Typo-morphological analysis of the Hindu temple: a tool aimed to inform conservation practices of the Indian architectural heritage

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ABSTRACT
Try to understand the architecture’s sense essentially means to answer to the Louis Khan’s question: ‘What does the building want to be?’ This is a question that finds a response in the idea of architecture like ‘institution’, without regretting the concepts of type and morphology. In the specific case of this essay, such an institution is recognized in the architecture of the Hindu temple i.e. architecture based on an previously established order, that is an essentia. Unlike most of a recent literature rather focused to enhance the condition of spirituality that dominates on Hindu temples (for example, Percy Brown defines the Temple as a where the 'spiritual dominates on the material') the following essay tries to trace the evolutionary process of the Hindu Temple through a typo-morphological reading of its characters in order to consciously orient conservative practices.

Keywords: Hindu Temple, Madya Pradesh, Typo-Morphological analysis, Typological Process, Conservation
This essay develops a research section produced within a Thesis Degree Laboratory of the Polytechnic of Bari (Italy) during the year 2009/2010 [The thesis is entitled “Characters of Mandu three mayor religios complexes: kosh monumental system of the Friday Mosque with Hoshang tomb and Asharafimadrase, the Darya Khann and the Malik Mughit. Project of special and residential building within the Hindu Fort”. Thesis relator: Prof. Attilio Petruccioli. Students: di Micco Luana, Giangualano Maria Rosaria, Laddaga Maddalena, Scardigno Nicola, Tesse Marianna, Topputi Annamaria]. Try to understand the architecture's sense essentially means to answer to the Louis Khan’s question: ‘What does the building want to be?’ This is a question that finds a response in the idea of architecture like ‘institution’, without regretting the concepts of type and morphology. In the specific case of this essay, such an institution is recognized in the architecture of the Hindu temple i.e. an architecture based on an previously established order, that is an essentia. Unlike most of a recent literature rather focused to enhance the condition of spirituality that dominates on Hindu temples (for example, Percy Brown defines the Temple as a where the ‘spiritual dominates on the material’) the following essay tries to trace the evolutionary process of the Hindu Temple through a typo-morphological reading of its characters in order to consciously orient conservative practices. Such an approach which might be also considered as an attempt to provide a tangible character to the Hindu Temple architecture - most of them, in particular in the less renowned reality of India, are in a state of degradation - lead to reveal that behind the abstract meaning of the VasthuPurusha Mandala (that is the sacred square, home of the gods and of the personified cosmos) there is the need to know by ‘measuring’ and ‘proportioning’ an architectural organism. It is not, as it might seem, an anticipation of the Leonardo da Vinci’s ‘Vitruvian man’, nor of the Le Corbusier’s ‘Modular’, where the measuring concept strictly refers to the human sphere, but rather of a geometric trace based on the will to impose a supreme order to everything takes a material form. Therefore is the module to define the ‘form’ to the temple architecture and more specifically: the mandala-module which is divisible into sub-pada module and which is at the same time sub-module of the VastuPurusha Mandala, that is of a diagram that embodies the key to interpret any kind of spatiality within the Indian culture. (Fig.1)

In other terms the latter is a tool for designing a Temple, (and in general the Indian architecture), which primarily has marked the primitive form of the Indian sacred architecture, the ‘elementary cell’ ([“related to its origin to the base type, the elementary cell is liable to be assumed as the system, the most elementary sub-organism, in the completeness of its structural-distributive components” that enters “into the logic of production of complex specialized organisms, both in the forms of repetitiveness and proportional growth.”]) / garbagriha (let’s think about the Dasavara Temple at Deogarh), and later ruled the evolutionary process of the same, until reaching more mature conformations. (Fig.2)

AttilioPetruccioli provides a double meaning of the module concept: “… we can say that the term module comprises two distinct concepts: the one of the measurement units and the one of geometric factor. In the first case it is an abstract measurement unit proposed as a base size for dimensioning building elements produced industrially...The module instead conceived as a numerical factor, sets a rule that coordinates numbers or dimensions. In the case of the geometric series, it represents the reason for the progression”. Based on this distinction we have that the module as measurement unit is the principle upon which Manasara Treaty basis - i.e. the document where the proportional relationships holding together all temple parts are expressed in the form of enumeration; while the idea of module as geometric factor explains the spaces progression visible during the maturation process of the temple itself.

