

Analyzing the Development of Khmer Temple Architecture and Dravidian Temple Architecture from 8th To 12th AD: A Case Study

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Abstract

Architectural history demonstrates that there has been an inspiration for the architectural marvels in the civilizations like Greek, Roman and Egyptian etc. However, these 'Inspirations' in Architecture were not limited to the superficial characteristics but includes much larger arena of factors like the philosophy, theory, concept, spiritual understanding and also the ways in which knowledge is manifested in the architectural forms.

India and South-East Asia has always been a topic of discussion for its resemblance in architectural characteristics. The paper focuses on how; historically; the architecture of South East Asia and India has been developed and the influential factors from both these regions which formed a rich architectural history of this region. To elaborate on this, the case of Khmer architecture with the example of Angkor Wat temple, Cambodia, which is the largest religious structure in the world and Dravidian temple architecture with an example of Brihadeeshwara temple, at Tanjavur, India- are selected. Both these examples are the epitome of the architectural styles from their respective regions during 8th to 12th C AD. The influences of Indian temple architecture on Khmer Temple architecture are much beyond the visible features of the structure and has an impact on the overall thought process of the builders and their creations.

This paper is an attempt to examine the influence of Dravidian temple architecture and philosophy on Khmer Architecture in Cambodia which manifested in the construction of such unique and perfect piece of Architecture.

Introduction

Temple is considered to be an epitome of Indian architecture and identified as a soul of Indian culture worldwide. Historically, it is evident that the stone temple construction started somewhere in 5th C AD. Indian Maritime history establishes that the rulers were also busy in establishing relations with the lands overseas, while the temple architecture was evolving in India.

South- East Asia has always been a topic of discussion for its cultural roots embedded in India which is significantly visible. Ayutthaya at Thailand, the Sanctuary of My Son at Vietnam, the temple of Borobudur at Indonesia, temple of Angkor Wat at Cambodia show evident similarities of Indian architecture. At a glance, it always gives a sense of 'Indian-ness' to this region (Codes, 1968). India was linked to Southeast Asia by geography, religion, politics, and history.

Composed of many nations, tribes, and cultures, this area has been a home to some of Asia's most significant civilizations and empires. The period from 1st AD till 13th AD is remarkable for the exchange of ideas, resources and cultures between India and other parts of the South East Asian region. Evidence of the region's historic accomplishments are still visible in the architecture, sites, and traditions that are still respected and practiced.



Figure 1: Angkor Wat temple, Cambodia



Figure 2: Borobudur, Indonesia



Figure 3: My Son Sanctuary, Viet Nam

Culturally, 'Farther' India today, is characterized by more or less deep traces of the Indianization (Codes, 1968) that occurred long ago, the importance of the Sanskrit element in the vocabulary of the languages spoken there, the Indian origin of the alphabets with which those languages are still written, the influence of Indian law and administrative organization, the persistence of certain Brahminic traditions in the countries, which in architecture and sculpture, are associated with the arts of India and bear inscriptions in Sanskrit (Codes 1975).

There is a need for systematic research in this regard. This paper is an attempt to study the architectural history of these regions and understand the linkages which influenced the development of architectural forms. The focus of this research paper is to analyse the layers of the architectural history of Dravida and Khmer region, evaluate the points of contacts and their influences on the temple architecture.

Structure of Paper:

The paper is divided into three parts-

1. Chola temple architecture,
2. Khmer temple architecture and
3. Connections between two regions

The objectives were set for the individual areas of study and the outcomes derived are then analysed. The study is majorly based on the historical research and the observations on the site. The sites significant for the study are mapped and their observations are noted for the further investigation.

Brief History of Chola Temples

The era of 9th to 13th centuries in the Tamil land, frequently referred to as Chola period, from the region of Kaveri River, is one that is highly significant period- both for its extraordinary artistic production and for its witness to religious development. The assumption which marked the establishment of the Chola Empire extending till the South East Asia as well as covering the whole of south India (Balasubramanyam, 1975) is derived from the interpretation of the evidence of inscriptions of this period. The inscriptional material that is of particular interest for political historians in this connections appears in the prefaces of stone and copper-plate inscriptions (Orr, 2007).

