REVIEW OF LITERATURE, PART A- VĀSTUVIDYA

2.0. Introduction

The body of Sanskrit and other Literature dealing with architecture and iconography is voluminous, even if scattered and insufficiently surveyed. It comprises, first of all, independent works which can be classified under the general heading of technical treatises (Śilpasāstra) or under the more precise one of treatises on dwellings (Vāstuvidyā). The dispersion is also historical and geographical only complicate the problems still further; the architecture as they appear in a given work are but the reflection of what was existed during the time of its drafting in the region where it was done.

2.1. The Sanskrit Literature of Vāstuvidyā

The Ancient Texts of Vāstuvidyā can be classified in to different groups based on the period it has origin or in the different pattern it was written. Basically it has grouped as the Vedic Literature, Purāṇas, Itihāsas, Samhitas, Āgamas, Sūtras, Upanishats etc. And also the basic original Vāstu texts based on the traditional works, compilations, translations, commentaries and modern works. The review of the literature on Vāstuvidyā is described here under in different heads and sub heads.

1 Mayamata Vol 1 Introduction pp x
2.1.1. Vedic Literature.

It is needless to say that the details of the art of building were systematically embodied for the first time in the avowedly architectural treatises. They are necessarily missing in non-architectural literature especially that composed before the growth of the Vāstuvidya.

The first textual evidence is in Ṛgveda, where Vāstospati or the protector of the house is invoked. Vāstuvidya is considered as the upveda of Atharvaveda which is known as Stāpatyaveda. It expounds the principles involved in the areas of Vāstuśāstra (Traditional Architecture and Planning), Silpaśāstra (Sculpture and Iconography) and Citrakala (Painting). Stāpatyaveda in compiled form is not available as upaveda, but the descriptions, the concepts, the scientific treatment and practices are seen available in various ancient textual works. The Vedic Literature reveals that the people of that era had lived in constructed houses and had learnt the art of building. Those buildings had components such as doors, windows, pillars, beams etc.

The description about the houses with sufficient rooms and other facilities and also about the townships, villages and public houses, funeral

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2 Sthapatya Ved- Vastu Sastra edited by Niketan Anand Gaur, pp 1
3 Contemporary use of Vastuvidya by Vibhuti Chakrabarthi, foreward pp 1
4 Rigveda (III), 53.6(IV), 49.6 and (VIII)10 Atharvaveda (VII) 83.115.4
places etc are seen in the 1st sūktha of the 8th part of the 13th
Satapathbrāhmānam⁵.

2.1.2. Ithihāsas

The Epics furnish copious description of cities, storied buildings, balconies porticos, triumphal arches, enclosing walls, flights of stone, masonry steps for tanks and a variety of other structures, all indicative of a flourishing architecture in the country.

The Descriptions on Ayodya and Laṅkāpuri are the basic examples for the Vāstuśāstra concepts prevailed in the age of the great Ithihāsa, Rāmāyaṇa. The plan of the city of Ayodya is strikingly similar to the town-plan given in the Mānasāra and other architectural treatises⁶. The temples in this city were as resplendent as the sky. Its assembly-halls, gardens, and alms-houses were most elegant; and everywhere were arranged extensive buildings crowded with men and women. The houses were as mines gems and the abodes of the goddess of fortune.

Both Rāmāyaṇa and Mahābhārata Ithihāsas, we can see such descriptions which underlined the Vāstu ideology and skills of that era. We can see the realistic explanations about the houses, bungalows, villages, townships

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⁵ Satapathbrahmānam 13.8.1
and its characteristics many times both in *Mahābhārata and Rāmāyṇa*. The *Mahābhārata* contains short but comprehensive accounts of the cities of *Dvāraka*, *Indraprasta*, a floating city, *Mithila* and others are the realistic examples of the Vāstuśāstra skills of that period. We can see the technologies used in these constructions, especially in the town planning, are still almost same to the modern construction engineering and management. The seating arrangement for the Kings who attended the *Rājaūya Yāga*, their guest houses and its construction pattern all are the evidence for the Vāstuśāstra ideologies and skills existed in that era. In the *Sabhāparva* there are interesting descriptions about assembly halls. Maya built an assembly hall for *Pāndavas*. A description is given also of the assembly hall of *Indra*(Chapter VII) of *Yama* (Chapter VIII) of *Varuna* (Chapter IX) of *Kubera*(Chapter X) and of *Brāhmaṇa*(Chapter XI)

**2.1.3. Purāṇas**

The *Purāṇas* generally deal with the subject of architecture in more detail. Vāstuśāstra introduced in a scientific outlook only in the *Purāṇas* which has written as the continuation to the *Itihāsas*. Casual references frequently met

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7 Mahābhāratham (III.15)
8 Ibid (1.207,30f)
9 Ibid (III. 173, 3)
10 Ibid (III.207,7)
with in all the nineteen Purāṇas. Some nine Purāṇas have materially contributed to the later Silpaśāstras themselves.\textsuperscript{11}

The Matsyapurāṇa has given the most important scientific interpretation to the Vāstuśāstra. Matsyapurāṇa for instance has eight comprehensive chapters dealing in great detail with architecture and sculpture. In one of these chapters accounts are given of eighteen ancient architects. It has described through eight chapters of the Matsyapurāṇa\textsuperscript{12}.

