

# Comparative Analysis of Swaras in Indian Classical Music: A Structural, Theoretical, and Pedagogical Perspective

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## ABSTRACT

This paper presents a comparative study of *Swaras* in Indian classical music, with a particular focus on the structural, tonal, and theoretical differences between the Hindustani and Carnatic traditions. Drawing upon ancient treatises and modern scholarship, the research analyzes the evolution, classification, and practical applications of *Swaras*. The study also explores improvisational techniques, modal systems, and ornamentation, thereby offering a systematic understanding of the role of *Swaras* in pedagogy and performance. This comparative inquiry contributes to the discourse on musical divergence and unity within the broader framework of Indian classical music.

This study provides a deeper investigation into the conceptual, structural, and pedagogical interpretations of *Swaras* in the Hindustani and Carnatic classical traditions. Beyond describing differences, it critically examines how pitch classification, modal systems, microtonality, ornamentation, pedagogy, and aesthetic orientation contribute to unique musical identities. The study contributes to broader Indian musicology by explaining how theoretical frameworks, performance practice, and pedagogy collectively shape Swara interpretation in contemporary practice.

**Keywords:** Swaras, Indian classical music, Hindustani music, Carnatic music, music theory, pedagogy

## INTRODUCTION

Indian classical music—encompassing the Hindustani and Carnatic traditions—is one of the most intricate melodic systems globally. At its core lies the concept of **Swaras**, the fundamental pitch units that structure ragas and define melodic expression. Although both traditions draw upon ancient Sanskrit treatises such as the *Nāṭyaśāstra* and *Sangīta Ratnākara*, their evolution diverged significantly as a result of regional histories, pedagogical philosophies, and aesthetic preferences. Although current research often broadly compares Hindustani and Carnatic music, there is a need for a detailed, integrated analysis that connects theoretical constructs with actual performance practice and pedagogical science. This study addresses that need by combining textual analysis with comparative structural mapping and pedagogical insights.

Indian classical music is one of the oldest and most sophisticated musical traditions in the world, characterized by its intricate melodic and rhythmic systems, improvisational depth, and spiritual foundations. Central to this tradition is the concept of *Swaras*—the basic tonal elements that form the foundation of melody and raga construction. Both the Hindustani (North Indian) and Carnatic (South Indian) systems of classical music share a common heritage rooted in ancient treatises such as the *Nāṭyaśāstra* and the *Sangīta Ratnākara*, which establish the theoretical underpinnings of *Swaras* and their role in musical expression (Bharata, 1996; Sarangadeva, 2002).

Despite these shared origins, the two systems have diverged significantly over centuries due to cultural, geographical, religious, and historical influences. The Hindustani tradition evolved through interaction with Persian and Islamic cultures, especially during the Mughal period, leading to stylistic innovations and the development of the *Thaat* system of raga classification (Bhatkhande, 1934). In contrast, the Carnatic tradition

retained a more orthodox and text-based approach, emphasizing the *Melakarta* raga framework and preserving many elements of ancient Sanskritic theory (Venkatamakhi, 2002).

Understanding the role of *Swaras* in these traditions is essential for comprehending the broader structure of Indian classical music. While both traditions utilize seven primary *Swaras*, their treatment, ornamentation, and microtonal nuances differ greatly. These differences are not merely technical but are deeply embedded in performance practice, pedagogical approaches, and aesthetic philosophy.

This paper seeks to conduct a detailed comparative analysis of *Swaras* from both a structural and theoretical perspective, with the aim of highlighting how similar conceptual elements have been interpreted and applied differently in the Hindustani and Carnatic music traditions. Through an exploration of scale formation, pitch classification, ornamentation, improvisation, and historical evolution, this study contributes to a nuanced understanding of the role of *Swaras* in shaping the identity of Indian classical music.

## 2. Research Aim and Questions

The aim of this study is to conduct a comprehensive comparative analysis of *Swaras* in the Hindustani and Carnatic systems, examining their theoretical structure, practical application, and pedagogical implications.

### Research Questions

1. How are *Swaras* conceptualized, classified, and applied differently in the two traditions?
2. How do these differences shape improvisation, performance aesthetics, and musical pedagogy?
3. What historical and cultural factors contributed to divergence in *Swara* interpretation?