Early phase of the Chola period, witnesses the conversion of Brick and timber temples of Shiva into stone buildings. During this period, Cōlas, on the basis of their own interpretations refined divisions of temple elevation, *anukāya*- component element, and various ideas concerning decoration. Keeping the formal arrangement of the temples same as the neighbouring architectural styles like Pandya and Pallavas, Cōlas have improvised on the rendering of elements. The most remarkable temple of this dynasty is Brihadeeshwara temple, at Tanjavur, India.

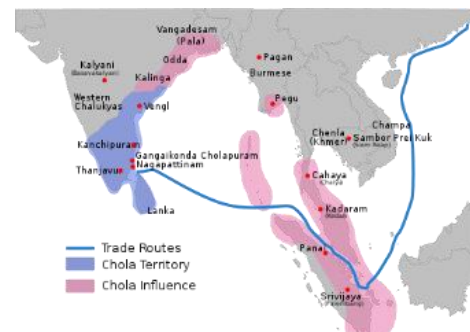


Figure 2: Relationships during Parakēsāri Rājēndra I Chola (AD 1012-1044)

Case study of Chola temple: Brihadeeshwara Temple, Tanjavur, India

Tanjavur is situated in the Cauvery delta. The tributaries of river Cauvery, Kallanai- the Grand Anaicut canal, Vadavaaru and Vennaaru rivers flow through the city. Kallanai, is an ancient dam constructed by the Chola king Karikalan in 2nd century AD, in running water across the Cauvery River at a distance of 15 km from Tiruchirappalli. Also, nearby important sites as Kaveripattanam and Nagapattinam were their principal ports.

Brihadeshwara originally constructed from 1004 to 1010 as the Rajarajeshwara temple, Rajarajesvaram or Peruvudaiyar Koyil at Tanjavur, which was the capital of Chola dynasty from 8th Century AD. Vast in concept, design, form and remarkable execution, this celebrated temple marks greatest achievement of the Cōla architects. The temple is covered with inscriptions relating to its origin and endowments. From these can be gathered that the construction of this all-stone temple- called as ‘dakṣiṇamēru’, was inaugurated by Rājārāja in his 19th year i.e. 1003-04 AD (Nagaswamy, 2010).

The immediate context of the temple includes the access road over a moat on East side, a moat – Agalion the west side. The Grand Anaicut canal is on the south side of the temple adjoining the prakara wall. On the north side of the temple is a Shivganga lake and the historic Tanjavur city with a moat around it.

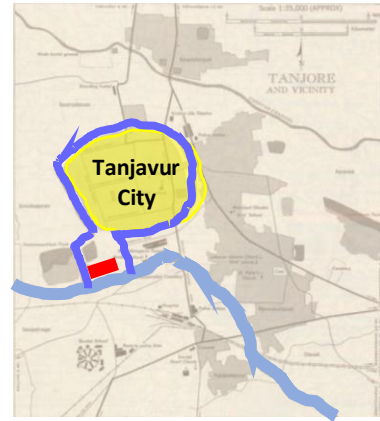


Figure 3: Location of Temple, 1955 map of Tanjavur

About the Temple Precinct

The shape of Brihadeshwara temple is True Rectangle (1:2 proportion of length and width) surrounded by the inner prakara 242 m (800ft) long east to west and 121m (400 ft) broad, north to south, with gopura on the east and three other ordinary tōraṇas entrances, at the sides of vimāna and at the rear. Some 60m (182ft), beyond the front gopura stands an outer gopura, the outer prakara wall is now lost and replaced by a much later wall. The original would have measured 1172 ft x 772 ft. The inner prakara encloses a rectangular court 756 ft x 386ft surrounded by an 18ft wide mālikā (series of columns), with dvitala (double storied) vimāna sub-shrine at the ‘dik’ and ‘vidik’ points, and a continuous cloister passage formed by intervening dvitala maṇḍapa shrines and the conjoined ardhamaṇḍapa in front. It has Nandi Mandapa at the center of First Square and garbhagriha at the center of Second Square.



