

Indian Philosophical Foundations in S. R. Ranganathan's Colon Classification: An Analytical Study

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ABSTRACT

This research analyses the Indian philosophical basis of S. R. Ranganathan's Colon Classification system (CC). CC is one of the modern, innovative, and scientifically proven systems of knowledge organization in the field of library and information science. Compared with enumerative classification schemes, Colon Classification uses a faceted and analytic-synthetic methodology that allows the flexible construction of complex subjects in library classification. The philosophical foundations of CC include epistemological, logical, and ontological concepts of Indian philosophy. In particular, it is related to the Advaita, Nyaya, and Vaisheshika schools of thought. Generally, these schools emphasize systematic investigation, organization, and relationships within reality. Ranganathan's PMEST system (Personality, Matter, Energy, Space, and Time) mirrors a structured worldview. In CC, elements, their attributes, actions, locations, and historical categories are analytically combined (synthesized). This method is similar to Indian epistemological systems, in which knowledge is broken into elementary components to understand both the whole and its parts. Further, the chain-notation structure of CC incorporates linguistic, logical, and mathematical concepts that ensure accessibility, clarity, and order. Philosophically, CC balances holism and fragmentation, emphasizing the interrelatedness of knowledge. This study examines Colon Classification from an Indian philosophical viewpoint, focusing

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on how Ranganathan integrated epistemological and logical ideas into a modern system of knowledge organization. The study uses analytical and comparative methods, with data collected from primary and secondary sources. Ranganathan's original works, such as Colon Classification, Prolegomena to Library Classification, and Elements of Library Classification, were used as primary sources.

Keywords: *S. R. Ranganathan, Colon Classification, faceted classification, Indian philosophy, Indian epistemology, library science, ontology*

Introduction

Classification is an intellectual endeavour that helps to organize information and understand universal knowledge (Beghtol, 2003). Classification methods in library and information science not only enable access to information but also reflect the philosophical and logical structures through which knowledge is understood and organized (Gnoli, 2016). Among the several classification methods in use today, S. R. Ranganathan's Colon Classification (CC) has a special place because of its deeper philosophical basis, scientific methods, and flexibility (Satija, 2013). CC was established in the 1930s and, unlike enumerative classification schemes such as the Dewey Decimal Classification and Library of Congress Classification, applies a faceted classification system and an analytic-synthetic method that allows complex subjects to be constructed from basic elements. This idea remains central to knowledge organization in the digital age (Gnoli, 2008).

Since Ranganathan was born in Tamil Nadu, India, his intellectual work on Colon Classification was significantly influenced by Indian philosophical traditions. Although his background in mathematics and library science provided a scientific framework, Indian logic, ontology, and epistemology gave CC a distinctive philosophical depth (Satija, 1992). CC is related to a number of Indian philosophical schools, including Nyaya, Vaisheshika, and Advaita. Vaisheshika

philosophy provides a structured worldview by analysing reality through logical and ontological categories known as Padarthas. These include substance, quality, universality, action, particularity, and inherence (Hiriyanna, 1993). This philosophical system emphasizes systematic analysis, relational understanding, and holistic integration, which parallel Ranganathan's PMEST categories of Personality, Matter, Energy, Space, and Time (Satija, 1992).

Ranganathan's PMEST structure expresses his view of knowledge as dynamic, scientific, and interconnected. Each category reflects an essential dimension of reality, and their combination represents the holistic nature of knowledge (Satija, 2016). Personality refers to the main subject, Matter to its substance or properties, Energy to activity, Space to location, and Time to period (Neelameghan, 1997). This form of faceted analysis provides a philosophical framework that expresses the holistic combination of existence by synthesizing parts into a whole. It is related to the Indian ontological view of reality as a connected totality rather than as isolated fragments (Hiriyanna, 1993).

In Indian philosophy, epistemology explores the nature, sources, scope, and justification of knowledge, essentially asking how and what we know (Audi, 2011). Ontology is the branch of philosophy that studies the nature of being, existence, and the fundamental categories of reality, it examines what exists (Craig, 1998). Logic is the systematic study of correct reasoning and of how conclusions are derived from premises using valid rules of inference (Copi et al., 2014).