## METHODOLOGY

This research uses a **qualitative, comparative, and analytical approach** including: **3.1**

### Textual Analysis

Primary sources:

1. *Nātyaśāstra* (Bharata)
2. *Sangīta Ratnākara* (Sarangadeva)
3. *Chaturdaṇḍi Prakāśikā* (Venkatamakhi)

### Secondary sources:

1. Bhatkhande's Hindustani Sangeet Paddhati
2. Modern scholarship on acoustics, pedagogy, and raga theory

## 3.2 Performance Analysis

Selected recordings and compositions were examined for ornamentation, improvisation, and *Swara* treatment.

## 3.3 Conceptual Mapping

Structured comparison of Thaat vs. Melakarta; Shuddha/Komal/Tīvrā vs. alphanumeric Carnatic variants.

### Theoretical Framework 4.1 Concept of Swara

A *Swara* is not simply a pitch but an expressive melodic entity with tonal, emotive, and contextual meaning.

Both traditions recognize seven primary Swaras (Sa, Ri/Re, Ga, Ma, Pa, Dha, Ni), yet their **variant structures**, **notation systems**, and **ornamentation rules** differ significantly.

#### 4.2 Śruti: Microtonal Dimension

Śruti—the smallest audible pitch difference—forms the microtonal basis of Indian classical music.

Tradition	Interpretation of Śruti
Hindustani	Flexible, aesthetic, realized through Meend, Andolan
Carnatic	Theoretically fixed 22 Śrutis with defined Swara positions

Carnatic music preserves a more textually grounded microtonal model, while Hindustani Śruti is more interpretive and performance-driven.

#### 4.3 Ancient Origins and Foundational Texts

The theoretical foundation of Indian classical music is rooted in ancient Sanskrit treatises such as the *Nātyaśāstra* (Bharata, 1996), which introduces early concepts of *Jātis*, the precursors to modern *Rāgas*. Although the modern concept of *Rāga* is not explicitly defined, the treatise lays a foundational framework for the melodic organization that later evolved differently in the two traditions.

Sarangadeva's *Sangīta Ratnākara* (13th century) is a seminal text that bridges the Northern and Southern musical systems, reinforcing the existence of a unified early tradition that diverged over time (Sarangadeva, 2002).

#### Swara Classification

Both systems recognize seven basic notes (*Swaras*): Shadja (*Sa*), Rishabha (*Ri*), Gāndhāra (*Ga*), Madhyama (*Ma*), Panchama (*Pa*), Dhaivata (*Dha*), and Nishāda (*Ni*). However, each tradition has developed distinct terminologies and classifications:

1. **Hindustani music** classifies Swaras as Shuddha (natural), Komal (flat), and Tīvrā (sharp).
2. **Carnatic music** uses alphanumeric designations such as R1, R2, R3 to indicate pitch variations (Venkatamakhi, 1934/2002).

The Carnatic tradition identifies 22 Śrutis (microtones) in an octave, which are more rigidly codified than in Hindustani music, where microtonal expressions are conveyed through *Meend*, *Andolan*, and *Gamak* (Viswanathan & Allen, 2004).

### 5. Comparative Structural Analysis

#### 5.1 Scale and Modal Frameworks

1. **Hindustani music** follows the *Thaat* system, comprising 10 parent scales categorized by Vishnu Narayan Bhatkhande (1934).
2. **Carnatic music** employs the *Melakarta* system, a comprehensive framework of 72 parent *Rāgas* formalized by Venkatamakhi in the 17th century (Venkatamakhi, 2002).

These scale systems are crucial to raga formation and are integral to both theoretical instruction and creative performance.

## Hindustani – Thaat system (10)

Primarily pedagogical and classificatory.

## Carnatic – Melakarta system (72)

A complete, mathematical framework governing raga generation.

Feature	Hindustani	Carnatic
Parent Scales	10 Thaats	72 Melakartas
Swara Variants	Shuddha, Komal, Tīvrā	R1, R2, R3 ... N1, N2, N3
Microtonality	Flexible	Codified (22 Śrutis)
Theoretical Orientation	Descriptive	Systematic & generative

## 5.2 Correspondence of Swaras

### Swara Correspondence Chart

Swara	Hindustani Notation	Carnatic Notation
Shadja	S	S
Rishabha	R (Komal, Shuddha)	R1, R2, R3
Gāndhāra	G (Komal, Shuddha)	G1, G2, G3
Madhyama	M (Shuddha, Tīvrā)	M1, M2
Panchama	P	P
Dhaivata	D (Komal, Shuddha)	D1, D2, D3
Nishāda	N (Komal, Shuddha)	N1, N2, N3

## 6. Ornamentation and Aesthetic Interpretation

Each tradition exhibits unique stylistic techniques for ornamenting *Swaras*:

1. **Hindustani music** emphasizes Meend (glide), Kan (grace note), Murki (short trill), and Gamak (oscillation) (Bhatkhande, 1934).
2. **Carnatic music** utilizes Kampita (oscillation), Jāru (slide), Nokku (grace flick), and Spuritam (repeated touch) (Subramaniam, 1981).

