

Materials of Building Construction in Ancient India: Views and Analysis of *Vāstuśāstras*

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Abstract: Sanskrit literature offers a huge range of technical knowledge. There we find various scriptures on medical science, astronomy, astrology, agriculture, military science, archery, musicology, sport, cookery etc. Among them architecture or *vāstuvīdyā* is one of the most important and prominent one. The views and analysis of *vāstuśāstras* on the material of buildings construction in the ancient Indian culture is the focal area of the current paper.

Materials of buildings construction is one of the most important issues at the preliminary stage of building construction. We can find a number of *vāstu*-scriptures from different traditions that present a vast discourse on this topic; and their scientific approach should, definitely, be appreciated. These scriptures describe the classification, selection and modification of building materials for different types of buildings. Sometimes ritualistic performances are also found in this technical field. It is also evident that in the ancient India materials for building construction used to be selected according to the socio-cultural arrangements. *Mayamata* a most significant treatise of Southern tradition of *Vāstu*, recognizes seven basic building materials. They are – sand, bricks, lime, stone, wood, metals, and precious stones, like Jewels and gems. Colours, foods, medicines etc are admitted there as the secondary material. Likewise, a detailed and elaborated description of different kinds of materials for building construction is found in other traditional *Vāstu*-scriptures, like – *Brhat-saṃhitā*, *Kāśyapa-śilpa*, *Viśvakarmā-vāstuśāstra* etc.

Our current paper would discuss different ways of classification, selection, modification and of the materials for building construction in the ancient India. This paper would try to find out the social reason related to this very topic. In this regard, it would also place a comparative analysis of different views of *Vāstuśāstras*.

Keywords: *Vāstuśāstra*, Material Classification, Ritual and Purity in Construction, Sociocultural symbolism, Ancient Construction Techniques

1.1. Among the preliminary tasks of the building construction, the choice and collection of materials are a significant one. A close examination of ancient methods reveals that the preparation and collection of materials were highly systematic. Here, we discuss the methods of collecting and

preparing materials based on several treatises of *vāstuvidyā*.

Mayamata prescribes have to identify suitable *vrkṣa* (trees), *prastara* (stones) and *iṣṭaka* (bricks). In this context other issues like, *vajyāḥ-vrkṣa* (avoided trees), *vrkṣasaṃgraha* (collection procedure of trees), and *iṣṭakāsaṃgrahana* (collection procedure of bricks) etc. are also discussed. Three kinds of descriptions for the building materials are provided here:

- Types of materials
- Processing of materials
- Selection procedure of materials.

1.2. Types of materials:

There are three kinds of materials prescribed for building construction: wood, stone, and brick. Among them, trees are considered as the most valuable materials in ancient time. *Mayamata* identifies the auspicious trees and provides some guidelines to collect the suitable trees.

1.2.1. *Vrkṣalakṣaṇa* (Definition of suitable trees):

According to Maya the characteristics of trees used in buildings are as follows: it should be hard and smooth (*snigdhasāra*), extremely firm (*mahasāra*), neither too old nor immature, not crooked, and free from any kind of injury or defect. Maya says that:

snigdhasāramahāsārā hysvrddhāstaruṇetarā /

avakrā nirvraṇā sarve grahītavyā mahīruhāḥ //

(*Mayamata* 15.62)

[“The chosen trees must be perfect, hard and vigorous; they should neither be old nor should they be saplings; they should not be crooked and should be undamaged.”]¹

It is also specified that the trees located in holy places, mountains, forests, and pilgrimage sites, which are beautiful to look at and attractive to the mind, offer all kinds of wealth and prosperity. It is because trees in these areas are often considered as sacred and are believed to be blessed by divine presence.

