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Exploring the Characteristics of an Engineer (Śilpī) in Vāstuśāstra

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Abstract - This research paper delves into the profound realm of Vāstuśāstra, an ancient Indian architectural science, to investigate the essence and characteristics of an engineer, referred to as Śilpī. By analyzing traditional texts and historical narratives, we aim to unravel the fundamental attributes, skills, and societal roles of the Śilpī within the context of Vāstuśāstra. Through this exploration, we seek to offer insights into the timeless wisdom and relevance of Śilpī in contemporary engineering practice and education.

Keywords: Śilpī, Engineer, Vāstuśāstra, Characteristics, Ancient Wisdom, Architectural Science, Societal Role, Engineering Practice, Education.

1. INTRODUCTION

Vāstuśāstra, the ancient Indian science of architecture and design, provides a rich tapestry of knowledge encompassing various aspects of construction, aesthetics, and human well-being. Central to this ancient discipline is the figure of the Śilpī, an engineer imbued with both technical prowess and spiritual insight. The Śilpī, as depicted in Vāstuśāstra texts and historical accounts, embodies a holistic approach to engineering, blending technical proficiency with an understanding of cosmic harmony and societal welfare. In this paper, we embark on a journey to explore the characteristics of the Śilpī, seeking to illuminate their significance in shaping the built environment and guiding contemporary engineering practice. Through a multidisciplinary inquiry, drawing from textual analysis, historical research, and insights from modern engineering, we endeavor to shed light on the timeless wisdom encapsulated in the archetype of the Śilpī and its relevance in today's rapidly evolving technological landscape.

Characteristics of an Engineer (Śilpī)

The second element of Aṣṭāṅga Vāstuśāstra is the group of people (śīlpi), who are actually responsible for the construction of the home, as per the sacred science and the requirements, specified by the yajamāna, i.e., the dweller. Various treatises have classified and described these people, according to their role in the home construction process.

Sthapati

Maya specifies the role as the person knowing all branches of Śilpaśastra and capable of applying its principles to the real life requirements. Maya further describes the virtues and characteristics and says that the engineer should be a rational thinker, benign, mathematician, knowledgeable, trustworthy, stoic, a technically sound good draftsman, meteorologist, strong and committed, a perfect leader, accurate and consistent and not possessing any of the seven bad habits mentioned in Dharmaśāstra.

Bhṛgu describes sūtradhāra in different language as having good conduct, creative, accurate, knowledgeable and skillful in applying scientific principles in practice. Kaśyapa uses the word silpajña and, more or less, emphasizes on his people centric characteristics.

Sūtragrāhī

He is the second line person and had been seen as a prospective sthapati. Maya points out that, in most cases, a sūtragrāhī was either a disciple or the son of sthapati. He is expected to be a master in, at least, one branch of Śilpaśastra. Bhṛgu describes him as devajña and adds that he should have the required knowledge and skills of estimating the project (total building or construction activities) cost, time, materials and all implementation issues, like, all the required rituals, their scheduling and effects as well as the remedial procedures, if required. Vaze (1928) concluded that this category of Śilpī was the pioneer in linking astrological principles to the science of construction.

Takṣaka

Maya describes him as a person, responsible for physical measurements, sizing and preparation of building materials for use. Kaśyapa describes him as vidhijña because he is supposed to know all the engineering processes carried out in building structures. He is responsible for the

a. Measurement and testing of land.
b. Preparations of raw materials, in right proportions, like sudhā-lepa, liquid limes, etc.
c. Cutting, sizing and finishing of wood, metal, bricks, stone, etc.
d. Economizing on time and costs.
e. Direct controller of budget.

Vardhaki

Maya describes him as one, who actually builds (vṛddhi) the structure. He is responsible for all the physical activities required to construct the home, like,

a. Digging the land for the basement preparation.
b. Construction of base, using right material received from takṣaka.
c. Preparation of proper cementing agents and applying the same in right quantity, at right place and at the right time.
d. Carrying out brickwork or stonework for the walls, ceilings, etc.
e. Checking the alignment of the structure and alterations.
f. Responsible for the delicate finishing, artistic look, interiors, wall paintings, etc.

We can see from the above that, depending upon the skills required for the processes, like, brick working, base fabrication, wall painting, ceiling, etc., there must have been different specialists existing.

