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## Built Form Analysis of Temples

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Abstract—The built form of temples is a reflection of the cultural, spiritual, and architectural ideals of ancient societies. This article explores the built form of temples, examining aspects such as spatial layout, structural elements, iconography, and stylistic variations across different regions. By analyzing the architectural features of temple structures, including their foundations, superstructures, and decorative motifs, this study reveals how temples served both as spiritual sanctuaries and as expressions of artistic and technological sophistication. The article examines the form and function of temples across notable historical periods and locations, revealing how these sacred structures embodied religious beliefs while also serving practical and cultural purposes within their communities.

Keywords: Temple Architecture, Built Form Analysis, Sacred Structures, Iconography, Temple Design, Spatial Layout, Structural Analysis.

#### I. INTRODUCTION

Temple architecture has a long-standing tradition across many cultures, notably in South Asia, Southeast Asia, and other ancient civilizations. Temples were not only places of worship but also centers for social, cultural, and educational activities. A built form analysis of temples involves examining the physical, spatial, and stylistic elements that characterize these sacred structures. By studying these elements, one can gain insights into the architectural styles and religious philosophies that shaped temple design over centuries.

#### II. ELEMENTS OF TEMPLE BUILT FORM

#### a. Foundation and Ground Plan

The foundation and ground plan are essential components of temple architecture, serving as the basis for structural stability and spatial organization. Temples often feature a symmetrical or axial layout, with the primary sanctum (garbhagriha) at the center, symbolizing the spiritual core of the structure. For instance, in Hindu temples, the sanctum is often surrounded by a series of mandapas (pillared halls) arranged to guide worshippers through the temple's sacred space.

This spatial hierarchy reflects the journey from the mundane to the divine, as devotees move from the temple's outer parts to its inner sanctum.

#### b. Superstructure and Shikhara/Vimana

The superstructure, often referred to as the shikhara in North Indian temples and vimana in South Indian temples, is one of the most distinctive elements of temple architecture. This towering feature symbolizes the mountain home of the gods and serves as a visual focal point, drawing the eye upward. The shikhara is typically adorned with intricate carvings, depicting gods, goddesses, and mythological

scenes, which reinforce the temple's sacred character and theological themes.<sup>2</sup> In Dravidian architecture (South Indian style), the vimana is tiered and pyramidal, while in Nagara architecture (North Indian style), the shikhara is often curvilinear, emphasizing verticality.

#### c. Mandapas (Halls):

Mandapas are multi-purpose halls within temple complexes, often used for gatherings, rituals, and ceremonies. These structures can vary in design, from simple open halls to elaborate pillared complexes. The mandapas serve both functional and symbolic purposes, providing space for worshippers and representing different stages of spiritual progress.<sup>3</sup> The number of mandapas and their arrangements can differ based on regional and historical variations, reflecting localized interpretations of temple architecture.

#### d. Sculptural Ornamentation and Iconography:

The sculptural elements and iconography within temples are crucial in conveying religious narratives and philosophical ideals. Temples are adorned with detailed carvings, which depict scenes from sacred texts, gods, and mythical beings. This iconography is not merely decorative but serves as a medium to educate and inspire worshippers.<sup>4</sup> In Indian temples, for example, the placement of deities follows iconographic conventions, with each figure representing different aspects of the divine and spiritual path.

#### e. Temple Complex and Peripheral Structures:

A temple complex often includes auxiliary buildings, such as tanks, gardens, and surrounding walls, which contribute to its spiritual and social role. Water tanks are an integral part of many temple layouts, symbolizing purification and the sacredness of water in ritual practices. Additionally, the complex may include subsidiary shrines and spaces for community gatherings, emphasizing the temple's role as a center for both spiritual and social activities.



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## III. REGIONAL VARIATIONS IN TEMPLE ARCHITECTURE

#### a. Nagara Style (North India)

Nagara-style temples, common in northern India, are characterized by their curvilinear shikharas and a focus on verticality. These temples typically have a compact layout, with the garbhagriha directly beneath the tallest shikhara, symbolizing the connection between earth and the divine.<sup>5</sup> Temples such as the Khajuraho temples exemplify the Nagara style, with ornate carvings and intricate iconography that reflect the mythological themes central to the culture of their time.

#### The Nagara Style of Temple Architecture:

The Nagara style of temple architecture is one of the primary styles of Indian temple design, prominent in the northern parts of India. It is distinguished by its unique features, including its curvilinear shikhara (spire) and absence of elaborate boundary walls.<sup>6</sup> This architectural style flourished between the 5th and 13th centuries CE, reflecting the cultural and spiritual ethos of its time.