Furthermore, Ranganathan's colon notation expresses combinations of facets through a logical structure similar to linguistic and mathematical structures. It enables analytic-synthetic concepts to be combined with accuracy, flexibility, and scalability (Ranganathan, 1937). This notation method can be related to the logical reasoning of Nyaya philosophy, which values systematic categorization, precise relationships, and clarity in the expression of knowledge (Hiriyanna, 1993). Therefore, Ranganathan's Colon Classification is not merely a technical tool for knowledge organization in libraries; it can also be viewed as a philosophical

system for organizing human thought in the modern age (Satija, 2016).

The philosophical basis of CC illustrates how Ranganathan used Indian logical, ontological, and epistemological concepts. His method offered a model of knowledge organization with roots in Indian epistemology and logic that extended beyond cultural boundaries (Satija, 1992). Therefore, this study analyses the philosophical basis of Ranganathan's Colon Classification from an Indian philosophical perspective, focusing on how his conceptualization of categories, organization, and synthesis mirrors epistemological, ontological, and logical concepts in Indian philosophy. By analysing CC from philosophical and practical viewpoints, the study examines its dual character as a scientific method of classification and a philosophical expression of knowledge.

Objectives of the Study

The main objective of the study is to analyse the philosophical foundations of Ranganathan's Colon Classification system.

The specific objectives are:

- To examine the epistemological influence of Nyaya philosophy on Ranganathan's classification method.
- To explore the relationship between Ranganathan's PMEST system and the concept of Padarthas in Vaisheshika philosophy (ontological concept).
- To examine the relationship between Ranganathan's PMEST system and the non-dualistic theory of Advaita philosophy.
- To examine Colon Classification as a philosophical model of knowledge organization rather than only as a technical/scientific method of modern classification.

Review of Related Literature

S. R. Ranganathan's Colon Classification has been extensively analysed by researchers in library and information science, information organization, and the

philosophy of knowledge. The literature indicates that, while several studies have examined the technical, structural, practical, and scientific aspects of CC, comparatively few have explained its philosophical basis. This section therefore reviews the theoretical and philosophical significance of Ranganathan's classification system in relation to Indian philosophy.

Methodological Innovation of Colon Classification

Broughton (2006) highlighted the methodological originality of CC, particularly its analytic-synthetic method and faceted classification system. The study discussed Ranganathan's contribution as a shift from enumeration to faceted thinking, enabling extensive subject representation through logical combinations. However, this work primarily situates CC within Western frameworks of knowledge organization and logic, giving less attention to the Indian philosophical concepts underlying Ranganathan's framework.

Philosophical Interpretations of Colon Classification

Satija (2013) is one of the leading scholars to analyse Ranganathan's ideas within their philosophical and cultural environment. He emphasized that CC can be understood as a philosophical representation of knowledge organization rooted in Indian logic rather than merely as a classification method. He further explained how Ranganathan's PMEST system represents an ontological view of reality and noted that Ranganathan's perspective on classification as a growing organism aligns with the Indian philosophical concept of Parinama (transformation).

Logical and Analytical Dimensions of CC

Similarly, Vickery (1960) acknowledged the logical complexity of Ranganathan's notation and its ability to represent relationships systematically. He noted that Ranganathan's system links classification to both logical and linguistic analysis, anticipating later developments in knowledge organization and faceted classification. Faceted analysis theory was later developed further by Mills and

Broughton (1977), who acknowledged Ranganathan's significant contribution to the creation of a model for knowledge synthesis.

Epistemological Perspectives on Knowledge Organization

Dousa (2019) examined Ranganathan's classification through an epistemological perspective and discussed the relationship between rational and intuitive dimensions of his thought. Within CC, rationalism is evident in its conceptual categorical system, while empirical subject analysis provides a practical basis for classification. This combination may be viewed as consistent with the holistic integration found in many Indian philosophical traditions.

According to the literature, CC has been described not only as a scientific and technical system but also as a philosophical method related to Indian epistemology and logic. The PMEST system reflects an ontological worldview; its analytic-synthetic method aligns with logical thinking, while the dynamic flexibility of CC can be related to metaphysical concepts of change and permanence.

Research Gap and Need for Further Study

A few earlier studies on Colon Classification have reflected on Indian philosophy. However, there remains a need for deeper philosophical analysis that places Ranganathan's classification theory more clearly within Indian logical, ontological, and epistemological traditions, particularly the structures of the Nyaya and Vaisheshika schools of philosophy. This study addresses that gap by examining how these philosophical systems may have shaped Ranganathan's conception of knowledge organization.

