Orientation of Hindu Temples – India

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Abstract— Hindu temple reflects a synthesis of arts, beliefs, values and way of life cherished under Hinduism. It is a link between man, deities, and universal Purusa in a sacred space. A Hindu temple design follows a geometrical design called vastupurusha mandala. Vastu provides some prominent features that must be considered while constructing a temple. East direction is sacred in vastu because sun rises from here which gives the sole energy and is source of light. While studying the vastu of temple, all the principles have to be taken care of which includes the ideal place for the construction of temple, the direction and placement of main entrance, the direction and the placement of deity. The study analyses the orientation of the Hindu temples, with respect to the guidelines mentioned in the Mayamatum and Mansara. It reviews the orientation followed in various types of Hindu temple architecture. (i.e. Nagara, Vesara and Dravida styles). The general orientation followed in the temples is studied and analyzed in these three styles with the help of few temples from each style. This orientation studies, the literature part and the orientation cardinal method (gnomon) are expressed through drawings and diagrams. The same method examined through a case study that is Ashapuri. The study will end by examining the orientation followed in the Ashapuri temple complex for validation. The aim of this paper is to present study the orientation of temples in India with different aspects and according to the traditional Indian architecture.

Keywords— Cardinal method, climatic principle, Orientation, Shore temple, The Hindu temple architecture.

1. INTRODUCTION
Temple is a building for the work ship of god and goddesses. A temple is a structure reserved for religious or spiritual activities such as prayer and sacrifice. Hindu temple reflects a synthesis of arts, beliefs, values and way of life cherished under Hinduism. It is a link between man deities, and universal Purusa in a sacred space. It is a sacred site where ambience and design attempts to symbolically condense the ideal tenets of Hindu way of life. All the cosmic elements that create and celebrate life in Hindu pantheon, are present in a Hindu temple - from fire to water, from images of nature to deities, from kama to artha from the fleeting sounds and incense smells to Purusha - the eternal nothingness yet universality - is part of a Hindu temple architecture.

The spiritual principles symbolically represented in Hindu temples are given in the ancient Sanskrit texts of India (for example, Vedas, Upanishads), while their structural rules are described in various ancient Sanskrit treatises on architecture (Brhat Samhita, Vastu Shastras). We have to take care of all principles these while studying the vastu of temple: The ideal place for the construction of temple, the direction and placement of main entrance, the direction and the placement of god’s idol which is important. Spaces were also designed considering the sacred five elements of earth, wind, water, fire and space.

Traditional Indian Architecture is based on certain guidelines or otherwise known as “VAASTU SHILPA SHAstras” (Vas-to be). VAStU principles are similar to the Feng Shui ones which mainly deal with energy and buildings. The two important texts which outline these Vaastu principles are “MANASAra” (by Manasara) and “MAYAMATAM” (by Maya).
Orientation of a building is important to save energy and to build a better house design, which would be comfortable for living simultaneously gives positive energy, good health, prosperity and wealth to the occupants. A living place and its direction have a correlation between the rotational scenarios of the planets with respect of north. There are total eight directions North, South, East, and West are called cardinal directions and the point where any of the two directions meet is called inter cardinal or ordinal point like NE, SE, SW, NW. These directions are given a lot of importance in Vastu Shastra as they combine the benefits of two directions in totality.

Orientation is important factor in the temple architecture. This paper focuses on the orientation of main axis in temple with respect to cardinal direction, geographical condition and climatic conditions. The general orientation followed in the temples is studied and analyzed in these three styles with the help of all temples from each style. The orientation cardinal methods (gnomon) are expressed through drawings and diagrams. The same method examined through a case study that is Ashapuri. The study will end with reasons behind the orientation of temples.

2. GENERAL ORIENTATION OF MAIN AXIS IN HINDU TEMPLE

As general rule temple are oriented in relation to the cardinal points. Furthermore they are directed either to the east or to west and almost never face north or south. In India, although east is the predominant, some building do face west and other even north. In Hindu temple orientation was standardized and east became the favored direction, with almost all the main temple facing the rising sun. In India west facing building were thus less numerous than east-facing ones.

Table 1: Orientation of Main Axis In Temple

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Name of temple</th>
<th>Plan of temple</th>
</tr>
</thead>
<tbody>
<tr>
<td>East – West</td>
<td>Sun temple, konark</td>
<td><img src="image3" alt="Figure 3 Sun temple" /></td>
</tr>
</tbody>
</table>

Figure 2 Temples of Sun temple Nagara style, Brihadisvara temple Dravidian style and Durga temple Vesara style.
2.1 General orientation in Hindu building traditions.

Indian treatises on architecture do not say that a sanctuary should face east. According to these treatises, numerous factors may influence the orientation of a temple, among others the position of the god to whom the temple is dedicated. The Indian texts offer a large variety of opinion and no standard orientation emerges from them.

The Bhavasiya-purana (Chap.viii), for example, recommends that the temple face east, but that, if this is not possible, west is also good choice (Arora 1972:192). The Brhat-Samhita states it even more blankly states that "the central or main gate would be auspicious if situated in one of the four cardinal directions " (Ramakrishna 1981:538).