These ornamentations reflect regional aesthetic preferences and significantly influence the expression of a *Rāga*. Ornamentation (Gamakas) shapes Swara identity more strongly in Indian classical music than in most world musical traditions.

### 6.1 Hindustani Ornamentation

1. **Meend** – Gliding between notes
2. **Andolan** – Slow oscillation

3. **Murki** – Quick turn
4. **Gamak** – Strong oscillatory expression

Character: fluid, introspective, continuous.

## 6.2 Carnatic Ornamentation

1. **Kampita** – Oscillation on a Swara
2. **Jāru** – Slide
3. **Nokku** – Grace flick
4. **Spuritam** – Accented repetition

Character: rhythmically precise, ornamentation as essential grammar.

## 7. Pedagogical Approaches

### 7.1 Hindustani Pedagogy

1. Oral tradition (guru–shishya parampara)
2. Emphasis on imitation and absorption
3. Early focus on meend-based intonation
4. Gharana-specific stylistic identities

### 7.2 Carnatic Pedagogy

1. Structured curriculum (Sarali → Jantai → Alankaras → Geethams) • Early introduction of gamakas
2. Standardized teaching texts and patterns
3. Strong theoretical grounding through Melakarta system

Carnatic pedagogy is more standardized; Hindustani pedagogy prioritizes lineage and stylistic nuance.

## 8. Improvisation Frameworks

Improvisation serves as a central feature in both traditions, albeit in structurally different formats:

1. **Hindustani music:** Improvisation is articulated through *Ālāp* (non-rhythmic exploration), *Jod* (rhythmic buildup), and *Tān* (rapid melodic runs).
2. **Carnatic music:** Improvisation occurs in structured forms such as *Ālāpana* (non-metrical elaboration), *Niraval* (lyrical improvisation), and *Kalpana Swaras* (creative swara patterns) (Viswanathan & Allen, 2004).

Hindustani	Carnatic
Ālāp	Ālāpana
Jod	Niraval
Tān	Kalpana Swaras
Less syllabic	More rhythmic & syllabic

Carnatic improvisation integrates mathematical rhythmic play; Hindustani focuses on mood and expansion.

## 9. Historical Evolution and Cross-Influences

The evolution of Swaras reflects centuries of cultural exchange and regional refinement. During the Mughal period, Persian influences altered the melodic landscape of Hindustani music, resulting in new Rāgas and melodic idioms. Conversely, Carnatic music maintained continuity with earlier Sanskritic treatises such as the Chaturdaṇḍī Prakāśikā (Venkatamakhi, 2002).

Bhatkhande's (1934) reform of the Hindustani music curriculum through the Thaat system paralleled Venkatamakhi's earlier codification of the Melakarta scheme, illustrating parallel developments shaped by distinct historical contexts.

## Summary of Major Similarities and Differences

Aspect	Similarities	Differences
Origins	Shared Sanskritic roots	Divergence due to regional/cultural evolution
Swara System	Seven foundational Swaras	Variant structures differ
Ornamentation	Essential to raga identity	Techniques and aesthetics differ
Pedagogy	Oral tradition valued	Carnatic more systematized
Aspect	Similarities	Differences
Raga Structure	Codified rules	Carnatic more formulaic; Hindustani more fluid

## CONCLUSION

This study highlights the complex interplay of shared origins and divergent evolutions in the treatment of *Swaras* within Indian classical music. While both traditions spring from a common theoretical past, regional influences, historical shifts, and pedagogical needs have led to distinct structural, tonal, and expressive systems. This expanded research demonstrates that although Hindustani and Carnatic traditions share foundational principles, their treatment of Swaras diverges in structure, interpretation, performance, and pedagogy. The Carnatic system prioritizes systematic codification, microtonal precision, and structured pedagogy, whereas the Hindustani system values expressive freedom, fluid microtonality, and lineage-based learning.

These differences contribute to two distinct yet interconnected musical worlds that continue to evolve. Future research could incorporate psychoacoustic studies, computational pitch analysis, or cross-tradition pedagogical models to deepen understanding of Swara perception and transmission in a technologically globalized musical landscape.

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