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A Scientific Approach Towards 'Vaastu': Interpretation of Vaastu Principles in Terms of Green Building Concepts and Climatological Aspects

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Abstract: ***September 28th is globally observed as Green Consumer Day every year. On this day, people across the, world are made aware to encourage purchasing only eco-friendly products which do not pollute the environment. The depletion of natural resources is taking place at an alarming rate and it is essential that we switch on the green mode at the earliest. The global buyers are definitely going green and are more than ever conscious about the environmental impact of the products they buy. Consumers now purchase products and packages that can be recycled or otherwise safely disposed off. Kaizad Hateria, general manager, corporate customer relations and assets class specialist, Rustomjee, says, " Green is the new age Vaastu-a common sense approach to building residential and commercial complexes. In the past few years, there has been a tremendous awareness in India about environmental issues. Majority of people have come to realise that sustainable development will happen only if a balance is struck between growth and environmental protection.***

Keywords: Vaastu, Green Concepts, Climatology

1. Introduction

The interpretation of vaastu is based on the following grounds: vaastu-is it a science or a myth? Has it got any relevance with the climatological aspects of a place? Vaastu varies from country to country. Has it got anything to do with the climatic zones of the world? Are vaastu principles laid down keeping in view the wind directions and the human comfort levels? Can we relate the vaastu prescribed guidelines in terms of the green building concepts of energy efficiency, building envelope and water bodies? The vaastu varies from place to place as well as the building typology as well. The vaastu guidelines are mainly laid for the tropical regions of the Asian Sub-continent. Whereas the climatological principles are based on the different climatic zones of the world.

In this paper, I would like to derive a scientific relation between vaastu and the globally accepted climatological principles for residential building as well as relate it to the green concepts of the present day need.I will list out each principle of vaastu and derive a scientific interpretation in terms climatology or green concepts wherever applicable

2. An Ancient Science Lost in Time?

Vaastu:
Vaastu is being widely used in Asian countries of China, Tibet and the Indian subcontinent over the ages. Though it varies from country to country, the main principles over which it is based are the same i.e., the five elements of nature namely the earth, sky, fire, air and water. However the scientific reason underlying the variations is the same. Now let us see the one by one list of the vaastu principles and their interpretation in scientific terms on various grounds of planning, location of openings, permissible slab-cuts in each direction, landscape and water bodies, set - backs of the building in the plot.

In a vaastu based design, courtyard housing is the best recommended option with doors opening in four directions i. e. North, South, East, West on the external walls with a central courtyard (figure -2). The main entrance to the house would be in the north or eastern direction. The hall or the main living would be in the north or east, kitchen in the south east, master's bedroom in the South- West, guest room in the north-west, room in the north-east. In this system, the courtyard allows the hot air to escape upwards and outsides an the lower openings pull in the cool air thus creating a stack effect. The placing of the washrooms should be in the south or west.

1) *Planning principles*

Now let us analyse these principles in terms of climatological aspects. Considering the sunpath over the tropical region the path is from east tilted towards south and sets in the west. In summer, the horizon is high whereas it is low in winters (figure 1).

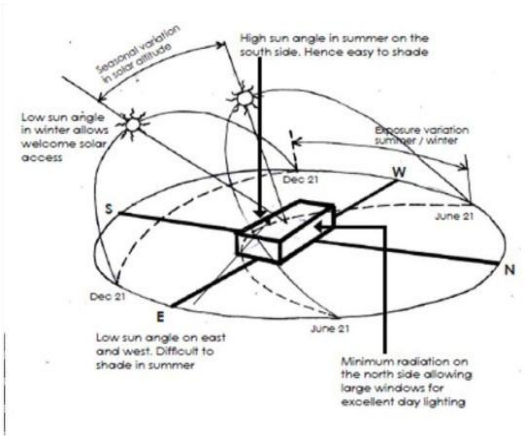

Figure 1: Showing the sun path (ref: *IGD booklet*, 2013)

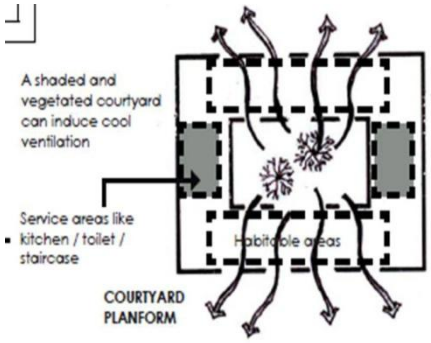

Figure 2: Showing the courtyard plan form

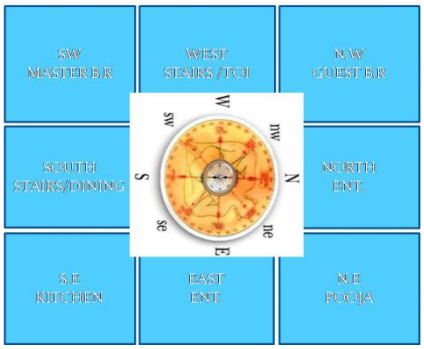

Figure 3: Vaastu Mandala and spatial arrangements

Depending on the sun path the sunlight received in each direction can be described as follows:

