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## **Indian Philosophical Schools and the Foundations of Science**

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### **Abstract**

This paper investigates the influence of Indian philosophical schools on the development of scientific thought, focusing on how ancient Indian traditions have contributed to various scientific disciplines. By analyzing key philosophical systems such as Nyaya, Vedanta, Vaisheshik and Samkhya, this study highlights their contributions to logic, epistemology, cosmology, and natural sciences. Indian philosophy's integration of empirical observation with metaphysical and ethical considerations demonstrates a unique approach to knowledge that transcends the boundaries of modern scientific disciplines. The paper illustrates how these ancient systems provided foundational concepts in logic, mathematics, and natural sciences, influencing the evolution of scientific methodologies and theories. This exploration underscores the enduring relevance of Indian philosophical thought in contemporary scientific discourse and its potential to enrich modern scientific inquiry.

**Keywords** : Indian Philosophy, Scientific Epistemology, Vedanta, Nyaya School, Philosophical Methodologies

### **1. Introduction**

Indian philosophy, a profound and intricate tradition spanning over two millennia, has significantly shaped the intellectual landscape of the world. From the early Vedic texts to the sophisticated philosophical systems developed in classical India, the philosophical schools of India have offered rich and nuanced understandings of reality, knowledge, and the natural world. Among these, the Nyaya, Vaisheshika, Samkhya, Yoga, and Advaita Vedanta schools stand out for their unique contributions to what can be regarded as the precursors to scientific thought.

The Nyaya school, founded by Akshapada Gautama, is renowned for its rigorous approach to logic and epistemology. Nyaya philosophy introduced a structured methodology for acquiring knowledge through perception, inference, and testimony [1, 2]. Kanada's assertion that all matter is composed of indivisible particles or "anu" mirrors contemporary

atomic theory, though it integrates metaphysical assumptions about the eternal nature of atoms [3, 4].

The Samkhya school, with its dualistic framework, offers a distinctive perspective on cosmology and the evolution of the universe. Founded by Kapila, Samkhya proposes a cyclical model of creation and dissolution that aligns with some modern cosmological theories [5, 6]. This model, emphasizing the interplay between Purusha (consciousness) and Prakriti (matter), provides an early exploration of evolutionary processes and the dynamics of the cosmos. In contrast, the Yoga school, with its emphasis on mental discipline and spiritual practice, offers insights into consciousness and self-awareness. Patanjali's Yoga Sutras present a framework for understanding the mind and its transformations, which resonates with contemporary cognitive science and psychological research [7, 8]. The integration of meditative practices with philosophical inquiry underscores the Yoga school's contribution to understanding human experience and mental processes.

Advaita Vedanta, a non-dualistic school of thought established by Adi Shankaracharya, presents a metaphysical perspective that has profound implications for understanding consciousness and reality. Advaita Vedanta's central tenet of non-dualism, where the ultimate reality is Brahman, and individual selves (Atman) are non-different from it parallels some modern interpretations of consciousness and reality [9, 10].

Indian philosophy's engagement with scientific concepts is not merely a historical curiosity but a profound testament to its intellectual richness. The Vedic texts, which predate the classical philosophical schools, contain early references to astronomical and mathematical knowledge [11, 12]. The classical period saw the emergence of systematic approaches to various fields, including logic, epistemology, and cosmology, which continue to resonate with modern scientific thought [13, 14].

The contributions of Indian philosophy to scientific thought are further exemplified by the development of logical systems and epistemological methods in the Nyaya and Vaisheshika schools. Nyaya's rigorous logic and analysis of inference laid a foundational framework for empirical and systematic investigation [15, 16]. Meanwhile, Vaisheshika's exploration of matter and atomic theory anticipated aspects of modern physical science [17, 18].

The Samkhya and Yoga schools also offer valuable insights into the nature of existence and consciousness. Samkhya's cosmological models and the theory of evolution reflect early attempts to understand the universe's structure and dynamics [19, 20]. Yoga's focus on consciousness and mental discipline contributes to ongoing discussions in cognitive science and psychology, emphasizing the interconnectedness of mind and body [13,21]. These philosophical approaches highlight the richness of Indian thought and its relevance to contemporary scientific and philosophical debates.

The exploration of scientific thoughts in Indian philosophy involves a careful examination of ancient texts and their interpretations. Accurate translation and interpretation of these texts are essential for understanding their contributions to scientific discourse [22, 23]. Moreover, integrating Indian philosophical insights with modern scientific research requires interdisciplinary collaboration, bridging the gap between philosophical concepts and empirical methodologies [24,25]. The historical and cultural context of Indian philosophy also plays a crucial role in appreciating its scientific contributions, as it provides a backdrop for understanding how these ideas evolved and influenced various fields [26,27].

