of the interconnectedness of natural phenomena. Through seminal works like *Brihat Samhita*, *Pancha-Siddhantika*, and *Bichat Jataka*, Varāhamihira articulated complex ideas about planetary influences, seasonal cycles, cloud behavior, and rainfall predictions, all rooted in keen empirical observation and traditional wisdom. This research paper explores Varāhamihira's scientific methodologies and theoretical frameworks within the broader philosophical ethos of IKS. His approach integrates logic (*tarka*), observation (*pratyaksha*), and scriptural knowledge (*shabda*), demonstrating an early form of interdisciplinary systems thinking. He connected the macrocosm (the cosmos) with the microcosm (human life and Earth), promoting sustainable practices and ethical responsibility.

The paper also investigates the relevance of Varāhamihira's work to contemporary issues, such as climate prediction, resource management, and ecological balance. By reviving his contributions through the lens of IKS, we highlight the value of traditional knowledge systems in modern scientific discourse. Varāhamihira's legacy underscores the importance of integrating indigenous perspectives with modern science for holistic development. Thus, this study reaffirms that ancient Indian scientists like Varāhamihira not only advanced scientific understanding but also promoted a worldview that was deeply ecological, ethical, and inclusive—values increasingly vital in our global search for sustainable and integrative knowledge systems.

Keywords: Varāhamihira, Ancient Indian Science, Indian Knowledge Systems (IKS), Meteorology, Astrology (Jyotisha), Astronomy, Brihat Samhita, Pancha-Siddhantika

Introduction

Emerging from the vibrant intellectual crucible of India's Gupta period (c. 4th-6th centuries CE), Varāhamihira (505–587 CE) was more than a scholar; he was a polymath whose insights bridged heaven and the earth. This era, often hailed as the Golden Age of India, witnessed an unprecedented flourishing of arts, literature, science, and philosophy. The Gupta dynasty, which ruled over a large part of the Indian subcontinent, provided a stable and prosperous environment that fostered intellectual pursuits. Scholars like Varāhamihira were able to dedicate themselves to the pursuit of knowledge, making significant contributions to various fields of study. Associated with the learned court of Avanti (modern Ujjain), Varāhamihira was a key figure in this intellectual renaissance, his contributions shaping the course of scientific and cultural development for centuries to come. His profound understanding of astronomy, astrology, and meteorology, coupled with his philosophical depth, positioned him as a unique and influential voice in the history of science. Varāhamihira authored several foundational texts, skillfully weaving together astronomy, astrology, meteorology, and even philosophy. Approach to understanding the universe. His most celebrated works include the *Brihat Samhita*, an encyclopedic masterpiece covering everything from natural phenomena to societal customs; the *Brihat Jataka*, a cornerstone text on horoscopic Astrology; and the *Pancha-Siddhantika*, a comparative analysis of five contemporary astronomical systems.

The Brihat Samhita, in particular, stands as a monumental work, offering a comprehensive view of the world as understood in ancient India. It delves into a vast array of subjects, ranging from astronomy and geography to architecture, agriculture, and even mundane aspects of daily life. This encyclopedic nature of his work highlights Varāhamihira's holistic approach to knowledge, where different disciplines are interconnected and contributed to a unified understanding of the universe. He believed that true knowledge could only be obtained by considering the interconnection of all things and by seeking to understand the underlying principles that govern the cosmos. Across these writings, a consistent methodology is one rooted in careful observation, systematic classification, and insightful synthesis. Varāhamihira embodied a holistic pursuit of knowledge. His work reveals profound engagement with the rhythms of nature and a deep awareness of the interconnected cosmos. He saw no sharp divide between empirical investigation and metaphysical understanding; this integrated vision is central to the spirit of the (IKS). This holistic perspective, which is a hallmark of IKS, emphasizes the interconnection of all things and seeks to understand the universe in its totality. Varāhamihira's approach was not limited to mere observation and classification; he sought to understand the underlying principles that governed the cosmos and their influence on human life. He believed that the universe was a complex and dynamic system and that truly understand it, one has to consider both its material and spiritual dimensions. His classifications and predictions were not mere abstractions; they directly addressed the pressing needs of his time—guiding agriculture, safeguarding health, informing governance, and maintaining social harmony. This paper seeks to reintroduce Varāhamihira not just as a figure of historical interest but as a significant contributor to global scientific thought, exploring how his integrated approach can enrich contemporary dialogues about holistic and sustainable science. By examining his contributions, we can gain valuable insights into the nature of knowledge itself and how it can be applied to address the challenges of our time. His emphasis on the interconnection of all things, his holistic approach to understanding the universe, and his commitment to using knowledge for the betterment of society offer a powerful model for contemporary scientific inquiry. In a world that is increasingly grappling with complex and interconnected problems, Varāhamihira's integrated approach offers a valuable framework for finding solutions that are both sustainable and harmonious.