According to Mansara, the temple of Vishnu should face the village, while that of Narsimha should have its back to the village. the temple of Shiva should face outward, except if it is build in the east or west, in which case it should face the village. As for the temples of other god, they may face any direction.

For the Mayamata, the temple of Isa may face either east or west, as long as it is turned outwards, the temple of Vishnu may face any direction and that of Shiva must face east.

In the Agni- purana one reads that "the door of temple at the centre of the village or on the eastern part should face west. In the southern, northern and western parts (the doors) should face the east "(gangadharan).

Indian treatises on architecture, or at least a good number of them, thus give much freedom to the architect in the choice of orientation, the principles established in the Agni-purana would have been known, while the traditions expressed in Manasara or in the Mayamatam, for example, would not. The first text shows indeed a preference for east and west, while the two later ones consider also the possibility of north and south facing.
buildings i.e. in giving the preference to the east, direction of rising sun.

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Deity</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>North and East</td>
<td>Siva Temple</td>
<td>Temple of Shiva should be outside and face away from town.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Only those situated in east-west should face the village.</td>
</tr>
<tr>
<td>West</td>
<td>Vishnu temple</td>
<td>All temple of Vishnu should face village or town</td>
</tr>
<tr>
<td>West or south – west</td>
<td>Ganesh temple</td>
<td></td>
</tr>
</tbody>
</table>

3. Techniques for orientation determination in Indian context

Even if it is true that over time there was an increasing general tendency to orientate building more and more accurately toward the cardinal point, we still do not know what this mean. To define where these veins are, and where an architect should locate the outside walls of a Hindu temple, an architect got a tool called a gnomon. The orientation of site is made according to the classic methods with Gnomon. This method is described in Manasara and the Mayamatam (chap .6). Time : at the sunrise during month when the sun path toward the North Material : the material prescribed for the making of gnomon are as follows: ivory , Snadal wood ,Wood of Khadira ,Kadara, sami, saka or tinduka or other hard wood. Tip should be perfectly circular. The gnomon has to be erected in the mid region of the prepared ground. The ritual of erecting the Sanku is called Sanku_sthapana. The gnomon is made of either ivory or the seasoned kadira (hard) wood which does not bend in the heat of sun. Before erecting the gnomon pole, it is essential that the ground is rendered absolutely clean, smooth and flat. The total length of the gnomon would normally be 18 inches; of which 6 inches would be under the ground level. At sunrise during a month when the solar path toward the north. There are six steps which are needed to construct a gnomon.

Figure 11 stage 1 of gnomon method

Step 1: A gnomon is made by putting a specified object in the ground and by drawing a circle around it. Diameter is double the length of gnomon.

Figure 12: stage 2,3 of gnomon method

Steps 2 and 3: The place where the shadow cuts the circle, in the morning and in the evening, is marked and a line is drawn between those two points. From these points two circles are made.

Figure 13: stage 4 of gnomon method

Step 4: On the place where these two new circles cut each other a new line is drawn. This line represents the North - South axes.

Figure 14: stage 5 of gnomon method

Step 5: From the places where the North - South axes cuts the first circle two new circles are drawn.
Step 6: A line, connecting the cutting points of the two new circles, is drawn. This line represents the West – East axes.

Because of the irregularity of the sun’s motion in the ecliptic, various rules have been laid down for the purpose of rectifying its variations. Time plays an important role here. The figure now found forms the basis of the Hindu architecture. What can be clearly seen is that the body of the Vastupurusa fits on the figure (Figure16).

The placement of the building within the site is the first step toward forming the grid for internal planning. The centre of the plot is generally not where the centre of the building is placed, only exception being temples. The climatic logic behind this is that in the house the outdoor and indoor is designed as one whereas in the temple the building is treated as a monument. Hence the temple buildings dominate the centre of the sites and more often than not the towns where they are seated.

4.2 Planning
The grid system of planning was always followed regardless of the site or building type. The grid was made flexible enough to accommodate any site condition and topography. The grid was not always symmetric or simple. Complex geometry and curvilinear grids were also adopted. The most common was the grid of a dwelling unit called the vaastu purusha mandala (Fig. 18). This grid is a schematic diagram showing the cardinal directions on the four sides of the square and a man’s body drawn across the site with his head in the North East direction. An interesting fact about this grid is that it is not static; the man revolves around then square and completes a full circle in one year. This diagram represents the non static nature of the site itself and the movement of the earth around the sun. The linear grids can be classified into two types:

4. Temple orientation and climatic architecture tradition of India.

4.1 Main axis:
The building is always oriented by the cardinal directions: North, South, East, West, Northeast, Northwest, Southeast and Southwest. Each of these directions is considered as energy by itself. Hence the spaces in different orientation are considered differently for design purposes which is a very climate sensitive approach (Fig. 17). For example the East or the North walls are made more open to light and air as the West is the heat gaining side in the warm humid climates of India.
a. Yugma or the even grid—where the centre is a point (Fig. 19 a).
This grid is mainly used for temples and large temple complexes as the centre is allocated for the Deity’s abode. Monumental buildings with open spaces around the central monument also follow this grid. These buildings are mostly public buildings where the usage is only during the day. Hence the shaded open spaces around the building are very well used.

b. Ayugma or the odd grid—where the centre is a square (Fig. b).
This grid is used for dwellings and large scale housing projects.