Future research in this area should focus on further integrating philosophical insights with contemporary scientific theories, exploring how ancient ideas can inform modern debates [28,29]. This includes examining the historical development of scientific concepts within Indian philosophy and their impact on subsequent philosophical and scientific thought. Additionally, educational initiatives that incorporate Indian philosophical perspectives into science curricula can enhance students' understanding of the historical development of scientific ideas and promote interdisciplinary learning [30,31].

Thus, the schools of Indian philosophy offer a wealth of scientific ideas that have significant parallels with contemporary scientific thought. The Nyaya, Vaisheshika, Samkhya, Yoga, and Advaita Vedanta schools each contribute unique perspectives on the nature of reality, matter, consciousness, and the cosmos. By examining these contributions, this research paper aims to highlight the relevance of Indian philosophical traditions to modern scientific discourse and foster interdisciplinary dialogue that enriches both philosophical and scientific understanding.

## 2. Nyaya: The School of Logic and Epistemology

The Nyaya school of Indian philosophy, founded by the sage Akshapada Gautama around the 2<sup>nd</sup> century BCE, is renowned for its rigorous approach to logic, epistemology, and methodology. The term "Nyaya" means "logic" or "method," reflecting the school's focus on the systematic analysis of knowledge and reasoning processes.

Nyaya's contribution to logic is foundational and influential. The school developed a comprehensive system of logic that includes the principles of valid reasoning, the classification of fallacies, and the methods of argumentation. The Nyaya system is centered on the concept of "Pramana" (means of knowledge) and the process of "Inference" (Anumana), which are critical for understanding and validating knowledge [1,2].

Nyaya philosophy classifies knowledge into four main categories: perception (Pratyaksha), inference (Anumana), comparison (Upamana), and testimony (Shabda) [3]. This framework reflects an early attempt to systematically categorize and validate different sources of knowledge, a practice central to modern scientific inquiry. Analysis of inference in Nyaya involves complex logical processes, including the formulation of syllogisms and the identification of valid and invalid inferences, which parallels contemporary logical and mathematical methodologies [6,15].

The Nyaya school places significant emphasis on "Pramana" (valid means of knowledge), which is crucial for understanding how knowledge is acquired and validated. The Nyaya system identifies several Pramanas, each providing a different pathway to knowledge: direct perception (Pratyaksha), inference (Anumana), comparison (Upamana), and authoritative testimony (Shabda) [9]. Each Pramana is evaluated based on its reliability and ability to provide true knowledge.

Nyaya defines perception as the direct (pratyaksha), sensory experience of objects. This aligns with empirical methods in modern science, where observation and experimentation are foundational [10]. The Nyaya analysis of perception includes a detailed study of the conditions necessary for valid perception, such as the absence of illusion and the presence of a reliable perceiver [12].

Inference (anumana) is a method of knowledge that involves reasoning from known premises to unknown conclusions. Nyaya's formalization of inference includes a structured

approach to syllogistic reasoning, which involves major premises, minor premises, and conclusions [5]. This structured approach has similarities with the logical frameworks used in scientific reasoning, where hypotheses are tested and validated through systematic inference [16].

Comparison (*upamana*) involves acquiring knowledge by recognizing similarities between known and unknown entities. Nyaya's treatment of comparison includes a detailed analysis of the conditions under which valid comparisons can be made, which parallels comparative methods in scientific research [13,21].

Testimony (*shabda*) refers to knowledge acquired through authoritative sources or experts. In Nyaya, the validity of testimony is assessed based on the credibility of the source and the consistency of the information with other sources of knowledge [29]. This aspect of Nyaya epistemology reflects the importance of peer review and expert validation in scientific practice [23].

Nyaya's systematic approach to logic and argumentation provides a rigorous framework for analyzing and validating knowledge. The school's detailed analysis of logical fallacies and invalid forms of reasoning contributes to a deeper understanding of how arguments can be constructed and critiqued. Nyaya identifies various types of fallacies, such as "hasty generalization" and "post hoc reasoning," which are analogous to logical errors identified in modern scientific reasoning [32,33].

The Nyaya system's emphasis on precise definitions and systematic categorization of arguments aligns with contemporary scientific methodologies, which rely on clear definitions and structured reasoning to develop and test hypotheses [18,24]. The school's approach to logical analysis not only provides a foundation for understanding valid and invalid reasoning but also contributes to the development of critical thinking skills essential for scientific inquiry [26].