1.2.2. Suitable trees for the making of *stambha* (Pillar):

The following trees are suitable for making of pillars as per *Mayamata*. They are:

- ◇ *Puruṣa* - White Fig (*Ficus virens*)
- ◇ *Katthā* - Acacia catechu
- ◇ *Sāla* - Sal tree (*Shorea robusta*)
- ◇ *Mahuyā* - Mahua tree (*Madhuca longifolia*)
- ◇ *Campaka* - Champak tree (*Michelia champaca*)
- ◇ *Śimśapa* - Indian Rosewood (*Dalbergia sissoo*)
- ◇ *Arjuna* - Arjuna tree (*Terminalia arjuna*)

- ◇ *Ajakarṇin* - Unknown
- ◇ *Kṣīrīṇī* - Unknown
- ◇ *Padma* - Lotus (*Nelumbo nucifera*)
- ◇ *Candana* - Sandalwood (*Santalum album*)
- ◇ *Piṣita* - Unknown
- ◇ *Dhanvana* – Unknown
- ◇ *Piṇḍī* - Uncertain, could be a specific regional or ancient name
- ◇ *Siṃha* - Uncertain, could refer to a specific tree or a lion-like characteristic tree.
- ◇ *Rājādana* – *rājādanam piyālaśca sannakadrurdhanuṣpaṭa* I(*Amarakoṣa* 2.92) *Śamī* - Sami tree (*Prosopis cineraria*)
- ◇ *Tilaka* - Tilak tree (*Clerodendrum phlomidis*)
- ◇ *Nimba* - Neem tree (*Azadirachta indica*)
- ◇ *Āsana* - Indian Laurel (*Terminalia tomentosa*)
- ◇ *Śirīṣa* – *Śirīṣa* tree (*Albizia lebbek*)
- ◇ *Eka* - Unknown
- ◇ *Kāla* - Unknown
- ◇ *Kaṭphala* - Box myrtle (*Myrica esculenta*)
- ◇ *Timisa* - Unknown
- ◇ *Likuca* - Breadfruit tree (*Artocarpus lakoocha*)
- ◇ *Katahāla* - Jackfruit tree (*Artocarpus heterophyllus*)
- ◇ *Saptaparṇaka* - Blackboard tree (*Alstonia scholaris*)
- ◇ *Bhaumā* - Unknown
- ◇ *Gavākṣīn* - Uncertain, could be a regional or ancient name for a specific tree.

1.2.3. *Varjya-vṛkṣa* (Trees these are to be rejected)

The trees that should not be taken for construction are as follows:

Trees located near a temple, trees damaged by weapons, trees struck by *vidyut* (lightning), trees burnt by *dāvānala* (forest fire) and trees grown on a *pretasthāna* (cremation ground) are not suitable for building timber. Maya says that:

na devatālayantaḥsthāḥ prahatā vā na vidyutā I

na dāvānalasaṃlīḍā na bhūtālayamadhyagāḥ II

(Mayamata 15.71)

[“The (chosen) trees should not be close to temple and should not have been struck by lightning nor scoched by any conflagration; they should not be growing in a place inhabited by sprits”...]²

Trees grown beside the main road, trees born in a village, trees sprinkled with water of rituals, and trees inhabited by birds and animals are not acceptable for house construction.

A tree broken by the wind, broken by elephants, providing shelter to

people of the *caṇḍāla* class (mixed caste); is also recognized as the non-suitable for building purposes.

Trees that are entwined with each other, broken, infested with termite, covered with dense vines, or have bird nests on them are unsuitable for building.

Trees with sprouts on all parts damaged by insects, bearing fruit out of season, or grown near *śaśmāna* (cremation ground) are not suitable for construction.

Maya suggests that materials made from such unsuitable trees, when used in construction, cause all kinds of calamities. Therefore, pure materials should be used with great care.

The stones are prescribed to be used in temples, the houses of brāhmins, kings, and heretics (*vidharmī*); however, it should not be used in the houses of *vaiśya* and *śūdra*. If a building of that type (using stone in the houses of *vaiśya* and *śūdra*) is constructed, it destroys *trivarga* i.e. *dharma*, *artha*, *kāma*.