Within this essay the hypothesis of the typological process of the Hindu Temple has been restricted to those temples present within the Madhya Pradesh region, and built between 4th-13th century [“... we can say that the term module includes two distinct concepts: the one measuring unit and the one of geometric factor. In the first case it corresponds to an abstract measurement unit that is proposed as basic dimension for dimensioning building elements produced industrially...While the module conceived as a numeric factor, sets a rule that coordinates numbers or dimensions. In the case of the geometric series, it represents the reason for the progression.”] QUARONI L. 2001. Progettare un edificio, pag.64]. (Fig.3)

During the Gupta Dynasty (320-550 AD), the idea of sacred place is limited to a monocellular building hierarchized by a single opening and whose polar character is emphasized by the sikhara covering [QUARONI L. 2001. Progettare un edificio, pag.64]. It can be considered as a sort of ‘basic type’ of the Hindu temple even know as Sancto Sanctorum or garbagriha, that is as place of divinity. One example in that sense is the Dasavara Temple at Deogarh where the idea of the centrality of the sacred place is emphasized by the fact it takes place in the middle of a square basement. (Fig.4)

The idea of sacred place conceived in the form of Sancto Sanctorumas isolated cell begins to be denied with the addition/juxtaposition of an in antis portico to the cell itself; this without altering the internal spatiality of the garbagriha itself. Differently, during the first phase of the Prathiara dynasty (725-800 AD) occurs a real dimensional increasing of about ½ of the cell through the introduction of a sort of vestibule, known as antrala. Such a ‘specialization’ of the base type leads to a sort of refinement of the sacred place. In other terms: starting from this moment Hindu temple compositional hierarchies begin to be

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altered. Some examples are temples 17 and 23 at Naresar, where a chaitya covering is projecting from one side of the sikhara (garbagriha covering) almost to emphasize the below antrala room. (Fig.5)

Always during Pratihara period there are examples of temples characterized by a double axialty; one of this is the TelikaMandir temple at Gwalior precisely set on a longitudinal axis and a transversal axis. In this way the garbagriha assumes an oblong shape with a consequent specialization of the covering system: rather than the classic sikhara, the main cell is covered by a so-called salasikhara which is conformed like a barrel vault. Therefore it becomes the covering the connotative element of this variant (Fig.6). Being this exceptional in the area of Madhya Pradesh, according to Michael Meister it represents the outcome of a cultural contamination with the Orissa region, and then with VaithalDeul in Bhubanesvara and with ratha of Maballipuram in south India, including that of Ganesha [MEISTER M. Geometry and Measure in Indian Temple Plans. In: Artibus Asiae, Vol. 44, No. 4, (1983), pp. 266-296].

<table>
<thead>
<tr>
<th>PADA</th>
<th>MANDALA</th>
<th>VASTHU-PURUSHA MANDALA</th>
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<tbody>
<tr>
<td><img src="image.png" alt="PADA Diagram" /></td>
<td><img src="image.png" alt="MANDALA Diagram" /></td>
<td><img src="image.png" alt="VASTHU-PURUSHA MANDALA Diagram" /></td>
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</tbody>
</table>

Figure 1
Tool for geometrically interpreting and measuring the Hindu Temple architecture (drawing by the author)

There are two temples built by the Pratihara that interrupt the linear continuity [that is the juxtaposition along a nodal axis of garbagriha - antrala - muka mandapa] of the evolutionary process. The first one is the Santinatha temple at Deoghar, where the garbagriha and the antrala are contained within a quadrangular space delimited by a fence-wall. This plant is structured on a double axis: the main nodal axis and a transversal axis, with both that identify the four stairs that provide access to the pradaksinapathea- i.e. the circumambulation path of the main cell. According to a spaces distributional analysis, the pradaksinapatha plays the role ‘serving space’ - spazioservente - , while the cell-garbaghriarepresents the ‘served space’ - spazioservito. It is still not clear how the pradaksinapathahas been introduced in the area of Madhya Pradesh. Certainly it was an element present in some temples of Gujarat and Rajasthan regions already from the fifth century; while in the southern India, starting from the same period, plants complexity
similar to those that will be built by the Chandella dynasty at Kajuraho (Madhya Pradesh) can be recognized. The second one is the Temple n. 15 at Deoghar which is characterized by a further hierarchization of the internal space. Particularly the pillared mandapa space is introduced. Configured like main nodal space of the plant, it is a space contained between four cells: two of them placed along the nodal axis, that is the antrala configured more like an external portico, and the garbagriha which polarizes [that is placed to the end of the plant’s leading axis] the nodal axis itself; while the other two configured like niches polarizing the mandapa transversal axis. It is also interesting the way in which the sikhara covering dominates on the mandapa space.

Figure 2
Geometric interpretation: identification of the pada-module in garbagriha of the temples of Madhya Pradesh (drawing by the author)
Figure 3

Figure 4
Deogarh_Tempio Dasavara (taken from internet: http://lalitpur.nic.in/tourism/)
Figure 5
Naresar_temple n17 (taken from internet: http://www.odoricoamico.it/india%20sconosciuta/naresar%20padhavali,%20batesara%20mitaoli/naresar%20padhavali%20batesar%20mitaoli%20padhavali.htm)

Figure 6
Gwalior, Teli-ka-mandir (take from internet: http://www.odoricoamico.it/india%20sconosciuta/naresar%20padhavali,%20batesara%20mitaoli/naresar%20padhavali%20batesar%20mitaoli%20padhavali.htm)
The last two temples actually introduce two spatial data which are at the basis of the conclusive evolutionary phase of the temple: the pradaksinapatha and mandapa.

