

Can Ancient Wisdom Guide Modern Architecture? A Study of Vaastu Shastra and Sustainability

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ABSTRACT

Various myths and beliefs prevail in the Indian society regarding the construction and architecture of the built environment. While deriving the principles of construction and architecture, the Architects and Engineers of Ancient India based it on their experiences, observation of natural phenomena as well as on the social and cultural aspects. The aim was to develop a built environment which could become compatible for the inhabitants beside extracting maximum benefits from nature, too. Modern scientific logic and knowledge can be used to explain these principles of construction and architecture and such a scientific study can be successfully applied in contemporary practice. An attempt has been made here to explore and survey the fundamental principles of Indian architecture and engineering based on Vaastu Shastra (the ancient Indian building science) texts. The present paper also attempts to provide scientific reason of some of these principles which may be used in the modern practice not only in designing but also in construction so as to bring a physical and mental comfort to the inhabitants. It may be concluded that some norms of Vaastu and modern techniques of design and construction can be bridged together to bring in a living environment that is ecologically balanced as well as culturally stimulating.

Keywords: Vaastu Shastra, Ancient Indian Principles, Living environment, Design and construction, Sustainable development goals

“A city should be built to give its inhabitants security and happiness.” – Aristotle

Vaastu is the ancient Indian science of placement and design of building and Vaastu Vidya is an art of architecture and construction in ancient Indian texts. (Nandy *et al.*, 2017). Marvelous monuments in India like Great Stupa at Sanchi and the Rock cut caves at Ajanta are exemplary examples of Vaastu Vidhya which represent its advance architectural and construction techniques. The construction of these monuments is based on the methodology which represents harmony of structure with environment, rituals and lifestyle of people of India.

The term Vaastu was originally derived from the root word vas, meaning to dwell or a dwelling place. The

Vaastu shastra thus literally translates to “wisdom of dwelling place”. The selection of site or the construction, the layout and design of interior spaces of temple, houses and town are systematically based on this principle. It signifies a human settlement or a place where more than one household lives.

Vaastu shastra is evident in the built form of Indian settlements which explores the possibility of creating a living environment that is self-sufficient, ecologically balanced and culturally stimulating. Man can improve his conditions by properly designing and understanding the location, direction and disposition of a building that have a direct bearing on the human being.

The subject of Vaastu Shastra had been rigorously dealt across various ancient texts covering diverse

subjects of literature. It ranges from Vedic literature to Agamas, Puranas, Sutras, Samhitas, Epics and other Treatises. The Architect was known as Sthapati, Draughtsman was known as Sutragrahi, Carpenter as Takshaka and Mason as Vardhak, together these four were considered as the four faces of Brahma (the god of Creator). During the Vedic period, Sthapatya Veda (Atharva Veda) prescribed the layout of city, Smriti shastra the street planning at macro and micro level and Vaastu shastra provided the knowledge of house planning.

Planning for cities in India dates back to the Vedic times with most of the cities like Patliputra, Varanasi, Nalanda etc. were built on the basis of well-conceived plans (Nallathiga, 2009). Most of the early approaches of city planning in India have resulted in the crystallization of intellectual and structured body of indigenous knowledge. The City of Jaipur was built as per the planning principles of Vedic city planning. Indian culture and civilization have survived thousands of years because it is based on the strong foundation of the wisdom known as “Vedas”.

The Vedic texts were mutilated with the advent of Mughals and their influence and also with the conflict of the states of North India. So, the texts which were written in South India were regarded as the basic literature. Elaborate descriptions on the aspects of architecture and engineering are thus available in the major technical treatises like Mayamatam written by sage Mayamuni, Samarangana Sutradhara of Bhojadeva and Aparajita precha

Our whole universe is composed of five basic elements- Air, Earth, Fire, Space and Water called “Panch Mahabhoot” (Fig. 1). Vaastu plays a significant role in balancing the dwelling/structure and the elements of

universe for happiness and comfort. It is the science of direction that combines all the five elements of nature and aims to balance them with man and the material. These principles are also derived on the basis of special characteristics and influences of elements of universe such as the magnetic field, gravitational effect of Earth and Galaxies in sky, light and heat of Sun including the effects of its ultra-violet and infra-red rays, etc. (Hitoshma Singh, 2011).