Methodology

This study used a qualitative descriptive research design. It primarily adopted theoretical and documentary analysis, emphasizing conceptual interpretation rather than empirical investigation. The study aimed to examine the philosophical

foundations of S. R. Ranganathan's Colon Classification by interpreting relevant primary and secondary sources. The methodology consisted of the following stages.

An in-depth analysis of both primary and secondary sources was conducted. The primary sources were selected based on their direct relevance to Ranganathan's original formulation of Colon Classification and facet analysis. These included Colon Classification, Prolegomena to Library Classification, and Elements of Library Classification, which provide the fundamental concepts and principles of his classification theory.

The secondary sources were selected according to their scholarly relevance to Indian philosophical traditions, particularly Nyaya, Vaisheshika, Advaita, and Indian epistemology. These sources included books, peer-reviewed journal articles, and authoritative commentaries that explain concepts such as Padarthas, logic, inference, non-duality, and epistemological principles. Only sources that directly contributed to understanding the philosophical background of Ranganathan's ideas were included, while materials lacking clear relevance to the study objectives were excluded.

The collected sources were analysed using documentary and conceptual analysis. Key philosophical concepts from the selected literature were identified, interpreted, and systematically compared with Ranganathan's classification principles. Comparative analysis was employed to examine the relationship between the PMEST facets and the Padarthas of Vaisheshika philosophy. Logical interpretation was also used to identify conceptual similarities between Ranganathan's facet analysis and Nyaya methods of reasoning and inference. The findings from both primary and secondary sources were synthesized to develop a coherent interpretation of the philosophical foundations underlying Ranganathan's Colon Classification.

Theoretical Framework

Ranganathan's Colon Classification (CC) is based on a synthesis of Indian logical philosophy and modern scientific reasoning (Satija, 1992). His method represents a philosophy of knowledge that aims to represent multiple aspects of human understanding and goes beyond the mechanical organization of library resources (Gnoli, 2016). This study analyses the philosophical foundations of CC primarily through the Indian philosophical schools of Nyaya (epistemology) and Vaisheshika (ontology), with reference to Advaita where relevant. Together, these perspectives provide a framework incorporating logic, epistemology, ontology, and ideas of unity and interconnectedness (Hiriyanna, 1993).

The Nyaya philosophical system, founded by Gautama, is one of the six orthodox or classical systems of Hindu thought. It is fundamentally a method of epistemological investigation (Anvikshiki) that emphasizes sources of knowledge (Pramana), reasoning, and the structure of thought (Hiriyanna, 1993). It offers an analytical and rational method for understanding reality by organizing knowledge into particular categories and relationships. Nyaya philosophers emphasize that valid knowledge emerges through systematic analysis and accurate perception, which can be compared with Ranganathan's analytic-synthetic approach (Satija, 2016). In CC, a subject is analysed into its basic elements or facets and then logically recombined through synthesis. This can be related to the Nyaya concepts of Avayava (parts) and Avayavi (whole) (Matilal, 1990). This structural relationship illustrates how knowledge may be logically disassembled and reassembled to reveal its context and meaning (Gnoli, 2016).

Another school of philosophy relevant to the study is Vaisheshika, traditionally associated with the Indian scholar Kanada. Vaisheshika provides an ontological framework for analysing reality through categories (Padarthas), including Substance (Dravya), Quality (Guna), Action (Karma), Generality (Samanya), Particularity (Vishesha), and Inherence (Samavaya) (Hiriyanna, 1993). These categories indicate basic components of existence and relationships among

them. Ranganathan's PMEST categories—Personality, Matter, Energy, Space, and Time—can be compared with aspects of the Vaisheshika system (Satija, 1992). For example, Personality (P) may be related to *Dravya* as the substantive focus of study, Matter (M) to qualities or material aspects, and Energy (E) to Karma or activity. Space (S) and Time (T) may be compared with spatial and temporal dimensions recognized in Vaisheshika thought (Neelameghan, 1997). This comparison provides an ontological interpretation of how Ranganathan's PMEST categories may relate to *Padartha* concepts within a modern system of library classification (Satija, 2016).

Through these PMEST categories, Ranganathan created a comprehensive model of knowledge organization intended to represent subjects in their multiple aspects (Satija, 2016). His approach can be interpreted as integrating the logical precision of Nyaya, the ontological framework of Vaisheshika, and the methodological rigour of scientific analysis (Satija, 1992). He maintained that classification should allow continuous growth and flexibility by reflecting the natural order and development of knowledge (Ranganathan, 1967). This view can also be considered in relation to the Indian philosophical idea of unity in diversity, expressed in the phrase “*Ekam Sat Vipra Bahudha Vadanti*” (“Truth is one, expressed in many ways”) (Chatterjee & Datta, 1984).