Nyaya philosophy's contributions to logic and epistemology have had a lasting impact on both Indian and Western philosophical traditions. The formalization of syllogistic reasoning and the systematic analysis of inference in Nyaya influenced subsequent philosophical and logical systems, including the development of modern formal logic [27,29]. The integration

of Nyaya's logical principles into contemporary debates on logic and reasoning reflects the ongoing relevance of the school's insights [23,30].

Nyaya's emphasis on systematic analysis and validation of knowledge aligns with the principles of scientific methodology, which prioritizes empirical evidence, logical reasoning, and the systematic testing of hypotheses. The parallels between Nyaya's epistemological framework and modern scientific practices highlight the school's contributions to the broader discourse on knowledge and reasoning [34,35].

The Nyaya school of Indian philosophy represents a significant contribution to the development of logic and epistemology, with profound implications for the philosophy of science. Nyaya's systematic approach to logic, inference, and the validation of knowledge provides a foundational framework that resonates with modern scientific methodologies and epistemic practices. The school's emphasis on precise definitions, structured reasoning, and critical analysis reflects its enduring relevance to contemporary debates on knowledge and reasoning.

### **3. Vedanta: Metaphysics and the Nature of Reality**

Vedanta, an ancient philosophical system derived from the Upanishads and crystallized through the teachings of sages like Adi Shankaracharya, focuses extensively on the nature of reality, consciousness, and the self. The central tenet of Vedanta is the concept of non-dualism (Advaita), which posits that the ultimate reality (Brahman) is singular and indivisible, and that the individual self (Atman) is fundamentally one with this ultimate reality. This metaphysical framework presents a unique perspective on reality that resonates with contemporary scientific inquiries into the nature of existence and consciousness.

Vedanta's metaphysical framework is anchored in the idea of Brahman, the ultimate reality that is both the source and essence of all existence. Brahman is described as Sat (being), Chit (consciousness), and Ananda (bliss) [11]. This conception of an underlying, unified reality offers an alternative view to the materialist perspectives prevalent in modern science, suggesting that the ultimate nature of reality transcends empirical observation and physical phenomena.

Vedanta's depiction of Brahman as an all-encompassing reality parallels the search in modern physics for a unified field theory that aims to describe all fundamental forces and particles within a single framework [36]. The quest for such a unifying theory in physics, whether through string theory, quantum field theory, or other approaches, mirrors Vedanta's philosophical assertion that all apparent diversity in the universe is rooted in a singular, unchanging reality [2,37].

The Vedantic concept of Maya, or illusion, suggests that the empirical world is a projection that obscures the true nature of Brahman [9]. This idea resonates with quantum mechanics, which reveals that at the quantum level, particles do not have definite properties until measured, suggesting a reality that is not as concrete as everyday experience might suggest [38,39]. Both perspectives challenge the conventional view of an objective, observer-independent reality.

Vedanta's exploration of consciousness and the self offers insights that intersect with modern discussions in cognitive science and philosophy of mind. In Vedanta, Atman is the true self, characterized by pure consciousness and identified with Brahman [40]. This non-dualistic view contrasts with materialist perspectives that consider consciousness a byproduct of physical processes in the brain [41]. Some contemporary theories in consciousness research, such as panpsychism or integrated information theory, propose that consciousness is a fundamental aspect of the universe, echoing Vedantic ideas [42,43]. Vedanta distinguishes between the empirical self (Jiva) and the true self (Atman) [44]. This distinction is relevant to modern psychological and neuroscientific studies of identity and self-awareness. Research into altered states of consciousness, such as those induced by meditation or psychedelics, often reports experiences of unity or dissolution of the ego, which resonate with Vedantic notions of transcending the individual self [23,45].

The intersections between Vedantic philosophy and quantum mechanics are particularly intriguing. Quantum mechanics, with its non-intuitive principles, shares conceptual similarities with Vedantic ideas about the nature of reality. The principle of wave-particle duality in quantum mechanics, where particles exhibit both wave-like and particle-like properties, parallels Vedanta's view of reality as multi-layered and complex [46,47]. This duality suggests that reality cannot be fully described by classical categories and that our perceptions of reality are limited, akin to Vedantic views on the illusory nature of empirical phenomena [48]. In quantum mechanics, the observer effect indicates that the act of

measurement affects the state of a quantum system [49]. This concept resonates with the Vedantic idea that consciousness and perception influence the nature of reality [50]. Both perspectives imply that the act of observation plays a crucial role in shaping the reality we experience, challenging the notion of an objective, observer-independent world.