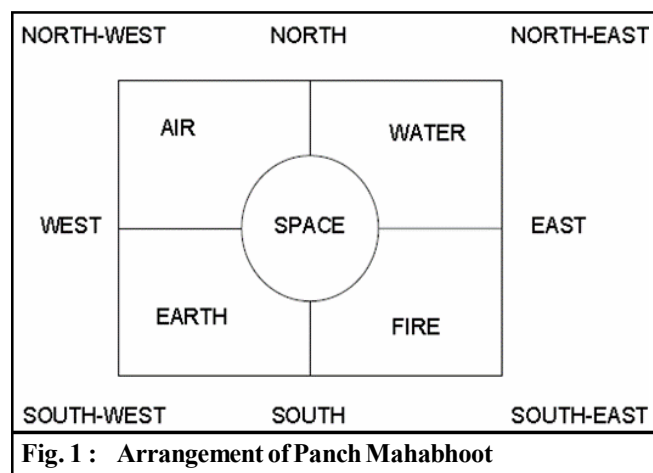
In Vaastu shastra as well as in modern architecture, shapes like squares and rectangle indicate safety, completeness and stability. But even the triangles and rounded shapes which represent an aesthetic shape and represent grace and progress are absent in Vaastu shastra but present in modern architecture. The square and rectangular form create vibrations which transmits a tranquil and peaceful pattern of life.

Basic Principles:

The principles of construction and architecture that the Architects and Engineers of Ancient India derived were based on their experiences and observation of natural phenomena. Being based on natural phenomena, they can be effectively applied in construction techniques of any era. Scientific knowledge of these principles and its application in modern construction can give better results. Vaastu shastra deals with four kinds of spaces- space with human form, constructed space, terrestrial space and cosmic space. A harmony among all these spaces brings tranquility to the body and mind. This has become the major concern to the people who are inclined to get the structure designed by the architect on the basis of Vaastu shastra which would fulfil their logical and psychological requirements.

The fundamental principles of Vaastu Shastra are successively applied in constructing buildings such as residential buildings, commercial complexes, industry layouts, towns, temples, etc. There are five basic principles on which the great edifice of the Vaastu science of architecture stands. They are:

- (1) Examination and Selection of Site: Bhu Pariksha.
- (2) Orientation : Dik Nirnaya.
- (3) Planning of various component: Padavinyasa (Vaastu Purusha Mandala)
- (4) Proportion and Measurement of building: Manna and Ayadi.
- (5) The aesthetics of the building: Bhulambamana or Chanada.



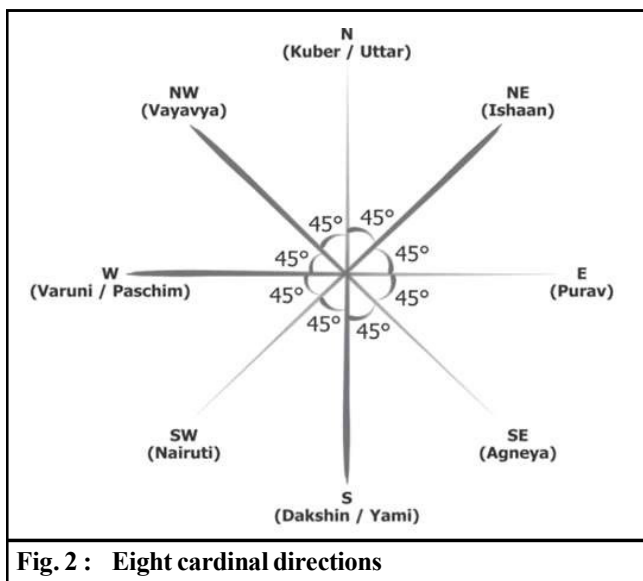
The movements of celestial elements like planets, Sun, Moon and their effects on environment form the basic principle of Vaastu shastra. The natural geographic features like the velocity and direction of wind rainfall, the volume and intensity and characteristic of soil is also taken into account. The influence of the elements of universe viz., magnetic field, the gravitational effect of Earth and the Galaxies in sky, light and heat of Sun including the effects of its ultra-violet and infra-red rays is recognized as one of the important bases in deriving these principles. The Indian philosophy of life and the interwoven relationship between human and environment is vividly reflected in the basic principles of Vaastu shastra. These five elements form the core of the art of interior designing and decoration.