If a building is to be made from a single material is called *śuddha* (pure), a building made from two materials (wood or stone etc.) is called *miśra* (mixed), and a building made from three (wood, stone and brick) materials is called *saṅkīrṇa* composite. It is stated that if a building constructed according to the previously mentioned rules than it will bring prosperity. Maya says that:

tridravayasamyutam yattu tat saṅkīrṇamudāhutam /

pūrvoditānām vāseṣu kartavyam sampadām padaṁ //

(Mayamata 15.80)

1.2.4. *Vṛkṣasaṃgraha* (Collection of trees):

The owner who desires materials (wood) for his construction should undertake auspicious actions and set out to the forest during the *śukla-pakṣa* (bright fortnight) and at an auspicious time.

Maya states that all forest gods and all desired trees should be worshiped with scents, flowers, incense, meat, milk, cooked rice with sesame, fish, and various kinds of food offerings.

According to *Mayamata* trees can be of three categories, viz., male, female, and neuter. Maya refers that the trees that are straight from the bottom to the top, round in shape, and with many branches are the male trees. The trees that are thick at the bottom and thin at the top are female trees, where as the trees that are thin at the bottom and thick at the top should be considered neuter trees. It is stated that:

tattu puṃstvam bhavenmūle sthūlam strītvam kṛśāgrakam /

stūlāgram kṛśamūlam tu ṣaṇḍametadudīritam //

(Mayamata 15.85)

[“A tree which is straight, cylindrical from root to top and which has plenty of branches is called ‘male’ whereas it is female when board at the bottom and thin at the top, and neuter when it is broad at the top and thin at the bottom.”]³

The *muhūrtastambha* (foundation pillar) should be made from a male tree. For other construction of the house, male, female, and neuter trees can be used.

After reciting a formula, the *sthapati* should salute the trees and sharpen the edge of the axe with milk, oil, and ghee. This auspicious formula is as follows:

apakrāmantu bhūtāni devatāśca saguhyakāḥ /
yuṣmabhyaṃ tu balaṃ bhūyaḥ somo diśatu pādapāḥ ||
(*Mayamata* 15.89)

[“Let Spirits, Divinities and Demons disperse! On you O trees let Soma bestow power! May it be propitious for you O sons of Earth! Divinities and Demons I shall accomplish this act and you must change your dwelling place.”]⁴

1.2.5. Caution for tree-cutting:

Maya advises to take the bellow mentioned precautions while cutting trees.

- If the tree falls facing east or north after it is cut down, the tree is considered auspicious for the owner. However, if it falls in other directions, it results in adverse outcomes.
- If a tree falls among other trees and gets stuck on the tops of other trees, it signifies the destruction of the house owner. If it gets stuck at the roots, it causes ill health to the house owner.
- If the middle part of a tree breaks during cutting, the person who cuts it will face misfortune. If the top part of the tree breaks, it indicates the destruction of their progeny. It is considered auspicious for the tree that falls onto another tree. Both parts of the tree should be cut evenly.
- After cutting the tree, both ends should be trimmed equally to make the wood square and straight. Afterwards the wood should be covered with white cloth and placed in a vehicle (cart or chariot) for transportation.
- The trees should be brought into the workshop and laid down on sand, with their tops facing east or north. They should be protected until they become dry.
- The trees should not be moved from their place for atleast six

months. All *indrakīl*-s (nails) should be obtained with care in the same manner.

1.2.6. *Prastara* (Stone):

Stones indeed play a significant role in building construction. The variety of stones depends on different factors such as their age, colour, shape etc. According to Maya, the auspicious stones are generally found even coloured. They are firm and smooth in touch. When they are placed in the ground, their face should be situated either in east or in north. The east and north sides are associated with the powerful deities Sūrya and Śiva.

1.2.7. *Īṣṭakāsaṃgrahaṇa* (collecting of bricks):

Brick is another important material in building construction, used for walls, foundations, and more. Several treatises on *vāstuvīdyā* describe the methods for processing bricks. Maya classifies bricks into three categories and discusses the procedure for making them. Bricks can be of feminine, masculine, and neuter genders according to their features. Maya specifies the characteristics of these bricks. It is stated that:

aṣṭau dvādaśā vā grāhyā madhame tu mahattare /

ṛjudīrghāṅgulinyāsā samasaṃkhyā hi puṃstvabhāk //

strītvabhāgojasamkhyā sā vakrarekhaṃ napuṃsakaṃ /

susnigdhaḥ samadagdhāśca susvanāstāḥ suśobhanāḥ //

(*Mayamata* 12.105-106)

[“A male (brick) has rectilinear sides the length of which is an odd number of digits and, in the case of a female brick, this number is even; a neuter brick has curved sides. These bricks must be pleasant to the touch and well banked; they must give off a pleasing sound and be of attractive appearance.”]⁵

They should be free from defects, dense (where the clay is well-compressed), evenly fired from all sides, have a pleasant sound when tapped, and be free from cracks, breaks, and holes. These characteristics are described for both feminine and masculine bricks.