Figure 4: Plan of Brihadeeshwara temple, Tanjavur

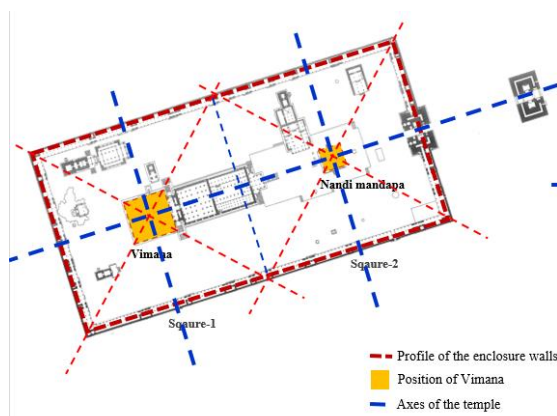


Figure 5: Location of Main Shrine & Nandi Mandapa of the temple

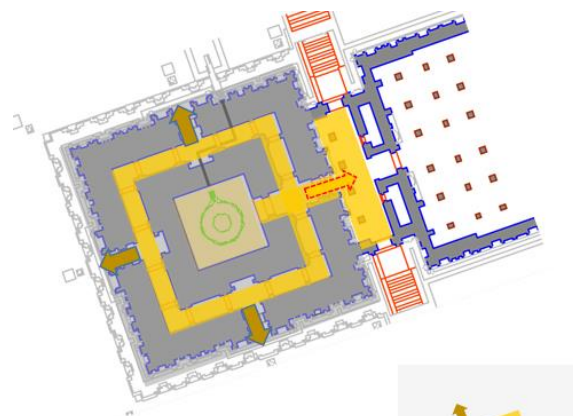


Figure 6: Details of Garbhagriha of the temple

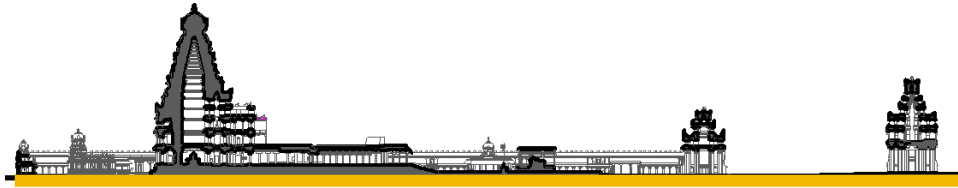


Figure 7: Section of Brihadeeshwara Temple, Tanjavur



Figure 8: Aerial View of Temple



Figure 9: View of Main shrine



Figure 10: Gopurams

Occupying the exact center of the rear half of the rectangular court is the main shrine-Rājarājēśvara vimāna. The footing of the square upa-pīṭha of the vimāna, now buried in the brick paving of the open court, measures some 30m on each side. The exact center of the front half of the rectangular court is occupied by the Nandi maṇḍapa, 400ft, from the center of the vimāna, as distance equal to the width of the prakara and half its length.

The upapīṭha rises to a height of over 2m, divided into five bays, a scheme continued to the topmost tala. The gala has galapādas. The garbhagriha is 24ft-9in square, surrounded by an enclosed ambulatory. The massive adhiṣṭhāna is Padamabandha type. The vyāla in the upper courses are gull leonine figures in profile, each with a rider. The height of the upapīṭha and adhiṣṭhāna facilitates the double flight of steps with a landing on the top level of upapīṭha and an open alinda like space around the vimāna. These flight of steps are provided on the north and south sides. The vyāla frieze is vēdī supporting the pādas of the wall.

This temple is the largest temple in India. The temple is conceptualised and constructed as “Mahameru”, hence this temple is perceived as “Dakshina Meru”. Due to its scale, composition, iconography spatial arrangements and geometry, it becomes a symbol of Epitome of Chola temples.

Brief History of Cambodia (Kambuja):

The Khmer temple architecture necessarily emphasizes on the Religious architecture, since all the remaining buildings are religious in nature. The history of Khmer, can be studied in four phases with the known sources of information. Today, spiritual tourism is a growing industry, with travel companies and hotel chains beginning to recognise its immense potential and opportunities.