Bhu Parikshan:

A unique method of testing and selecting the site before the construction begins. The shape, contour, odour, colour, taste and touch of the soil has to be examined here.

Dik Nirnaya:

A story regarding the creation of direction can be found in the 21st chapter of Varasha Purana. There was no support of magnitude to the universe when it was formed. A need was felt for measure to understand the position of each thing in the universe. Thus initially 10 directions were formed which included 8 cardinal directions along with hell and heaven. According to Ancient Indian texts of architecture, the cardinal



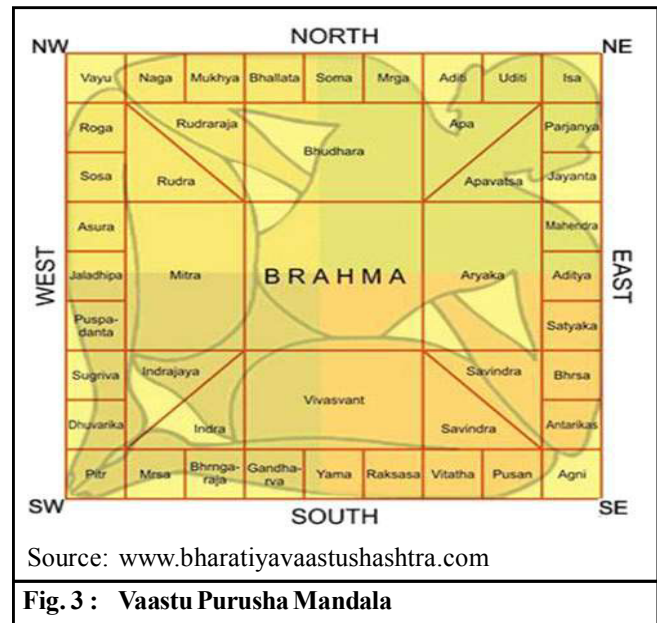
directions hold a significant relevance. The Fig. 2 depicts the eight cardinal directions.

The orientation principles of Vaastu Shastra aim at setting of structure and its components in such a way that they may get maximum benefits from solar radiation and wind.

Padavinyasa (Vaastu Purusha Mandala):

For generating the architectural design, mathematical and diagrammatic basis is required and Padavinayasa provides this basis. While Purusha refers to energy, power, soul or cosmic man, Mandala is the generic name for any plan or chart which symbolically represents the cosmos.

Padavinyasa is the process in which the site is divided into various numbers of squares. The number of squares varies from Single Square (1x1 grid) to 32x32 (1084) squares depending upon type of construction, where each square is referred to be as Padas. Most common mandala is shown in Fig. 3.



Pada – each of the divided squares are assigned a deity and are also named after them. It defines stable structural grid for construction. According to Indian thought process, these deities are said to be an element of nature which controls the particular natural phenomena. Arrangement of deity indirectly indicates the characteristic of particular component which guides us to formulate activity zoning in the house. For example, location of Vayu (God of Wind) is in North -West direction

indicates change in the course of business, friendship and enmity.

The diagram is divided into $9 \times 9 = 81$ parts. The positions of the 45 gods who are holding down the Vaastu Purusha are shown (32 are in the external enclosures and 13 are in the internal enclosures). These symbolic Gods rule various aspects of life and have certain inherent qualities for example East which is considered to be the direction of lineage is ruled by Indra and signifies the long life of the owner.

The basic tenet of Vaastu Shastra has the potential to create a living environment which enhances sustainable development through its culture, heritage and orientation. Vaastu and modern techniques of design and construction can be bridged together to bring in a living environment that is ecologically balanced and that brings happiness and comfort to the inhabitants.

Vaastu Shastra in Modern Architecture -Towards Sustainable Development:

“If the house is designed as per the Vaastu Purusha Mandala, a perfectly balanced environment which ensures enhanced health, wealth and happiness is created, because the ancient Vaastu pundits figured out that when the different rooms were placed according to the Vaastu Purusha Mandala, good disposition to the Sun, proper ventilation and lighting and privacy would be ensured.” - Dr. Rashmi Jain¹

As we all know that human beings engage themselves in a lot of activities throughout the day but each time of the day does define its course of work too. The ancient Vaastu experts divided the 24 hours into eight parts, representing the eight cardinal directions. According to this, the direction and positioning of a room's opening are determined in such a way that at any given moment of the day, regardless of the activity, those living inside do get the essential rays and light from the Sun. this direction of the sun throughout the course of the day changes and the structure of the house when determined in coordination with this direction may minimize the use of like fans, lights, and so on. The house can thus be made sustainable leaving a positive bent of mind on the residents.