Vedanta's metaphysical concepts have influenced various fields of modern science and philosophy, encouraging a broader perspective on the nature of reality and consciousness. Vedantic ideas have contributed to philosophical discussions about the nature of reality and the limitations of empirical science. The notion that reality transcends empirical observation aligns with the search for deeper, more fundamental principles in science [51]. This perspective encourages scientists to consider non-material dimensions of existence and to explore how ancient philosophical insights can inform contemporary scientific paradigms [52].

The dialogue between Vedanta and modern science fosters interdisciplinary research that bridges philosophy, physics, and cognitive science. This dialogue promotes a more integrated understanding of reality that incorporates both empirical and metaphysical dimensions [35,53]. By exploring the intersections between Vedantic thought and scientific theories, researchers can develop a more holistic view of existence and consciousness.

Vedanta offers a profound exploration of metaphysics and the nature of reality that intersects with modern scientific thought in significant ways. Its non-dualistic perspective on Brahman, the concept of Maya, and the nature of consciousness provide a unique framework for understanding reality that complements contemporary scientific theories. The parallels between Vedantic ideas and quantum mechanics, as well as the influence of Vedanta on modern philosophical and scientific discourse, highlight the enduring relevance of these ancient insights in addressing fundamental questions about existence and consciousness.

#### **4. Samkhya: Cosmology and the Classification of the Natural World**

Samkhya, one of the six classical schools of Indian philosophy, is renowned for its detailed cosmology and classification of the natural world. Traditionally attributed to the sage Kapila, Samkhya presents a systematic approach to understanding the universe through its unique framework of cosmology and ontology.



The cosmological framework of Samkhya is characterized by its dualistic approach, distinguishing between Purusha (consciousness) and Prakriti (matter or nature). This dualism provides a foundational structure for understanding the natural world and its processes. In Samkhya, Purusha represents the ultimate consciousness, which is passive and does not engage in the creation or transformation of the material world. Prakriti, on the other hand, is the dynamic, active principle responsible for the creation and evolution of the universe [11,54]. This distinction between consciousness and material nature parallels contemporary scientific concepts of observer and observed phenomena, suggesting a division between the subjective and objective aspects of reality [55]. Samkhya cosmology describes the evolution of the universe through a process known as "Sankhya Yoga," where Prakriti evolves from a state of equilibrium into a diverse array of forms and phenomena [56,57]. This process is characterized by the emergence of three fundamental qualities or Gunas, Sattva (goodness), Rajas (activity), and Tamas (inertia), which influence the behavior and transformation of matter [58]. The concept of Gunas offers a pre-modern analogue to the idea of fundamental forces or fields in physics, providing a framework for understanding the diversity and dynamism in nature [48,59].

Samkhya's classification system provides a detailed taxonomy of the natural world, breaking it down into various categories that reflect its underlying principles. The Samkhya system classifies reality into twenty-five Tattvas (principles or elements), which include both metaphysical categories and physical components [44]. These Tattvas include the three Gunas, the five Mahabhutas (great elements: earth, water, fire, air, and space), the five Tanmatras (subtle elements), and the five Jnana Indriyas (senses) among others [60]. This comprehensive classification system reflects an early attempt to systematically categorize natural phenomena and their interactions, similar to modern scientific efforts to classify and understand the components of the universe [61]. The Gunas play a critical role in Samkhya's classification of natural phenomena, influencing the characteristics and behavior of both physical matter and mental processes [62]. The interaction of these qualities determines the state and transformation of all entities in the universe. This triadic classification provides a conceptual framework that resonates with contemporary theories of dynamic systems and complexity, where interactions between fundamental components give rise to emergent properties and behaviors [63,64].

The scientific aspects of Samkhya, particularly its cosmological and classificatory principles, have notable parallels with and implications for modern scientific theories. The dualistic framework of Samkhya, distinguishing between Purusha and Prakriti, parallels modern discussions about the observer effect in quantum mechanics, where the act of observation affects the state of a quantum system [65,66]. Both perspectives suggest a fundamental distinction between the observer and the observed, emphasizing the role of consciousness or perception in shaping reality. The concept of Gunas, Sattva, Rajas, and Tamas, offers an early model for understanding dynamic interactions in nature. Modern physics describes fundamental forces and fields that influence the behavior of matter, and the Gunas provide a conceptual precursor to these ideas by categorizing the qualities and interactions of material phenomena [54,67]. The idea that the fundamental nature of matter can be described in terms of inherent qualities or forces reflects an intuitive grasp of dynamics that parallels contemporary scientific theories. Samkhya's detailed classification of the Tattvas reflects an early systematic approach to understanding the components of reality. Modern science similarly relies on classification systems to organize knowledge about the natural world, from the periodic table of elements to the taxonomy of biological species [68,69]. The Samkhya system's attempt to categorize various aspects of reality demonstrates a rigorous approach to knowledge that anticipates the scientific method of categorization and analysis.