Table 1: Percentage of direct sunligt received in each direction Ref:*Garden web, feb2012.*

Direction	Summer	Winter
East (semi shade)	25%	15%
South (sun)	70%	50%
West (semi sun)	50%	30%
North (shade)	Diffused light	

As per the sunpath south east direction receives50% of direct sunlight in the morning (table1) which is good for health and the heat is optimum to keep the food materials both cooked and uncooked in a fresh condition at room temperature. Excessive heat or cold which intern leads to moisture in the tropics is not an ideal condition for food storage as it leads to contamination.

South-west, west and North West, which are the less inhibited areas during the day receive maximum solar heat. The heat gets dissipated by night and is replaced by cool winds. This location is ideal for night occupancy i.e. is the bedrooms. And the place allotted for the toilets is also on the south and west walls so as to facilitate the drying up of these areas which are otherwise damp and may lead to the development of unhygienic conditions.

North receives the diffused sunlight throughout the day which is the exact requirement for living areas. North east receives the morning rays which are believed to contain positive cosmic energy as per Hindu mythology and justifies the placement of the puja room at this corner (figure 3).

The staircase and the cupboards /wardrobes inside the house should be located on the south or west walls which act as a buffer for the conductive heat entering the house from the external walls from these sides.

2) Location of openings

According to the vaastu principles, all the openings in the house should be in alignment with each other i.e, the doors and windows. This demonstrates the linear ventilation method which was used before the concept of cross ventilation was introduced. All the openings had ventilators above them facilitating the reduction of heat pond effect at ceiling level (figure 4). The shutters of all openings were made out of wood, which is an insulating material maintaining the interior temperature intact unlike glass.

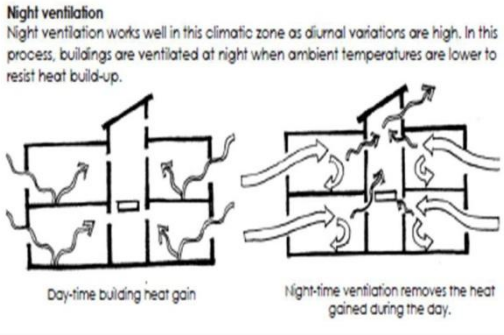

Figure 4: Dissipation of heat through higher openings (ref: *IGD booklet, 2013*).

3) Slab-Cuts:

Vaastu prescribes the permissible slab-cuts in each direction as follows:

Table 2: Permissible slab-cut in each direction (ref: Gouru *Griha vaastu*, 2002)

Direction	permissibility
East	Allowed
South-east	Not allowed
South	Not allowed
South-west	Not allowed
West	Not allowed
North-west	Not allowed
North	Allowed
North- east	Allowed

From the above data one could easily make out that the slab cut indicates the increase in the surface area of that respective direction which intern leads to maximisation of solar heat gain (figure 5). South, West, and their respective corners are likely to increase the heat inflow to the building, hence avoided. Whereas north, east and their common corner helps increased surface area capturing the cool winds besides diffused north-light. The slab heights are also prescribed as: south-west part highest and the north-east

lowest. That implies that the roof should slope from SW to NE minimising the exposure of the roof to direct solar radiation and the south wall which receives max heat is protected by the deciduous trees on that side.

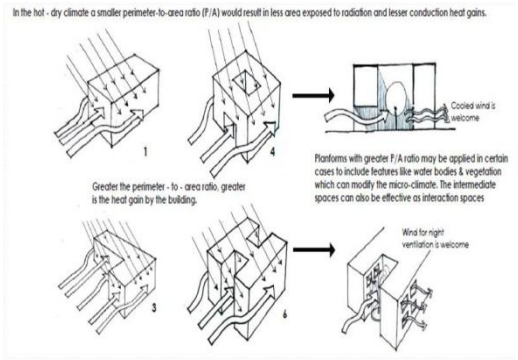

Figure 5: Illustrations showing the conductive heat gain and wind capture depending on form.