Ranganathan's philosophical method can also be considered in relation to Indian epistemological systems. In Nyaya philosophy, four recognized sources of valid knowledge are Perception (*Pratyaksha*), Inference (*Anumana*), Comparison (*Upamana*), and Verbal Testimony (*Shabda*) (Hiriyanna, 1993). Ranganathan emphasized that a classifier must understand the subject matter of a document, determine its main focus, examine its relationships, and assign notation for its expression (Ranganathan, 1937). This epistemic process emphasizes that classification is not merely a mechanical effort but also an intellectual method of understanding (Gnoli, 2016).

Additionally, Ranganathan's faceted analysis and chain notation can be

compared with the syntactic logic of Indian linguistic philosophy (Vyakarana), particularly rule-based combinations of elements associated with Panini's grammatical tradition (Gnoli, 2016). Similarly, in CC, the colon (:) functions as a logical connector that links individual facets into a coherent subject expression (Satija, 2016). This method operationalizes relational thinking in the structure of knowledge (Matilal, 1990).

In essence, Ranganathan's Colon Classification is a practical technique for organizing human knowledge that may be interpreted in relation to Vaisheshika's ontological structure and Nyaya's logical and epistemological rigour (Satija, 2016).

His system illustrates how Indian philosophical systems can inform modern approaches to knowledge organization, suggesting that classification is not merely a library technique but can also be interpreted as a philosophical act of mapping reality (Gnoli, 2016). In this sense, the philosophical framework of CC offers an example of Indian philosophical ideas applied to information science. Ranganathan's approach integrates ontology, epistemology, logic, and practical librarianship, providing a philosophical structure that continues to influence classification theory, ontology, and information design in the digital age (Neelameghan, 1997).

Analysis and Discussion

Ranganathan's Colon Classification (CC) reflects not only a system for organizing library resources but also a philosophical framework for knowledge organization. When evaluated from an Indian philosophical perspective, particularly through the Nyaya and Vaisheshika systems, CC reveals a deeper intellectual structure. This study analyses the primary elements of CC, including its categories, notation, and methods, and discusses their philosophical significance in relation to Indian logical, ontological, and epistemological traditions.

The core of CC is facet analysis, which breaks down a subject into its

elemental aspects and then synthesizes them into a meaningful whole. This process can be related to the logical system of Nyaya philosophy, which emphasizes systematic analysis and the relationship between parts and the whole (Chatterjee & Datta, 1984). Ranganathan's method similarly requires the classifier to break down complex subjects into the fundamental categories of Personality, Matter, Energy, Space, and Time (PMEST) and then combine them to represent the complete subject (Satija, 2016). This analytic-synthetic approach reflects the view that understanding involves both the parts and their relationships within a whole (Hiriyanna, 1993).

The PMEST concept can also be considered in relation to the Vaisheshika ontological framework. Each category denotes an aspect of existence comparable with selected Padarthas (Chatterjee & Datta, 1984). At the broadest conceptual level, Personality (P) represents the principal entity or subject of a discipline and can therefore be related to Dravya (substance). However, the characteristics of an entity may also involve Samanya (generality) and Vishesha (particularity), which explain its general and distinctive aspects. Matter (M) represents the material or property-related aspects of a subject; accordingly, its relationship with Vaisheshika may be distributed across Dravya (substance) and Guna (quality) rather than restricted

to a single category. Energy (E), representing action, process, or activity, corresponds most closely to Karma (action). Similarly, Space and Time have relatively direct conceptual correspondences with spatial and temporal categories. Through these five categories, Ranganathan incorporates physical, action-oriented, geographical, and temporal aspects of knowledge into a comprehensive structure. This comparison suggests that CC may be interpreted as compatible with aspects of ancient Indian philosophical thought, in which knowledge and being are interconnected (Kumar, 2009).