The scientific aspects of Samkhya have influenced various fields of modern science and philosophy, contributing to a broader understanding of cosmology and natural classification. Samkhya's approach to cosmology and classification has implications for the philosophy of science, particularly in understanding how different frameworks conceptualize and categorize reality [70]. The systematic nature of Samkhya's classification reflects a philosophical commitment to organizing knowledge in a coherent and comprehensive manner, which is a central concern in modern scientific practice [71,72]. The parallels between Samkhya's cosmological and classificatory principles and contemporary scientific theories have led to interdisciplinary research exploring the connections between ancient philosophical systems and modern science [73,74]. This research highlights the value of integrating diverse intellectual traditions to gain a more nuanced understanding of fundamental questions about the nature of reality.

Samkhya's contributions to cosmology and the classification of the natural world offer a profound and systematic approach to understanding reality that intersects with modern scientific thought. Its dualistic framework, classification of Tattvas, and conceptualization of the Gunas provide valuable insights into the nature of the universe and its components. By examining these aspects of Samkhya in relation to contemporary scientific theories, we gain a deeper appreciation for the historical and intellectual context of scientific inquiry and the ways in which ancient philosophical systems continue to inform and enrich our understanding of the natural world.

### **5.Vaisheshika : The concept of Atom**

The Vaisheshika school of Indian philosophy, founded by Kanada (or Kanad) in the 6th century BCE, is renowned for its detailed exploration of the nature of reality and its components. This school, which later integrated with the Nyaya school to form the Nyaya-Vaisheshika tradition, has contributed significantly to the Indian intellectual heritage by addressing fundamental questions about matter, perception, and causality.

Vaisheshika philosophy was established by Kanada, who is traditionally credited with the work "Vaisheshika Sutra." This text outlines the fundamental principles of the school, focusing on the nature of reality and the classification of substances (dravyas) [1,2]. The system evolved over centuries, with significant contributions from philosophers like Prashastapada and Udayana, who elaborated on and refined Kanada's original ideas [75,76].

Central to Vaisheshika philosophy is the categorization of reality into six fundamental categories or padarthas: substance (dravya), quality (guna), action (karma), generality (samanya), particularity (vishesha), and inherence (adhikara) [3]. These categories are used to describe and analyze the nature of objects and their interactions.

One of the most notable scientific contributions of the Vaisheshika school is its early form of atomism. Kanada proposed that all material objects are composed of indivisible particles called "anu" (atoms), which combine to form more complex substances. This concept is remarkably similar to modern atomic theory, although Vaisheshika atomism includes a metaphysical dimension that considers the atoms to be eternal and indivisible [4,17]. Vaisheshika atomism posits that atoms combine in various ways to form physical substances, a concept that parallels the modern atomic model where atoms form molecules through chemical bonds. However, while modern atomic theory is based on empirical

observations and experimental data, Vaisheshika atomism is grounded in philosophical reasoning and metaphysical assumptions [10,77].

Vaisheshika philosophy also addresses the nature of space and time, though its approach is more metaphysical than empirical. The school recognizes space and time as fundamental aspects of reality, but they are treated as abstract rather than concrete entities. The Vaisheshika view aligns with the idea that space and time are necessary conditions for the existence of material objects [5,6]. Modern physics treats space and time as part of the fabric of the universe, influenced by Einstein's theory of relativity, which views space and time as intertwined dimensions that can be warped by mass and energy [78,79]. Vaisheshika's treatment of space and time is more aligned with their role in providing a context for the material world rather than as dynamic, interactive dimensions.

The Vaisheshika school emphasizes the principle of inherence (*adhikara*), which asserts that qualities and actions inhere in substances. This principle is used to explain the relationship between objects and their properties. Inherences are crucial for understanding causality within this framework [16,80]. Modern science often views causality in terms of physical interactions and empirical laws. The Vaisheshika notion of inherence resembles the idea of properties being intrinsic to substances, but modern scientific causality is usually described through empirical observations and controlled experiments [13,21].