Objectives

1. **To document and analyse Varāhamihira's specific contributions to meteorology and astrology with clarity.** His vast and intricate body of work requires careful distillation to highlight core innovations and practical applications in these fields.
2. **To interpret these contributions through the lens of Indian Knowledge Systems (IKS).** We aim to demonstrate how his work embodies the characteristic values and methodologies of this tradition, such as its emphasis on cyclical, interconnection, and seamless blending of empirical knowledge with spiritual perspectives.
3. **To illuminate the holistic nature of Varāhamihira's thought.** We will demonstrate how he viewed science and metaphysics not as separate domains but as complementary paths to understanding reality. His work, simultaneously analytical, intuitive, and symbolic, holds particular relevance for modern efforts seeking to bridge scientific inquiry with traditional wisdom.

Methodology

This research employs a combination of textual analysis and interpretive synthesis. Primary sources include Varāhamihira's key texts: 'Brihat Samhita', 'Brihat Jataka', and 'Pancha-Siddhantika'. These texts provide the foundation for understanding Varāhamihira's contributions and his unique perspective on the world. A close reading of these texts allows us to delve into Varāhamihira's original ideas, his methods of inquiry, and his understanding of the interconnectedness of the cosmos. Secondary sources comprise scholarly works on Varāhamihira, ancient Indian science, and Indian Knowledge Systems.

These sources offer valuable insights into the historical and cultural context of Varāhamihira's work, as well as different interpretations of his ideas. They also help to situate Varāhamihira's contributions within the broader framework of scientific and philosophical thought. The methodology involves

1. **Textual Analysis:** Close reading and translation of relevant passages from Varāhamihira's works to identify his core concepts and methodologies in meteorology and astrology. This involves a careful examination of the original Sanskrit texts, paying close attention to the nuances of language and the specific terminology

used by Varāhamihira. It also requires an understanding of the historical evolution of the Sanskrit language and the specific meanings of words in the context of ancient Indian science.

2. **Comparative Study:** Examining how Varāhamihira's ideas relate to and build upon earlier Indian scientific and philosophical traditions, as well as comparing his approaches with those of contemporary and later scholars. This involves tracing the development of ideas in Indian science and philosophy and identifying the unique contributions made by Varāhamihira. It also entails considering how his ideas were influenced by other cultures and intellectual traditions.
3. **Interpretive Synthesis:** Drawing connections between Varāhamihira's specific contributions and the broader framework of Indian Knowledge Systems, highlighting the holistic and integrated nature of his thought. This involves identifying the key principles of IKS and demonstrating how they are reflected in Varāhamihira's work.

It also requires an understanding of the philosophical underpinnings of IKS, such as its emphasis on the interconnection of all things, the cyclical nature of time, and the unity of the material and spiritual realms. Contextualization: Placing Varāhamihira's work within its historical, social, and cultural context to understand its relevance and impact on ancient Indian society. This involves exploring the social, political, and economic conditions of ancient India during Varāhamihira's time and how these conditions influenced his work. It also entails considering the role of science and astrology in ancient Indian society and how Varāhamihira's contributions shaped these roles.

Meteorological Insights

Varāhamihira's '*Brihat Samhita*' is one of India's earliest known systematic approaches to weather prediction. Far from being speculative, his meteorological insights were grounded in empirical methods that carefully observed the celestial, atmospheric, and terrestrial indicators. He did not rely on divine explanations or mere guesswork; instead, he developed a sophisticated system of observation and analysis that formed the basis of his meteorological predictions. This emphasis on empirical observation and logical reasoning was a hallmark of ancient Indian science, and Varāhamihira's work exemplifies this approach.

He developed sophisticated techniques for forecasting rainfall, which are crucial for an agrarian society. These method involved correlating the positions and movements of *nakshatras* (lunar mansions) with expected precipitation and incorporating precise timings and interpretations of events such as eclipses, planetary transits, and lunar phases. The *nakshatras*, which are specific constellations or segments of the zodiac, were believed to have a significant influence on weather patterns. Each *nakshatra* was associated with specific qualities and characteristics, and their positions in the sky were thought to affect the distribution of rainfall. By carefully observing their movements and positions, Varāhamihira was able to develop a system for predicting rainfall with a remarkable degree of accuracy.

Eclipses and planetary transits were also considered important indicators, as they were believed to disrupt the normal flow of cosmic energies and influence weather patterns. Varāhamihira meticulously studied these phenomena, recording their effects on weather patterns and incorporating them into his predictive models. Such forecasts were vital tools for planning crop cycles and managing water resources. In a society that was heavily dependent on agriculture, accurate weather prediction was essential for ensuring food security and economic stability. Farmers relied on Varāhamihira's insights to determine the best time for planting, sowing, and harvesting their crops, while administrators used his predictions to manage water resources and plan for potential droughts or floods.