Table 1

PMEST and Vaisheshika categories

Ranganathan's categories	Corresponding Vaisheshika concept	Nature of correspondence
Personality (P)	Dravya (substance), with Samanya (generality) and Vishesha (particularity)	Represents the principal entity or subject and its general/particular characteristics
Matter (M)	Dravya (substance) and Guna (quality)	Represents material and property-related aspects of a subject
Energy (E)	Karma (action)	Represents actions, processes, and activities
Space	Dika (space)	Represents geographical aspects
Time	Kala (time)	Represents temporal aspects

The colon notation system, which gives the scheme its name, also has a philosophical basis. It is a syntactic structure and a logical mechanism that enables simple ideas to be combined into more complex expressions (Ranganathan, 1937). In Indian logic, particularly in Nyaya epistemology, reasoning involves connecting propositions through relational operations to produce valid knowledge (Anumana) (Chatterjee & Datta, 1984). Likewise, in CC, the colon (:) functions as a logical connector indicating relationships between facets. This enables classifiers to construct a wide range of subjects while maintaining consistency and order. It can also be compared with the rule-based relational structure of Indian linguistic philosophy (Vyakarana), illustrating how Ranganathan integrated logical and linguistic clarity into his system (Satija, 2016).

Additionally, Ranganathan's classification system presents an integrated view of ideas, a feature that can be related to Indian metaphysical thinking. Knowledge is seen not as a collection of separate facts but as a cohesive and dynamic continuum. CC seeks to represent the basic aspects of a classified subject: what it is (Personality), what it is made of or characterized by (Matter), what happens to it (Energy), where it is (Space), and when it occurs (Time)

(Ranganathan, 1937). This holistic view can be considered alongside Advaitic (non-dual) understandings of unity and interconnectedness (Satija, 2016). Advaita Vedanta, particularly associated with the teachings of Adi Shankaracharya, holds that ultimate reality (Brahman) is non-dual and that apparent multiplicity is grounded in a unified reality. From this perspective, the emphasis on unity, interconnectedness, and the underlying coherence of reality provides a philosophical lens through which Ranganathan's holistic approach to knowledge organization may be examined (Dalal, 2021).

Ranganathan's philosophical approach becomes more evident when contrasted with Western classification systems such as Dewey Decimal Classification and Library of Congress Classification. These systems are largely based on enumerative and fixed hierarchical structures, whereas the faceted and dynamic character of Colon Classification can be related to philosophical ideas of transformation (Parinama), in which reality and knowledge are continually changing. This flexibility enables CC to accommodate emerging fields and interdisciplinary subjects, supporting its continuing relevance in the digital information age.

In conclusion, Ranganathan's Colon Classification can be interpreted as a philosophical structure as well as a classification system. Its categories and notation reflect the analytical character of Nyaya logic and can be compared with the ontological categories of Vaisheshika. In this way, Indian philosophical concepts related to logic, epistemology, ontology, and holistic thought can be examined alongside a scientific method for organizing knowledge. Through CC, Ranganathan connected Indian philosophical ideas with modern information science and developed a philosophy of knowledge organization that continues to influence contemporary approaches to classification and semantic knowledge systems.

Conclusion

Colon Classification (CC), developed by S. R. Ranganathan, is more than a technical method for organizing library resources. It can be interpreted as a philosophical framework connected with logical, ontological, and epistemological traditions of India. When examined through the lenses of Nyaya, Vaisheshika, and Advaita philosophy, CC reveals an intellectual structure that combines logical analysis, ontological categorization, and a broad understanding of knowledge.

The PMEST concept (Personality, Matter, Energy, Space, and Time) provides a structure through which subjects are analysed and synthesized. It can be compared with selected ontological concepts of Vaisheshika philosophy. Similarly, the analytic-synthetic method of CC can be related to Nyaya logic, in which understanding is developed through the systematic analysis of concepts and their rational reconstruction.

Ranganathan's philosophy of classification can also be considered in relation to the Indian metaphysical idea of unity in diversity. By allowing each topic to be expressed through multiple aspects, including its nature, properties, actions, spatial context, and temporal context, Colon Classification provides a dynamic and integrative representation of knowledge. Its faceted structure gives it flexibility in accommodating evolving fields and interdisciplinary subjects.

In summary, Ranganathan's Colon Classification represents a synthesis of ontological structure, Indian logical reasoning, and modern scientific methodology. It illustrates how Indian philosophical ideas can be considered in relation to modern approaches to knowledge representation. By connecting Indian philosophical traditions with contemporary information science, Ranganathan developed an enduring model of classification that continues to influence faceted classification, digital information systems, ontology design, and semantic knowledge structures.

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