Vaisheshika epistemology is based on three primary sources of knowledge: perception (*pratyaksha*), inference (*anumana*), and testimony (*shabda*) [9]. These sources are used to acquire knowledge about the physical world and its components. Perception and inference are particularly significant in Vaisheshika philosophy as they provide the basis for understanding the nature of matter and its interactions. The Vaisheshika emphasis on perception and inference aligns with the empirical methods used in modern science. However, while modern science relies heavily on experimental validation and systematic observation, Vaisheshika inference is more abstract, focusing on logical deductions from fundamental principles [26,81].

Vaisheshika philosophy employs a detailed system of logical analysis to explore the nature of reality. This includes categorizing objects and their properties, analyzing their interactions, and understanding the principles of causality [14,28]. The logical rigor of Vaisheshika thought provides a framework for systematic analysis, which is a precursor to

modern scientific reasoning. The logical analysis in Vaisheshika philosophy bears resemblance to modern formal logic, particularly in its systematic approach to categorizing and analyzing concepts. Modern logic, however, is more formalized and abstract, with developments in symbolic logic and mathematical reasoning providing additional tools for analysis [15,30].

The Vaisheshika school has had a lasting impact on Indian intellectual traditions, influencing other philosophical schools and contributing to the development of the Nyaya-Vaisheshika system. Its concepts of atomism and logic have been integrated into various philosophical and scientific discussions throughout Indian history [26,35].

The scientific ideas of the Vaisheshika school, particularly its atomism, have continued to be a point of interest for scholars and scientists exploring the historical development of scientific thought. The parallels between Vaisheshika atomism and modern atomic theory highlight the enduring relevance of ancient philosophical insights in understanding the nature of matter and the universe [27,82].

The Vaisheshika school of Indian philosophy offers valuable insights into the nature of reality, matter, and causality that resonate with modern scientific understandings. Its early form of atomism, emphasis on logical analysis, and exploration of epistemological principles highlight the rich intellectual heritage of Indian philosophy.

## **5. The Interplay of Science and Indian Philosophy – A Comparative Analysis**

The relationship between science and philosophy has been a subject of profound exploration, with Indian philosophy offering unique insights into this discourse. Indian philosophical traditions, which include schools like Vedanta, Samkhya, Yoga, and Nyaya, have long engaged with questions of reality, knowledge, and the nature of existence.

Indian philosophy and modern science share a commitment to knowledge and understanding, but they differ in methodology. Indian philosophical schools such as Nyaya emphasize rigorous logical analysis and empirical observation in understanding reality [21]. This approach parallels the scientific method, which relies on hypothesis testing and empirical validation. However, while Nyaya integrates metaphysical assumptions into its epistemology, modern science often strives for methodological naturalism and empirical verification.

Indian metaphysical systems, especially Vedanta, propose a unified reality (Brahman) underlying all existence. This ontological perspective contrasts with the scientific view, which often operates within a framework of materialism and physicalism. However, contemporary discussions in physics and cosmology, such as those involving string theory and the multiverse, sometimes reflect metaphysical questions similar to those posed by Indian philosophy [83,84].

Indian philosophy's ethical teachings, such as those found in the Bhagavad Gita, emphasize dharma (duty) and the moral implications of actions [85]. Modern science, while providing tools for understanding the natural world, does not inherently address ethical questions about how to live or act. This gap suggests that while science can inform ethical decision-making, philosophical frameworks are essential for addressing moral and existential questions [31,86].

Ayurveda, an ancient Indian system of medicine, integrates philosophical principles with medical practice. Research into Ayurveda's efficacy and mechanisms offers insights into how traditional practices align with or diverge from modern scientific understandings of health and disease [87]. Studies on Ayurvedic herbs and treatments often reveal potential mechanisms that complement or challenge contemporary biomedical perspectives [29,88].

Yoga, rooted in Indian philosophical traditions, has gained scientific attention for its benefits on physical and mental health. Research supports its effectiveness in managing stress, improving flexibility, and enhancing overall well-being [77,89]. This integration of Yoga into health sciences exemplifies how philosophical practices can be examined and validated through scientific inquiry.

The interplay between Indian philosophy and modern science reveals a complex and dynamic relationship. Indian philosophical traditions offer rich conceptual frameworks that resonate with or challenge contemporary scientific ideas. While there are significant differences in methodology and focus, the convergence of these fields offers valuable insights into the nature of reality, consciousness, and existence.

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