The third phase of the Pratihara dynasty confirms logics of aggregative principles that have characterized plano-volumetric temple development starting from the origin, namely: aggregation of spatial entities – which are functionally autonomous - along a main axis (nodal axis). The Maladevi temple at Gyaraspur represents an example in that sense. Here in fact along the nodal axis both the square pillared mandapa and the garbagriha can be found: two almost autonomous nodal spaces, both in terms of function that in terms of architectural language. To unify these spatial entities is the pradaksinapatha: a path that by circumnavigating both the mandapa and the garbagriha increases the plant organicity degree. Also within the mandapa space two transversal axis take place and are polarized into small niches obtained within side walls thickness.

Besides, being the antralroom simply configured as vestibule of the secred cell, it starts from now the role of filter element between spatial entities of the garbagriha and the mandapa. The introduction of a new spatiality determines changes even in terms of volumetric hierarchies of the temple; let’s think for example to the introduction of the samvarna pyramidal covering on mandapa. This covering type is inspired - constructively speaking - to the tolos model (like the sikhara covering).
<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Temple/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st PHASE</td>
<td>monocellular/polar plant: Garbhagriha or Sancto Sanctorum</td>
<td>Deogarh: Tempio Dasavara</td>
</tr>
<tr>
<td>2nd PHASE</td>
<td>adding of the Maha Mandapa along the longitudinal/modal axis</td>
<td>Deogarh: Tempio Kariya Bir</td>
</tr>
<tr>
<td>3rd PHASE</td>
<td>adding of the Antral along the longitudinal/modal axis</td>
<td>Mahua: Tempio di Shiva</td>
</tr>
<tr>
<td>4th PHASE</td>
<td>dimensional increasing of the spaces on the transversal axis</td>
<td>Naicker: Temple n. 8</td>
</tr>
<tr>
<td>5th PHASE</td>
<td>addition along the nodal axis of Antral and Maha Mandapa</td>
<td>Markhera: San Temple</td>
</tr>
<tr>
<td>6th PHASE</td>
<td>structuring of a circumambulation path called Pradaksinapath</td>
<td>Deogarh: Saninatha Temple n. 12</td>
</tr>
<tr>
<td>7th PHASE</td>
<td>specialization of rooms on the transversal axis</td>
<td>Deogarh: Temple n. 15</td>
</tr>
<tr>
<td>8th PHASE</td>
<td>addition of Mandapa with circumambulation path</td>
<td>Gyarspur: Tempio Maladevi</td>
</tr>
<tr>
<td>9th PHASE</td>
<td>increasing of the organicity degree of the nodal room</td>
<td>Khajuraho: Jagadambi Temple</td>
</tr>
<tr>
<td>10th PHASE</td>
<td>further increasing of the organicity degree of the nodal rooms with addition of the circumambulation path</td>
<td>Khajuraho: Mahadeva Temple</td>
</tr>
</tbody>
</table>

Figure 8
Synthetic scheme of the typo-morphological process of the Hindu Temple in the Madhya Pradesh (drawing by the author)
Therefore the introduction of transversal axis along the nodal axis becomes a constant from a certain moment onwards. This compositional expedient determines planimetric solutions with a higher degree of organicity and consequent marked definition of hierarchies, both from a planimetric point of view that in terms of elevation. In that sense are paradigmatic the Pratihara dynasty Gadarmal temple at Badoh and mostly those temples of the Chandel dynasty (916 - 1250 d.c) i.e. Jagadambi temple at Kajuraho and Nilkanthesvara temple at Udayapur. Here we find a transects that will be strengthened and reinforced in the Lakshmana (Fig. 7) and Mahadeva temples at Kajuraho, where the temple type reaches its apex in terms of organicity even considering the configuration of the whole temple covering system from which it is possible to deduce the temple internal spatiality. In fact, by proceeding along the nodal axis it can be noticed a growing degree of intimacy of spaces externally manifested through gradual oversizing of the covering systems: from the external portico to the garbagriha.

The attempt to re-build the typological process of the Hindu temple (Fig. 8) - and particularly in the Madya Pradesh region - must be conceived as an approach to the study of built cultural heritage aimed to understand its evolutionary phases and so to provide a more structured knowledge of the available heritage. Also, beyond to provide an historical knowledge of the architectural data, such a method of analysis might be configured like a real ‘design tool’ if we think its capacity to instruct conservation practices which aim to preserve the authentic architectural heritage of India.

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Characters of Mandu three mayor religios complexes: kosh monumental system of the Friday Mosque with Hoshang tomb and Asharafimadrase, the Darya Khann and the Malik Mughit. Project of special and residential building within the Hindu Fort.