Karmī

Maya describes that the Karmī he should be smart, clean, healthy, cordial, meek, happy, open-minded, obedient and disciplined. They should carry out all the supporting activities like:

a. Loading, transferring and unloading of materials.

b. Cleaning the place, equipment's, tools, structures.

c. Watering the structure, place, etc.

d. Helping the other Śilpīs by bringing their tools, materials required and keeping the same back at the right place, keeping the tools as per the instructions, oiling or greasing.

e. Should carry out everything, specified by sthapati.

We have seen above the role and responsibilities of every class of Śilpī and their interdependence. The following pages will describe the method of selection of these Śilpīs and the revenue distribution aspects.

Selection Process of Śilpī

Yajamāna first selects sthapati depending upon the

a. Required scope of knowledge, skills and experience;

b. Past performance and history of sthapati; and

c. Affordability.

Once this is done, then, both sthapati and yajamāna or either of them selects sūtragrāhī. It is expected that the total project be carried out by the same sthapati and sūtragrāhī; and in case of death of any one, his son or disciple should be replaced with.

Sūtragrāhī will select vardhakī and sthapati will select karmī. Finally, sthapati and sūtragrāhī both shall select takṣaka.

Hierarchies, Accountability and Reporting Structure

The following diagram will clear the above-mentioned

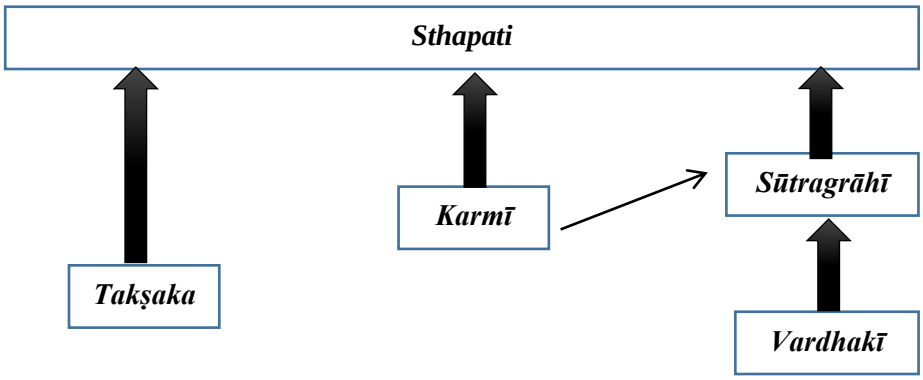

Fig -1: Hierarchies, Accountability and Reporting Structure

Division of Income between Śilpīs

The following table shows the percentage of total income to be distributed among the śilpīs, i.e., recommended distribution of revenues.

The total value for distribution is based on the total project cost and can be estimated as 10 per cent of it. This approach will enlighten us about the planning of financial allocations amongst the people, who used to carry out the home building activities in ancient India.

Table -1:

Śilpī type	Doctrine			
	Kaśysps Saṁhitā	Bhṛgu Saṁhitā	Manu Smṛti	Śilpadīpaka *
Sthapati	40%	50%	48%	Land
Sūtragrāhī	30%	25%	24%	Land
Takṣaka	20%	16%	16%	Ornaments
Vardhakī	10%	9%	12%	Clothes

*A different approach of bartering is seen in Śilpadīpaka.

Thus, from this chapter, we can conclude that the system followed in selecting responsible people for construction, was very meticulous.

2. CONCLUSION

In conclusion, this research paper has delved into the intricate realm of the engineer, known as the Śilpī, within the context of Vāstuśāstra. Through an exploration of ancient texts, philosophical insights, and contemporary interpretations, we have uncovered a rich tapestry of characteristics that define the Śilpī. From their technical prowess and creative ingenuity to their ethical responsibility and holistic understanding of the built environment, the Śilpī embodies a multifaceted role that extends beyond mere construction. They are stewards of balance and harmony, integrating principles of design, sustainability, and human well-being into their work.

As we navigate an increasingly complex and interconnected world, the timeless wisdom embedded in Vāstuśāstra offers valuable lessons for modern engineering practice. By embracing the holistic worldview of the Śilpī and integrating it with contemporary knowledge and technology, we can aspire to create built environments that not only endure the test of time but also nurture the human spirit and promote collective flourishing. In the spirit of continual learning and adaptation, may this exploration serve as a catalyst for further inquiry and reflection, inspiring engineers to embrace their role as guardians of harmony and champions of sustainable development in service to both present and future generations.

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