4.3 The Sun and the axes
The Indian conception of space relies on a movement, that of the pradakinapatha (clockwise circumambulation), which is an essential element of Hindu-Buddhist worship. In India, devotees have to turn clockwise around temples and idols, leaving them to the right. Pradaksinapatha is the path of the sun and, therefore, the movement of life. It is best started in the east, to replicate the course of the sun from sunrise to sunset. Hence the numerous east-facing temples found in India. The cardinal points are here enumerated in a clockwise order, suggesting the movement of the Pradaksinapatha.
Energy axis is a row of windows or door or ventilators aligned in the same line. The North South energy axis of a building is called the Somasutra. The East West energy axis is called the Brahmasutra. Ideally the Somasutra and the Brahmasutra should meet perpendicularly in the centre of the courtyard or the Brahmastana. Hence the cross ventilation axes should ideally intersect in the centre of the courtyard.

5. The influence of natural environment upon temple orientation.
Now try to find if there is some correlation between temple orientation and natural surroundings. In Hindu temple architecture, it has long been acknowledged that many temples were oriented towards a distant mountain, river side So, it is possible that, in India, natural features, and especially topography, have played an important role in the choice of orientation. Whatever the role of natural elements, this does not mean that such an orientation was without symbolic value. First of all, although knowing that temples built there would have to face east, Indian architects still considered the site suitable. This can mean that in their perspective east and west were both auspicious. This study is more focuses on the orientation of sea side temple in India.

6. Example: Orientation of shore temple Mamallapuram (Pallava period)
Amongst the structural or stone built temples, the ‘shore temple’ at Mamallapuram built by Narasimhavarma rajasimha (690-715A.D.) is the most famous one. It is so called because it stands on the extreme fore shore of the ancient port on coromandel cost.

<table>
<thead>
<tr>
<th>Orientation of temple</th>
<th>River/sea position</th>
<th>Temple</th>
</tr>
</thead>
<tbody>
<tr>
<td>East –west</td>
<td>west back</td>
<td>shore temple</td>
</tr>
<tr>
<td>west</td>
<td>back</td>
<td>Sun temple</td>
</tr>
<tr>
<td>East</td>
<td>front</td>
<td>Rathas at</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mahabalipuram</td>
</tr>
</tbody>
</table>

The King Rajasimha alias Narasimhavarma whose major concentration spread on temple erection. In this kind, the shore temple was one of his creations erected
strangely at the seashore. This paper analyzes the temple orientation and its reasons of shore temple.

Each temple of the Pallava period has had distinctions in some aspects. Even, from the early apsidal structure of Kōram to the smallest temple of Piravathanesvara of Kanchipuram those all having some distinction indeed. In this kind, the structural temples of Pallavas were erected in the various locations as, on Hills; lands and seashore. Thus, besides the usual lands’ temples, hill temples of them are familiarly known as Olakanesvarar temple at Mamallapuram and Talagirisvarar Temple at Panamalai near Senji a fort Town. We don’t know the origination of hill temples in India, but the temple at Badami by Early Chalukyas on hill is according to the source was earlier to the Pallava hill Temples. However the temple erected on the top of hills was became common but the temple at sea shore is obviously a conceptual creative thought of Pallavas which evidenced by through their plan execution and the aesthetic value of the location.

6.1a): Site selection (location):
The selection of the location for the temple erection by the King Rajasimha is a scientific approach with deliberation. Therefore, the divine eligibility introduced him to find a different location to shape his thoughts. Among these, the Shore Temple is a highlight that very strangely located at the edge of tides. Many views have casted on this Temple, as it was in prior little far from sea shore later the sea came closer.

6.2b) Plan Form and Main axis of shore temple:
The Shore Temple is in asymmetrical alignment in plan, having two temples in front and back of Shiva and Vishnu. Temples face east and west respectively. The Vishnu temples were built by Narasimha Varman I and the other one were built by Narasimha Varman II. One can find the beautifully carved twin Dwarka Palaks (gate keepers) at the entrance of the east facing Shiva Temples. The main shore temple, which face east so that the sun rays shine on the main deity of shiva linga in the shrine, is five storied structural hindu temple rather than rock cut as are the other monuments at site.

7. Discussion

The study conclude that

The orientation of main axis in most of the Hindu temples from (i.e Nagara, Vesara and Dravia styles followed East – West orientation. Orientation of remaining Hindu temples is designed according to these parameters : Cardinal direction, Geographical and Climatic condition and Position of main deity.

References:
[3] Indian Architecture (Buddist and Hindu period).