4) Landscape and water bodies

Vaastu suggests the plantation of trees in the southern and western directions of the site but limits the eastern and northern sides with shrubs and ground covers of greenery. The water bodies in the site should be located in the north-east or north only (figure 6). The prime idea behind these guidelines is that the decidious trees act as an envelope for protecting the building against heat inflow during summer and allow the direct sun required in winter (figure 8). It is specifically mentioned that huge trees like banyan, peepal, amla, tamarind should be got removed if present in the site as they are unauspecious, the reason behind this belief being the presence of such trees would damage the foundation and the structure because of its strong root system. The water in north will lower the temperature of the wind blowing from north and east into the building (figure 7). The placement of the water body in any other direction would lead to excessive evapouration in turn building up humidity in the site. Another concept behind this guideline is that water gets heated and slowly than land. Supposing a water body in south or west, the water gets heated up throughout the day and will heat up the surroundings while dissipating the heat during night, i.e. the bedrooms in this direction would become uncomfortable for the occupants.

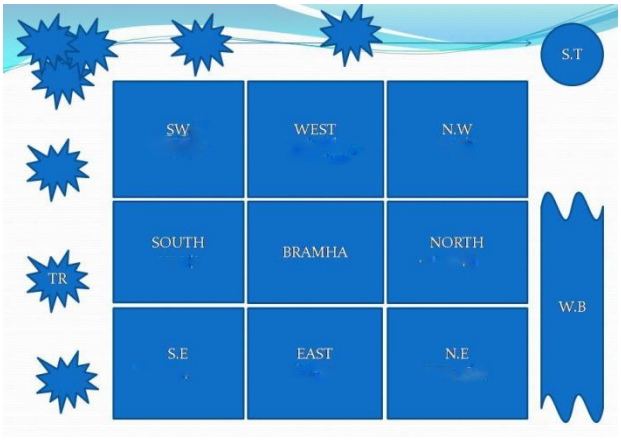

Figure 6: Location of trees and water bodies around the building.

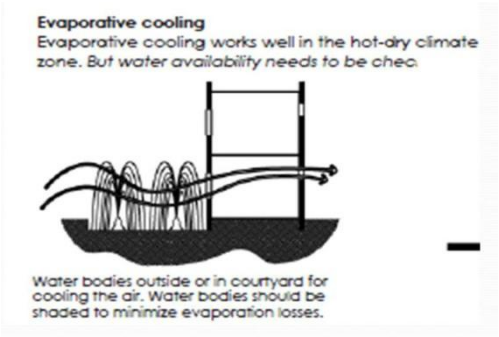

Figure 7

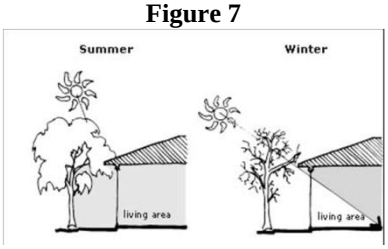

Figure 8: Decidious trees provide shade in summer and warmth in winter

5) Building setbacks:

The guidelines for building setbacks as per vaastu are: less on south and west, more on north and east (figure 9).The scientific reason behind this guideline is that the building is closely placed to the trees on the south and west boundary wall providing shade to the openings as well as the external wall surfaces from the harsh radiation in these directions (figure 10).

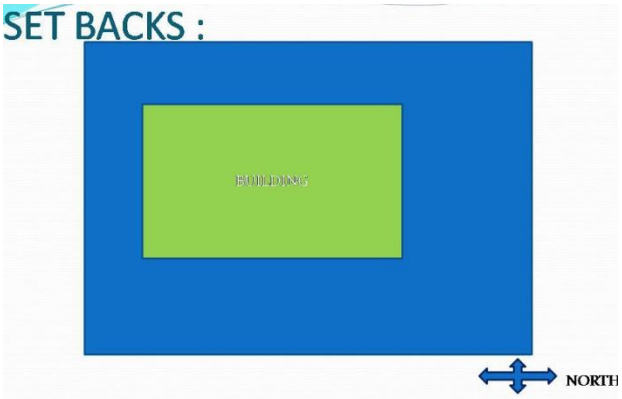

Figure 9: Building setbacks as per vaastu (ref:Gouru *Griha vaastu*, 2002)

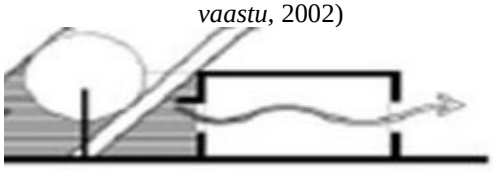

Figure10

3. Conclusion

In this paper I have tried to unveil the green building concepts in vaastu which may be the actual scientific reason behind the vaastu principles. This is only an attempt made to eliminate the superstitious practices of vaastu and various misinterpretations regarding an ancient science. The public should follow vaastu on the scientific grounds with proper reasons but not involve in any beliefs which do not have a proper reasoning. It should be kept in mind that vaastu

principles vary from region to region depending upon the climatic conditions and are not to be blindly followed or are applicable to all the regions in a similar manner. Follow vaastu as a science but not as a myth- which if violated will lead to the ill being of the occupants.

4. Acknowledgements

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