Vaastu Shastra being an ancient Indian architectural

and design system, offers a unique approach to building and living in harmony with nature. While often associated with traditional Indian architecture, its principles can be adapted to modern construction practices, promoting sustainable development.

Key principles of Vaastu Shastra include:

- **Orientation:** Buildings should be aligned with the cardinal directions to harness natural energy and minimize negative influences.
- **Energy flow:** The layout should facilitate the smooth flow of energy (prana) throughout the space, promoting positive vibes and well-being.
- **Natural light and ventilation:** Maximizing natural light and ventilation is essential for energy efficiency and occupant comfort.
- **Water conservation:** Vaastu principles often emphasize water conservation through proper drainage and rainwater harvesting.

By incorporating these principles into modern architecture, we can achieve several Sustainable Development Goals (SDGs):

- **SDG 3: Good health and well-being:** Vaastu Shastra's focus on creating harmonious living spaces can contribute to improved mental and physical health.
- **SDG 7: Affordable and clean energy:** By optimizing natural light and ventilation, Vaastu Shastra can reduce reliance on artificial lighting and cooling systems, leading to energy savings.
- **SDG 11: Sustainable cities and communities:** Vaastu Shastra principles can promote urban planning that is in harmony with the environment and fosters a sense of community.
- **SDG 12: Responsible consumption and production:** By emphasizing energy efficiency and resource conservation, Vaastu Shastra can contribute to more sustainable consumption patterns.

Vaastu Shastra has thus a strong relation with the concept of sustainable development. It explains the complex current concerns of urbanization and overcrowding. The science of Vaastu Shastra harmonizes the potential of building a self-sustaining environmentally sustainable and culturally appealing place to live in by addressing the appropriate constructed form of Indian

1. Dr. Rashmi Jain as mentioned in Soni, S., Mishra, S. A. and Pakhale, K. Vastu Shastra-The concept of Sustainable Architecture, International Journal of Research in Engineering, Science and Management, Volume-2, Issue-10, pp.803, October-2019

communities. It emphasizes on the rich cultural heritage and focuses on forests' long-term viability as a way to deal with issues within the framework of sustainable development. Furthermore, the essential concepts, the importance of Vaastu-Purusha-Mandala, and the history of Vaastu Shastra along with its metaphysical and societal effects has its significance in promoting sustainable development.

There is a strong connection between the science of Vaastu Shastra and environmental sustainability in order to rethink the current form of human settlement planning (Patra, 2008). Houses were built according to vaastu shastra guidelines in ancient times; thus, they respond favorably to the environment, and the relationship between building, human beings, and ecology becomes harmonious. However, the rapid pace of industrialization and modern architecture have changed the positive reaction of buildings to the environment, leading to a rise in the employment of active techniques to create a welcoming environment in the home.

As the usage of proactive approaches has increased, so has pollution, and therefore the notion of Sustainable Architecture has evolved, using Vaastu Shasta as its main concept to limit the adverse effects of buildings on the environment (Soni *et al.*, 2008).

Conclusion:

We live in a rapidly increasing world of human settlement and urbanization, which leads to socio-ecological instability and a serious problem of unfavorable climate change and natural disasters. Inadequate human habitation and wasteful material use have also depleted natural resources, resulting in environmental contamination. Despite this, the ancient knowledge of Vasu Shastra plays a significant role in managing human ambitions and ensuring sustainability, allowing us to establish a healthy inner and outer environment. The basic goal of Vaastu Shastra is to achieve perfect balance and harmony between nature, people, and their places of living and working in order to offer everyone with serenity, wealth, health, and happiness. It can thus be concluded that the science of Ancient Indian Principles, Vaastu Shastra, when considered by the Engineering and Architecture in Modern times would surely help to attain out goal of sustainable development.

Data Availability statement:

All data underlying the results are available as part

of the article and no additional source data is required.

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