1. Funan period (First AD to 550 AD)
2. Chenla Period – 550 AD to 802 AD
3. ***The Kambuja/ Angkor Period – 802 AD to 1432 AD***
4. After Angkor period – 1432 AD onwards

Funan is the formative period of the Khmers which later evolved to the Khmer civilization, there are no buildings in completeness could be seen from this period. Chenla -seems to be the Chinese equivalence- of Kambuja or Kambujadesa saw the Indian traders and teachers to have reached here and began to group themselves into little communities and to adopt Indian religion (Briggs, 1999). The most remarkable period of the history from architectural perspective is Kambuja or Angkor Period (802-1432 AD). The construction of “Capital City” has always been an important activity in Khmers since its formative years. Each king has a Capital City and a temple at the center which is designated as a Royal Temple. During Angkor Period, several such Capital Cities were constructed in and around the region of earlier built cities. Fig-15 shows the locations of the capitals and their names resembling the Sanskrit names from India

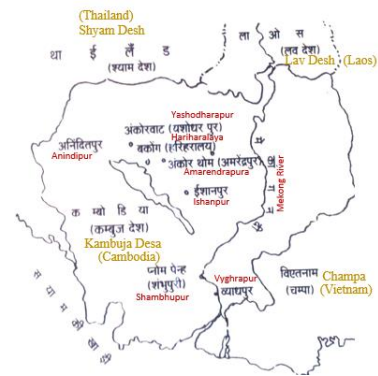


Figure 11: Historic capitals of Khmers, strategic locations

Case Study of Khmer Architecture: Angkor Wat temple, Siem Reap, Cambodia



Figure 12 : Location of Angkor Wat w.r.t Angkor Thom- The Capital City

The temple of Angkor Wat was built at the height of Cambodian political power, during the reign of Suryavarman-II (AD 1113-1150). Like the kings before him, Suryavarman-II was to build a royal temple at a place distinct from those of his predecessors. He chose a site in the southern sector of Angkor, and faced the temple towards West, as it is dedicated to Vishnu, which is believed to be the god ruling the west quarter of the compass. With its 1300m N-S axis and 1500m E-W axis, it is spacious and open unlike other temple in the region.

The design of the Angkor Wat is focused on three rings, concentric galleries at the heart of the temple, and a vast amount of space circling the galleries. Around it all is a rectangular moat, a water-filled border that isolates the grounds of the monument.

Around 40m from the rectangular moat, is a laterite wall, 4.5 m high, and imposing and effective barrier. The wall is cut into by large single entrances on the east, north and south and by a total of give entrances on the west. Of these western entrances, the two gateways at each end were built for the ground level passage of elephants and horse-driven chariots. The central three gateways are the main entrance tower and its two flanking towers.

As one crosses the moat, by means of the bridge that now fronts onto a paved road leading to Angkor Thom. This bridge is the only way into the temple except for an earthen road across the moat on the east.

On the east side, the dirt road over the moat allows one to approach the central area of the temple. No bridge or road cross the moat on the north or south side. Once crossed the western entrance in the fourth enclosure, one can see the towers of Angkor Wat at the far end of an elevated sandstone promenade that shoots arrow-straight for nearly 350m across the open courtyard. Two libraries flank this stone walkway at its mid-point, at its end, two reflecting pools just in front of the galleries mirror the temple and sky. The three central galleries, numbered from first to third, from the center outward, rest on the raised terrace bordered by Nāga balustrade. Three sets of staircases lead to the ground level on each side of this terrace.