#### Characteristics of the Nagara Style:

#### 1. Shikhara (Superstructure):

The defining feature of the Nagara style is its towering shikhara, which rises vertically above the sanctum sanctorum (garbhagriha). The shikhara is typically curvilinear and crowned with an amalaka, a ribbed disc-like structure, and a kalasha (pot-like finial).

#### 2. Ground Plan:

Temples built in the Nagara style are usually square or rectangular in plan. The sanctum sanctorum, the most sacred space, is surrounded by a pradakshina patha (circumambulatory path).

#### 3. Assembly Hall (Mandapa):

Adjacent to the garbhagriha is the mandapa, an open or enclosed hall for worshippers. In some larger temples, multiple mandapas are arranged axially.

#### 4. Ornamentation and Carvings:

Nagara temples are known for their intricate carvings and sculptures. The walls, pillars, and shikhara often depict scenes from mythology, celestial beings, floral motifs, and geometric patterns.

#### 5. No Enclosure Walls:

Unlike the Dravidian style, Nagara temples generally do not have boundary walls or gateways (gopurams). The temple structure stands as an independent entity.

#### 6. Regional Variations:

The Nagara style has several sub-styles that evolved across different regions, including:

- a. Rekha-Prasada: Characterized by a tall, curvilinear shikhara.
- Phamsana: Features a roof resembling a pyramid with horizontal tiers.
- c. Valabhi: Includes barrel-vaulted roofs.

#### IV. NOTABLE EXAMPLES OF NAGARA TEMPLES

#### a. Khajuraho Temples (Madhya Pradesh):

The Kandariya Mahadeva Temple at Khajuraho is a quintessential example of the Nagara style. Its elaborately carved shikhara and erotic sculptures exemplify the artistic mastery of the Chandela dynasty.

#### b. Sun Temple, Konark (Odisha):

Although often categorized as Kalinga architecture, the Sun Temple of Konark adheres to Nagara principles, especially with its grand shikhara (now in ruins) and intricate carvings depicting chariot wheels and horses.

#### c. Lingaraja Temple (Bhubaneswar):

The Lingaraja Temple is a remarkable blend of Kalinga and Nagara styles, with its towering shikhara and exquisite detailing.

#### d. Mukteshwar Temple (Odisha):

Known as the "Gem of Odisha Architecture," this temple beautifully combines Nagara style elements with a touch of local innovation.

#### V. CULTURAL AND SPIRITUAL SIGNIFICANCE

The Nagara style reflects the synthesis of spiritual beliefs and artistic expression in northern India. The soaring shikharas symbolize the ascent toward the heavens, while the sanctum's intimate design invites introspection and devotion. These temples were not only places of worship but also served as cultural centers, promoting art, music, and literature.

#### VI. PRESERVATION AND CHALLENGES

Many Nagara temples face threats from weathering, urbanization, and neglect. Initiatives by the Archaeological Survey of India (ASI) and UNESCO have been pivotal in preserving these heritage sites. However, greater awareness and community involvement are necessary to safeguard their legacy.

#### VII. DRAVIDIAN STYLE (SOUTH INDIA)

Dravidian-style temples, found in the southern part of India, feature pyramidal vimanas and large complexes with elaborately carved gopurams (gateway towers). These temples are more expansive than their northern counterparts, with multiple mandapas and extensive outer precincts. The Brihadeeswarar Temple in Tamil Nadu, with its imposing vimana and detailed sculptures, represents the grandeur of



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Dravidian temple architecture.

## Dravidian Style: A Marvel of South Indian Architecture:

The Dravidian style of temple architecture, synonymous with the cultural and spiritual identity of South India, represents a culmination of artistry, devotion, and engineering excellence. <sup>10</sup> Flourishing predominantly during the reign of powerful dynasties like the Pallavas, Cholas, Pandyas, and Vijayanagar rulers, this architectural style is distinguished by its monumental structures, intricate carvings, and spiritual symbolism.

#### Key Features of Dravidian Architecture:

The Dravidian style is characterized by its unique elements that reflect the region's cultural, climatic, and material resources:

- 1. Gopurams (Gateway Towers): A defining feature of Dravidian temples, gopurams are towering gateways adorned with intricate sculptures of deities, mythological stories, and motifs.<sup>11</sup> These towers serve as visual landmarks and are often taller than the main sanctum, symbolizing the grandeur of the temple complex.
- **2. Vimana (Sanctum Tower):** Above the sanctum sanctorum (garbhagriha) lies the vimana, a pyramidal structure that is proportionate and finely carved. Unlike the gopuram, the vimana is simpler, reflecting its sacred purpose.
- **3. Mandapas** (Pillared Halls): Spacious and ornately carved halls used for religious gatherings, cultural performances, and rituals are another hallmark of this style.
- **4. Prakara (Enclosures):** Enclosed corridors around the sanctum provide space for circumambulation (pradakshina) and house smaller shrines, each adding to the spiritual vibrancy of the temple.
- **5. Ornamentation:** Dravidian temples are known for their intricate carvings depicting deities, celestial beings, dancers, and mythological events, showcasing a harmonious blend of art and spirituality.
- **6. Water Tanks and Temple Tanks:** Temple complexes often include water tanks or reservoirs, which are integral for rituals and provide a tranquil setting.