1.2.7.1. *Manufacture of bricks*:

According to the *Mayamata*, there are four types of soil in the earth: salty (*ūṣara*), off-white (*pāṇḍura*), black and uniform (*Kṛṣṇa-cikkaṇa*), and red-swollen (*tāmra-pullaka*). Regarding on *Īśānaśivagurupaddhati* also records the same information. It is stated that:

cikkaṇā pāṇḍarākhyā ca saloṇā ca vigarhitā /

caturthī tāmraphullā tu karmayogā mṛdiṣyate //

(*Īśānaśivagurupaddhati*, *kriyā*. 33.36)

[“*cikkaṇā* (smooth), *pāṇḍarākhyā* (off-white), and *saloṇā* (salty) soils are considered unsuitable for the construction. The fourth type, *tāmraphullā* (red-swollen), is deemed appropriate for work.”]⁶

Maya recommends using red-swollen soil for making bricks. Soil of this category should be devoid of gravel, pebbles, roots, and bones. It should be blended with white sand until the mixture achieves a smooth and pleasant texture to touch.

Firstly, the clay soil should be placed in a pit filled with water. After some time, once the soil is fully soaked, it should be continuously crushed by foot. Then, this mixture should be soaked in the extracts of *kṣīra*, *ka-damba*, *amra*, *abhaya*, *akṣa*, and mixed with water from *triphalā* (*amla*, *haritakī*, and *baheṛa*). Afterward, the mixture should be crushed thirty times.

The width of the bricks should be measured in units of four, five, six, or eight digits, and the length should be twice of the width. The thickness of the bricks should be half, one-fourth, or one-third of their width. Bricks can be dried in sunlight or fired in a kiln. After a few months, the *sthapati* wets these bricks with water. They should be dried again before being used in building construction. It should be noted that the same method is followed even today.

Mānasāra (chap 257), *Bṛhatsaṃhitā* (chap 57), *Viśvakarmā-prakāśa*, *Viṣṇudharmottara-purāṇa* (chap 92) etc. also illustrate the choice of materials for building construction. In the texts *Bṛhatsaṃhitā* and *Viṣṇudharmottara-purāṇa* the concept of *vajralepana* (similar to cement) is discussed. The *vajralepana* can be made following two different methods. Here, the first method is to be discussed depending on *Viṣṇudharmottara-purāṇa*. It is stated that:

ataḥ param pravakṣyāmi vajralepavidhiṃ tava ।

bilavakāṃśca kapitthāṃśca āmrān saṃhr̥tya yatnataḥ ॥

śālmalīnāṃ tathā puṣpaṃ sallakībījameba ca ।

dhanvanaśca(dhanuścāpi) tathā kalkaṃ vacāṃ ca manuḥśvara ॥

(*Viṣṇudharmottara-purāṇa*, 92.1-2)

[“*Bilvaka*, *Kapittha*, *Āmra* as well as the flower of *Śālmalī*, the seed of *Sallakī*, the skin of *Dhanvana* and *Vaca* should be taken in equal parts and mixed up in water eight times in quantity. The whole mixture should be boiled till it reduces to one-eighth. Then the following things should be put into it; the *Vinyāsa* of *Sallakī*, the *Guggula* of *Bakula*, *Bhallātaka*, *Bilva*, *Kundurū*, *Sarja* and *Atasī*. When it (this mixture) is heated properly, it is called *Vajralepa*.”]⁷