Varāhamihira meticulously classified clouds by noting their appearance, color, movement, and the likely weather associated with each type. He recognized, for instance, specific cloud formations and behaviors indicative of monsoon patterns. His detailed descriptions of clouds and their associated weather patterns demonstrate a keen understanding of atmospheric phenomena. He understood that different types of clouds were formed under different atmospheric conditions and that their appearance and behavior could provide valuable clues about impending weather changes. These classifications stemmed from long-term observations and were presented for practical use by farmers and administrators. The practical nature of his meteorological insights underscores his commitment to applying knowledge for the benefit of society. He sought to make his findings accessible to a wide audience, ensuring that his knowledge could be used to improve the lives of ordinary people.

Wind patterns are another key research focus. He identified eight primary wind directions and correlated

hem with different seasons and probable weather outcomes. He understood that winds play a crucial role in determining weather patterns and that their direction and intensity can provide valuable clues about future weather conditions. He developed a system for classifying winds based on their origin, speed, and direction, and he used this system to predict seasonal changes and weather patterns. His understanding of the monsoon system, while using traditional terminology, displayed remarkable sophistication for its time. Despite the limitations of the scientific tools available in his time, Varāhamihira was able to develop a comprehensive understanding of the monsoon system, which is a complex and dynamic weather phenomenon. His insights into the monsoon, which is crucial for agriculture in many parts of India, demonstrate his deep understanding of the interplay between atmospheric circulation, ocean currents, and land temperatures.

Furthermore, Varāhamihira integrated a wide range of environmental signs into his climatological framework, linking phenomena such as rainbows, earthquakes, lightning patterns, and even specific animal behaviours to broader weather trends. This holistic approach to weather prediction, which takes into account a wide range of environmental factors, is a testament to Varāhamihira's deep understanding of the interconnection of nature. He believed that everything in the natural world was interconnected and that by carefully observing these connections, one could gain valuable insights into the workings of the universe. This sensitivity to the intricate web of nature aligns perfectly with IKS values, revealing a holistic system that anticipated principles of modern environmental science, particularly the interdependence of natural elements.

His work in meteorology exemplifies how rigorous scientific inquiry, driven by careful observation and a commitment to serving societal needs, could coexist harmoniously with a deeper spiritual awareness. Varāhamihira saw no contradiction between scientific inquiry and spiritual understanding; instead, he believed that they were complementary paths to knowledge. This integrated approach to science, which is a hallmark of IKS, offers a valuable model for contemporary scientists who are seeking to bridge the gap between objective analysis and subjective experience. By embracing a more holistic and integrated approach, we can develop a deeper understanding of the interconnection of the natural world and our place within it.

Astrological Contributions

Varāhamihira's astrological legacy, particularly embodied in *Brihat Jataka*, remains a cornerstone of Vedic astrology (*Jyotisha*). Critically, Varāhamihira approached astrology not as mere fortune-telling, but as a complex science of time (*Kala*) and human potential, deeply interwoven with mathematics, astronomy, and ethics. He viewed astrology as a tool for understanding the fundamental principles that govern the cosmos and their influence on human life. He believed that the movements of the celestial bodies were not random but followed a divine order, and that by understanding this order, one could gain insights into the nature of reality itself.

Brihat Jataka systematically codified horoscopic astrology, providing detailed guidelines for the construction and interpretation of natal charts. This comprehensive text laid the foundation for the development of Vedic astrology as a systematic and rigorous discipline. It provided a framework for understanding the complex interplay between planetary positions, zodiacal signs, and astrological houses, and it offered detailed instructions on how to interpret these factors in order to gain insights into an individual's character and life path. Varāhamihira explained how planetary positions at birth could illuminate personality traits, health predispositions, vocational leanings, and significant life patterns. He believed that the positions of the planets at the time of an individual's birth could provide valuable insights into their character, their strengths and weaknesses, and their potential for growth and development. He also believed that astrology could be used to predict future events and to understand the cyclical nature of time. His comprehensive framework integrated houses (*bhavas*), signs (*rashis*), and planetary influences into a map intended to understand an individual's journey. This framework, which is still used by astrologers today, provides a detailed and nuanced understanding of the individual's place in the cosmos.

What truly set his work apart was the integration of ethical and medical dimensions. He linked specific planetary configurations to potential health issues and sometimes suggested remedial measures (Although often couched in religious or ritual terms). This integration of medicine and astrology reflects the holistic approach to health that was prevalent in ancient India, where physical, mental, and spiritual well-being were seen as interconnected. Varāhamihira believed that the planets could influence an individual's health and that by understanding these influences, one could take steps to promote healing and well-being. More profoundly, astrology served as a tool for understanding one's societal role and karmic context, suggesting that an

individual's *dharma* (life purpose or duty) could be discerned from their birth chart. From this Perspective astrology has become an aid to self-knowledge and social coherence. By understanding their place in the cosmos and their unique potential, individuals could live more fulfilling lives and contribute to the well-being of society as a whole.