## VIII. EVOLUTION OF DRAVIDIAN ARCHITECTURE

#### a. Pallava Dynasty (6th-9th Century):

The Pallavas laid the foundation of Dravidian architecture. The rock-cut temples of Mahabalipuram and the Kailasanatha Temple at Kanchipuram exhibit their pioneering work. 12 The use of granite and the transition from rock-cut to structural temples are notable contributions.

#### b. Chola Dynasty (9th–13th Century):

The Cholas elevated the Dravidian style to its zenith with grand temples such as the Brihadeeswarar Temple in Thanjavur. Known for their massive vimanas and exquisite sculptures, Chola temples are masterpieces of engineering and artistic brilliance.

#### c. Pandya Dynasty (13th-16th Century):

The Pandyas introduced elaborate gopurams and expanded temple complexes. The Meenakshi Temple in Madurai, with its towering gopurams and intricate carvings, is a prime example of their contribution.

#### d. Vijayanagar Empire (14th-17th Century):

The Vijayanagar rulers emphasized grandeur and scale, evident in the Virupaksha Temple at Hampi. The use of intricately carved pillars, musical columns, and sprawling temple complexes became hallmarks of this period.

#### e. Cultural and Religious Significance:

Dravidian temples are more than architectural wonders; they serve as spiritual centers that embody the cultural and religious ethos of South India. These temples are hubs for festivals, rituals, and art forms like Bharatanatyam and Carnatic music. They reflect the devotion of rulers and artisans who sought to create spaces that connect the human with the divine.

#### f. Preservation and Legacy:

Today, Dravidian temples stand as symbols of India's rich cultural heritage. Efforts by UNESCO, the Archaeological Survey of India (ASI), and state governments focus on conserving these architectural treasures. Restoration projects and tourism initiatives aim to preserve their legacy while promoting cultural awareness.

#### g. Vesara Style (Deccan Region)

Vesara architecture is a blend of Nagara and Dravidian elements, emerging in the Deccan region. This style often features a combination of curvilinear and pyramidal forms, creating a unique synthesis.<sup>13</sup> The Hoysala temples of Karnataka, such as the Chennakesava Temple at Belur, are noted for their star-shaped plans and highly detailed carvings, showcasing the complexity of the Vesara style.

# IX. VESARA STYLE OF TEMPLE ARCHITECTURE: A UNIQUE BLEND OF ART AND CULTURE

The Vesara style of temple architecture, prominent in the Deccan region of India, represents a remarkable blend of Nagara and Dravidian architectural styles.

Emerging during the rule of the Chalukyas of Badami in the 7th century CE, this style reflects the cultural and artistic synthesis that characterized the Deccan plateau. Known for its harmonious proportions, intricate carvings, and innovative designs, Vesara temples occupy a significant place in Indian



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architectural history.

#### a. Historical Background

The Vesara style originated as a response to the unique cultural and geographical conditions of the Deccan region, which served as a melting pot of northern and southern influences. The Chalukyas of Badami (543–757 CE) are credited with developing this hybrid style, which was later refined by the Rashtrakutas (8th–10th century CE) and the Hoysalas (11th–13th century CE). These dynasties integrated regional artistic traditions to create temples that balanced the verticality of the Nagara style with the horizontal focus of the Dravidian style.

#### **b.** Architectural Features:

- 1. Shikhara (Tower): The Vesara style is characterized by a unique shikhara that combines the curvilinear spire of the Nagara style with the tiered pyramidal structure of the Dravidian style. This blend results in a harmonious and visually appealing tower.
- **2. Plan and Layout:** Vesara temples typically feature a star-shaped or square sanctum (garbhagriha), surrounded by pillared halls (mandapas). The symmetry and geometric precision of the layouts exemplify the architectural expertise of the period.
- 3. Carvings and Sculptures: Intricate carvings, including depictions of deities, mythical creatures, and floral motifs, are a hallmark of Vesara temples. These carvings often narrate episodes from Hindu epics like the Ramayana and Mahabharata.
- **4. Pillared Mandapas:** The mandapas in Vesara temples are adorned with elaborately sculpted pillars that showcase the artistic finesse of the craftsmen.
- **5. Fusion of Styles:** The Vesara style integrates the grandeur of the Nagara style's northern temples with the intricate detailing and horizontal emphasis of Dravidian temples.