Second method to process the *Vajralepana* is to be discussed here depending on *Bṛhatsaṃhitā*. The text mentions that:

lākṣākunduruguggulugrhadhūmakapitthavilvamadhyāni /

nāgavalāphalatindukamadanaphalamadhukamañjiṣṭāḥ //

sarjjarasarasāmakāni ceti kalkaḥ kṛto dvitīyo 'yaṃ /

(*Brhatsaṃhitā* 57.5-6)

[“There is a second glue of excellent qualities made of the sediments, as explained before, of lac, Kunduru, Guggulu, jouse smoke, wood-apple, Bilwakernel, fruits of Naga, Neem, Tinduka and Madana, madder, Sarjara-sa, Raktabola and Amalaka.”]⁸

The systematic methods prescribed in treatises like *Mayamata*, *Viṣṇudharmottara Purāṇa*, and *Brhatsaṃhitā* for the selection, collection, and preparation of construction materials reflect more than mere technical expertise, they embody a deeply ingrained social, spiritual, and ecological consciousness. The rigorous classification of trees, stones, and bricks based on their physical and symbolic qualities, along with their prescribed use in different types of buildings, demonstrates how architecture in ancient India was closely tied to social hierarchy, ethical principles, and cosmological beliefs.

The exclusion of certain trees those struck by lightning, grown near cremation grounds, or inhabited by birds, highlights a concern for purity, spiritual safety, and harmony with nature. Meanwhile, the regulation of stone use in buildings of different social classes, such as the prohibition against stone structures for *Vaiśyas* and *Śūdras*, reflects the stratified social order of the time. Even the gendered classification of materials—trees and bricks as male, female, or neuter, reveals how natural elements were interpreted through the lens of human social structures.

Moreover, the prescribed rituals such as tree worship, offerings to forest spirits, and auspicious timing of material collection indicate that construction was not viewed as a merely physical act, but a sacred endeavor intertwined with religion, environment, and society. These practices ensured that building a home was not just a technical achievement, but a *dhārmic* act rooted in social responsibility.

Endnotes

1. B. Dagens, *Mayamata*, vol. 1, p.195.
2. B. Dagens, *Mayamata*, vol. 1, p.199.
3. B. Dagens, *Mayamata*, vol. 1, p.201
4. B. Dagens, *Mayamata*, vol. 1, p.203.
5. B. Dagens, *Mayamata*, vol. 1, p-147
6. Translated by the researcher.
7. Priyabala Shah, *Viṣṇudharmottara-purāṇa*, vol. 2, p.196.
8. V. Subrahmanya Sastri & M. Radhakrishna. Bhat , *Brhatsaṃhitā* p.502

Bibliography

- Acharya, P. K, Compiler. *A Dictionary of Hindu Architecture*. Delhi: Low Price Publication, 2015.
 - ---. *An Encyclopaedia of Hindu Architecture*. Delhi: Low Price Publication, 2010.
 - ---. editor and Translator. *Architecture of Mānasāra*. Delhi: Low Price Publication, 1995.
 - Altekari, Rahul Viswas. *Vāstuśāstra: Ancient Indian Architecture and Civil Engineering*. Delhi: D.K. Printworld (p) Ltd, 2004.
 - Dagens, Bruno, editor and translator. *Mayamata: Mayamata, Treatise of Housing, Architecture and Iconography*. 2 Vols. Delhi: IGNCA, 1997.
 - Macdonell, A. Arthur, editor. *A History of Sanskrit Literature*. London: Oxford, 1900.
 - Shah, Priyabala, editor. *Viṣṇudharmottarapurāṇa*. Vol. 1. Baroda: Oriental Institute, 1958.
 - Sastri, V. Subrahmanya, and M. Ramakrishna Bhat, editors and translators. *Br̥hatsaṃhitā: Varahamihira's Br̥hatsaṃhitā*. Bangalore: M.B.D. Electric Printing Works, 1946
 - Vasudeba, K, and N. B. Gadre, editors. *Visvakarmā-vāstuśāstra*. Tanjore: S. Gopalan T.M.S.S.M. library, 1958.
 - Williams, Monier, compiler. *A Sanskrit-English Dictionary*. Delhi: MLBD, 1986.
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