In the *Pancha-Siddhantika*, Varāhamihira achieved a remarkable feat of scholarship by synthesising five distinct astronomical schools prevalent in his time (Surya, Romaka, Paulisa, Vasishta, and Paitamaha Siddhartha's). This demonstrates his mathematical prowess and observational acumen but as well as his intellectual openness and commitment to comparative analysis. He critically evaluates and integrates the aspects of these diverse traditions into a more unified understanding. This synthesis of different astronomical traditions highlights Varāhamihira's commitment to seeking knowledge from diverse sources and his ability to integrate seemingly disparate ideas into a coherent whole. He recognized that each school had its own strengths and weaknesses, and he sought to create a more comprehensive and accurate system by combining the best elements of each.

Varāhamihira and Indian Knowledge Systems

His methodology drew upon core IKS epistemological tools: direct observation (*pratyaksha*), logical inference (*anumana*), and received wisdom or authoritative testimony (*shabda pramana*). While deeply respecting tradition and referencing earlier scholars throughout his works, he never hesitated to innovate or integrate his own findings, contributing to a living, evolving body of knowledge. The IKS values of sustainability, harmony, and interconnection permeate Varāhamihira's writings. His detailed attention to agriculture, water management, architecture, gemmology, and even personal conduct underscores a concern for holistic well-being—for individuals, society, and the environment. His predictions were never isolated technical data points; they were embedded within a worldview that strived for a balance between humanity and the cosmos.

Results

Analysis of Varāhamihira's corpus, notably the *Bṛhat Saṃhitā* (BS), *Bṛhajjātaka* (BJ), and *Pañcasiddhāntikā* (PS), reveals a methodological framework grounded in empirical observation, systematic classification, and the integration of diverse knowledge systems. This approach is consistently applied throughout his scholarly endeavors. In meteorology, Varāhamihira's empiricism is evident in the BS through detailed atmospheric categorizations. He delineates cloud types like 'Puṣkara' and 'Āvarta' for their rainfall potential (BS, Ch. 21) and classifies winds from eight directions for prognostic purposes (BS, Ch. 26). Rainfall prediction methods integrated meticulous observations of celestial signs, such as specific sky color or lunar halos (BS, Ch. 28), and planetary positions like Venus (BS, Ch. 24). Terrestrial indicators included faunal behavior, like ants moving eggs, and floral phenology, such as the Arjuna tree's timely flowering (BS, Ch. 28-29), all reflecting a system of multiple observed correlations. Varāhamihira's astrological rigor is prominent in the BJ, which codifies horoscopic principles. This includes detailed significations of *grahas*, *bhāvas*, and *rāśis*, and the determination of planetary strength (*bala*), exemplified by Jupiter's exaltation in Cancer or Mars in Capricorn (BJ, Ch. 1, Verse 13). His synthetic acumen is demonstrated in the PS, where he critically evaluates and integrates elements from five earlier astronomical schools (Paitāmaha, Romaka, Pauliśa, Vāsiṣṭha, Saura). This synthesis involved comparing computational methods for key parameters, such as the solar year's length and equinoctial precession, to achieve a more accurate framework.

Discussion

Varāhamihira's contributions to meteorology and astrology highlight the sophistication of ancient Indian science. His work demonstrates a clear understanding of natural cycles and patterns and a commitment to using knowledge for the betterment of society. The integration of empirical observation with spiritual and philosophical insights in his work offers a valuable perspective for contemporary science, which often struggles to bridge the gap between objective analysis and subjective experience. Varāhamihira's holistic approach suggests that a more integrated understanding of the world can lead to more sustainable and harmonious ways of living.

Conclusion

Varāhamihira emerges from history, not merely as a compiler of ancient wisdom but also as a profound synthesizer who masters diverse streams of knowledge into coherent, practical systems. His enduring legacy lies

in this remarkable ability to integrate meticulous empirical observations with deep spiritual insight, thereby addressing both the practical necessities and philosophical yearnings of his society. As contemporary society faces complex challenges such as climate change, quests for meaning, and social fragmentation, revisiting thinkers like Varāhamihira offer far more than historical curiosity. It provides resonant models for sustainable living, integrated education, and a more holistic conception of science itself. Varāhamihira's contributions echo across centuries.

Acknowledgement

I, Mr. Sanjay Sahebrao Jagadale, wish to express my sincere gratitude to Principal Dr. Sanjay Khetre, the respected Principal of Dahiwadi College, Dahiwadi, for their encouragement and for providing a conducive environment for research.

Financial support and sponsorship

Nil.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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