#### 6. Prominent Examples:

Durga Temple, Aihole: One of the earliest examples of Vesara architecture, this 7th-century temple features a semicircular apsidal structure, reflecting both Nagara and Dravidian influences.

- 7. Kasi Vishveshwara Temple, Lakkundi: Built during the Later Chalukyan period, this temple exemplifies the mature phase of Vesara architecture with its ornate carvings and balanced proportions.
- **8. Hoysaleswara Temple, Halebidu:** A masterpiece of the Hoysalas, this 12th-century temple showcases an advanced form of Vesara architecture with its intricate detailing and star-shaped layout.

#### 9. Significance:

The Vesara style represents the cultural unity of India, bridging the architectural traditions of the north and south. It showcases the ingenuity of the Deccan rulers, who utilized architecture as a medium of cultural expression and political assertion. Moreover, Vesara temples highlight the technological advancements of their time, evident in their structural stability and artistic complexity.

#### X. CHALLENGES IN PRESERVATION

Many Vesara temples face threats from natural decay, urbanization, and lack of awareness. Efforts to preserve these architectural treasures are essential to safeguard India's rich cultural heritage. Initiatives by organizations like the Archaeological Survey of India (ASI) and UNESCO aim to document and protect these monuments. However, greater community involvement and sustainable tourism practices are needed to ensure their longevity.

## XI. FUNCTIONAL ASPECTS OF TEMPLE BUILT FORM

Temple architecture is not only about aesthetic appeal but also about functionality. The spatial arrangement, orientation, and structural details are carefully designed to support rituals, accommodate large gatherings, and provide a serene environment for meditation. Temples serve as educational centers, promoting cultural values and philosophical teachings through their art and architecture.

#### XII. CONCLUSION

The built form of temples embodies the intersection of art, religion, and culture, with each structural element contributing to the temple's purpose as a space of spiritual connection and communal gathering. A comprehensive analysis of temple architecture, from its foundational layout to its ornamental details, reveals the deep cultural and symbolic meanings embedded in these structures. By studying these built forms, one can appreciate the role of temples as both sacred spaces and architectural masterpieces that continue to inspire devotion and admiration. The Nagara style of temple architecture is a testament to India's rich cultural and spiritual history. Its aesthetic beauty, intricate craftsmanship, and spiritual significance make it an enduring symbol of Indian art and heritage. Preserving these architectural marvels is vital for ensuring that their legacy continues to inspire generations to come. The Dravidian style of architecture is a testament to South India's cultural richness, architectural ingenuity, and spiritual devotion. From the towering gopurams to the intricate carvings, these temples capture the essence of a civilization deeply rooted in art and faith. Preserving these monuments is vital to understanding and celebrating the historical and cultural legacy of South India. The Vesara style of temple architecture is a testament to the artistic and cultural diversity of India. Its unique synthesis of Nagara and Dravidian elements reflects the creativity and innovation of the Deccan's ancient builders. By preserving and studying these temples, we not only honor our ancestors' achievements but



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also ensure that this heritage continues to inspire future generations.

#### **REFERENCES**

- Michell, George. The Hindu Temple: An Introduction to Its Meaning and Forms. University of Chicago Press, 1988, pp. 45-50.
- [2] Hardy, Adam. Indian Temple Architecture: Form and Transformation. Abhinav Publications, 1995, pp. 20-24.
- [3] Kramrisch, Stella. The Hindu Temple. Motilal Banarsidass, 1976, pp. 30-35.
- [4] Vatsyayan, Kapila. The Square and the Circle of the Indian Arts. Roli Books, 1997, pp. 80-85.
- [5] Fergusson, James. History of Indian and Eastern Architecture. John Murray, 1876, pp. 120-125.
- [6] Dehejia, Vidya. Indian Art. Phaidon Press, 1997, pp. 58-62.
- [7] Yazdani, Ghulam. The Early History of the Deccan. Oxford: Clarendon Press, 1960.
- [8] Meister, Michael W. Encyclopaedia of Indian Temple Architecture. Princeton: Princeton University Press, 1991.
- [9] Deshpande, Shrinivas. Deccan Rock-Cut Temples: A Study in Architectural Evolution. South Asian Journal of Archaeology, vol. 7, no. 2, 2021, pp. 65-85.
- [10] Sharma, Anil. Indo-Islamic Architecture of the Deccan Sultanates. Indian Heritage Quarterly, vol. 11, no. 3, 2022, pp. 45-60.
- [11] Stein, Burton. Vijayanagara.Cambridge University Press, 1999.
- [12] Chaitanya, Krishna. A History of Indian Architecture. Orient Longman, 1976.
- [13] Michell, George, and Richard Eaton. The Religious and Cultural Heritage of India: Temples of the Deccan. Routledge, 2012.