On the top of the Nāga terrace, on the west, a large cruciform platform leads up to the central galleries- the setting for the

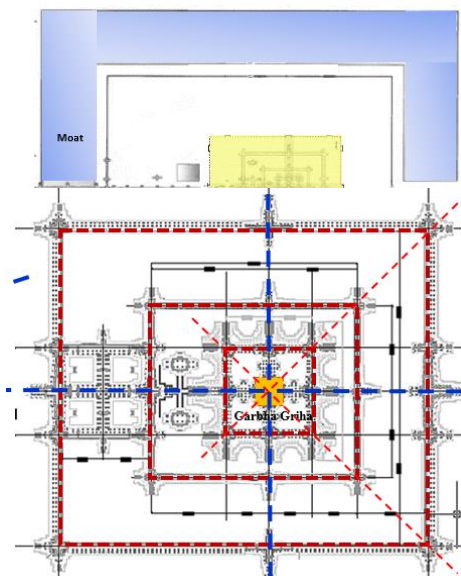


Figure 14: Three concentric enclosure walls

special ceremonies or rituals in the temple watched by the common people in the temple courtyard. Three rectangular galleries at the heart of the Angkor Wat temple, are covered with the vaulted corridors and decorated with the elaborate foliated and figural reliefs. Each of the three central levels of Angkor Wat, is higher, steeper, and narrower than the proceeding one, until the surrounding architecture closes in around the central tower. Whereas the plains of Angkor, may be intermittently visible through balustrade windows and entrance doors from the upper level, the sandstone city of gods is immediate and all-encompassing. Towers, courtyards, and vaulted corridors create a dense environment.

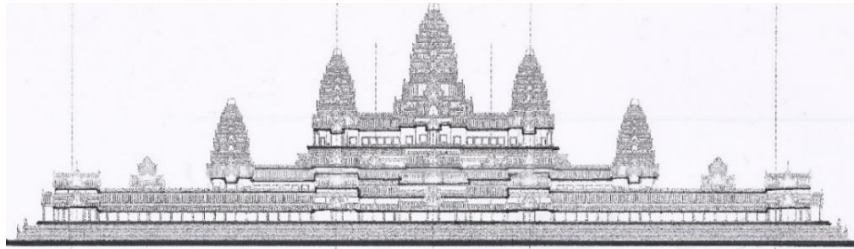


Figure 15: Elevation of Angkor Wat temple



Figure 16: Original Vishnu statue at Angkor Wat



Figure 17: Corner Shikhara of the innermost enclosure (Photo: By Author)



Figure 18: Shikhara over corners and central space (Photo: By Author)



Figure 19: Shikhara at the corner of the enclosure (Photo: By Author)

Figure 19: Corner Shikhara of the innermost enclosure (Photo: By Author)

Figure 20: Shikhara over corners and central space (Photo: By Author)

Figure 21: Shikhara at the corner of the enclosure (Photo: By Author)

The architectural focus of Angkor Wat is on the central tower. The tower is connected to the gallery around it by roofed and pillared corridors on the east, north and south. But on the west side, the corridor leads directly to the central tower, and crudely walled up. The effect of these corridors is to fracture the surrounding, courtyards into the segments that ultimately may not be quite as spatially satisfying as a large open area. These connecting passageways must have had the ritual functions, and they would have protected priests and visitors from the rains.

The Angkor Wat temple is the world's largest religious precinct, as per UNESCO's world heritage site nomination. This temple is also considered as one of the perfectly constructed temples (Mannikka, 2000). The temple was conceptualised as "Varahvishnulok" i.e. the abode of Vishnu at heaven. This concept is completed embedded in the nocks and corners of this temple right from its concept till the bas reliefs on the walls

Discussion About The Indian Architecture as an Inspiration for Cambodia:

Connections between India and Cambodia:

The Indian influence on Cambodian art and culture was prolific during the rule of Pallava (3rd - 9th AD) and Cholas (9-13th AD) in South India. Among the Pallava kings, it is very well known that

the title Varman was honorific and so was borrowed by the Cambodian kings. Almost all of them having the suffix 'Varman' starting with Bhadravarman in 4th AD. He happened to be a scholar and well versed in Vedas and author of several inscription in Sanskrit.

The Grantha called Pallava Grantha script travelled to Cambodia from Pallava. Some of the birudas (titles) of Pallava kings including Mahendravarman-I appear to be in the Khmer language. Nandivarman Pallavamalla, one of the later Pallava rulers, is believed to have lived in Cambodia before he travelled to Kanchi and then ascended Pallava throne.

Various bas reliefs inside the galleries at significance locations, depicts the wars of Ramayana and Mahabharata, posturize the concept of *Swarga and Naraka* based on the deeds (Karmas), and also the story of *Samudra Manthana* (churning of sea by gods and demons).

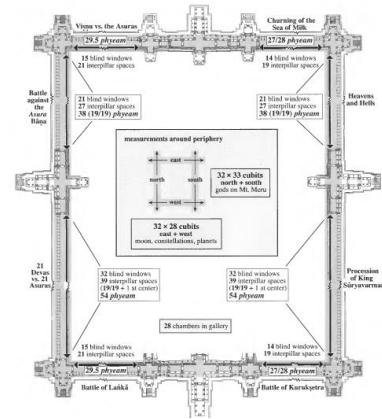


Figure 20: Bas Reliefs showing Indian Mythological Stories at Angkor Wat

Architecturally, the temple of Angkor Wat which is based on the “Panchratna” concept of planning. This planning principle was evolved during the 500AD and mostly used by Buddhist monks to construct the monasteries and stupas. The plan form of Angkor Wat shows this feature which is enhanced with the galleries all around the Panchratna plan. As per Eleanor Mannikka, these galleries are dedicated to the king, Brahma, the moon, and Vishnu.

Philosophical inspirations:

The major inspiration of Angkor Wat temple is based on the Solar, Lunar alignments and the concept of cosmology. Our universe is transformed into four distinct and successive time periods i.e. Yugas, repeated over and over again, in a sequence of Satya, Treata, Dvapara, and Kali. Of these four cycles the Kali Yuga, our own time period, is believed to be the worst of all. During which the human life span is shortest and wars and famine are common, morality and ethics are all but lost. Till ill-fates time cycle lasts for 432,000 years and according to the legend began a few thousand years ago, after the end of Mahabharata War.

Yuga	Celestial Years	Terrestrial Years
Satya	4800	1,728,000
Treta	3600	1,296,000
Dvapara	2400	864,000
Kali	1200	432,000

Here in Angkor Wat temple, the space becomes the symbol of time, and one consecutively leaves our era behind on the bridge before entering the temple. The architect of the temple has kept this approximate 432 units measurement at the farthest possible distance from the central sanctuary. In fact, it lies beyond the protective enclosing wall of the temple. The whole temple starting from the entrance passage way on the west side till the central topmost tower has a specific alignment fitted into specific dimensions related to Hindu calendar and philosophies. The content of measurement system and thematic sets is not only coherent and logical, it also reinforces everything we know about the Indian temple architecture.

In the end, the measurements’ corroboration of Hindu concepts demands a great deal of respect-both for the coding of these concepts and for the priests who developed this system of temple construction. The architect of Angkor Wat were brilliant and well educated whose knowledge ranged from Architecture to Sanskrit to Astronomy to religious rituals.

Conclusion

Historically, approximately 5000 years ago, there were various ports – Lothal, Chol, Dabhol, Rajapur, Malwan, Goa, Chennanur, Kottayam, Kanyakumari, Konark, Masulipattan, Nagapattan, Kaveripattan, which have references in 2000 year old manuscript named- ‘The Erithrias Sea’, which

also mentions the ports of Shurparak (Sopara) and Brugukuttach (Kuttch). The travel across various countries and the transfer of culture from India to various regions is apparent.

The basis of the influences is the acceptance of the idea of a temple, which has Indian roots but accepted and flourished in the South East Asia. It is evident from the similarities in the architectural vocabulary, the perception of Indian mythology and cosmology, Vastushastra and its manifestation in architectural form that the people from South East Asia were highly inspired by the Indian Culture and hence could dare to construct such a magnificent structure of Angkor Wat with so much of confidence. It, indeed, has remarkable indigenous characters.

The architectural history of India and South East Asia has lot of potential to explore the connections and influences which determine the architectural form of the temples from this region. This study covers a few points which are forms the foundation of the further detailed investigation in this regard. The paper also provides a platform for the enthusiasts to explore the aspects which highlights the glory of Indian architecture and its comprehensive acceptance in other parts of the world through Indianization, historically.

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