The Skanda which is another early Purāṇa, has devoted three chapters to the subject. One of these refers to the laying out of a large city. In another, mention is made of the construction of a supplied, and the names of the architects are added. The details of the construction of a special pavilion for the wedding of a royal princes is described in another chapter where in references is made to the painting also\textsuperscript{13}.

The Garudapurāṇa makes some valuable additions to the contributions of this class of literature to architecture. One of the four chapters devoted to this subject deals systematically with all the three classes of buildings, namely residential, military and religious, as well as with the laying out of pleasure

\textsuperscript{12} Matsyapurāṇa, arranged by Nagsaran Singh pp1112-1158
\textsuperscript{13} Indian architecture, P.K. Acharya.
gardens and pavilions therein. The following chapter treats exclusively for religious buildings. The remaining two chapters are devoted to sculpture, one dealing with rules regarding the construction of an image and other with the installation of images in temples.

The *Agni*, among all *Purāṇas* has dilated on the subject at great length. There are 16 chapters of which one deal with town planning, two with residential buildings and the remaining 13 with sculpture.

The *Nāradapurāṇa* practically complete the *Purāṇas* contributions to architecture. In a single chapter it describes the construction of pools, wells, and tanks as well as temples. The *Lingapurāṇa* supplements the contributions by adding an account of the construction of sacrificial pits together with a description of temples and the installation of deities therein.

The *Vāyu*, which is one of the very early *Purāṇas*, maintains its unique position by dealing with the construction of various temples built upon mountain tops. For the *Brahmāndapurāṇa* there was very little left to add. In a single chapter it describes the construction of temples and residential buildings.

The *Bhavisya* apparently a late *Purāṇa*, has also nothing new to contribute. Three of its chapters are devoted to sculpture. The most striking

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14 Sthapatya Ved- Vastu Sastra edited by Niketan Anand Gaur, pp11
feature of this *Purāṇa* is that the number, name and other architectural details of the buildings described in it are identical with the twenty types found in the *Matsyapurāṇa*, and the *Bṛhatśamhitā*.

2.1.4. The Agamas

The āgama tradition, which evolved particularly for the building of temples, and worshipping of deities in them. The Agamas, like *Purāṇās*, incidentally deal with architectural subjects however their contributions to *Vāstuvidya* are extensive and valuable. In agama literature the *Vāstu* literature descriptions are in related to the *pooja* practices. The priority has given to the construction concepts of temples.

Some of the agamas deal with technical matters, which are not in *Purāṇās*. Moreover some agamas to all intents and purposes are but architectural treatises. The *kāmikāgama*, for instance devotes sixty chapters out of a total of 75 to architecture and sculpture\(^\text{15}\). It begins systematically with the preliminary matters, such as the testing and preparation of soil, selection of sites, scheme of measurement and the finding out of cardinal points for the orientation of the building, and the ground plans. Buildings proper are described under twenty types, just as in the *Matsyapurāṇa* as well as in the

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\(^{15}\) Vastusastra Vol 1 P. N. Sukla pp80
Bṛhat samhitā. But unlike Purāṇas, there is in the Kāmikāgama a discussion of architectural matters under some very highly technical classifications, such as the styles, Nagara, Drāvida and Vesara; shapes, masculine feminine and neuter. Karanāgama, Suprabhedāgama etc also gives special emphasis to different aspects of Vāstuśāstra.

2.1.5. Sutra Literature

Sutras are very precise version with very few words, conceptual and concise in the theory which has universal application\(^{16}\). The Construction science is interpreted in the Kalpasūtra of the Sūtra sāhitya. The description on pillars and its types were given in the Sāngyāyanagrihyasūtra. Sutras indicate that the earliest house of Aryans with central pillars providing stability to the house. Rather than the pillars it also discussed about the selection of land, doors and windows trees planted in the premises etc. In Sūlbasūtra we can see detailed description of the construction of Yāgasāla, yāgavedi, vessels for yāga, preparation of bricks for the different types of yāgasāla construction etc. It describes the geometry, geometrical proportion and modes of proportioning. Foundation of correct and proportionate measurements of the architecture of sacrificial altars was established canons.\(^{17}\)

\(^{16}\) Kasyapiyam, Introduction by Sankarasastri
\(^{17}\) Katyayana Sulbasutra, Vaidika Samsodhana mandala, Pune 2003
The sūlbasūtras, which form a part of the sutra literature, are intended to lay down the rules of demarcation of the various sacrificial altars, pantals and places for sacred fire.\textsuperscript{18}

2.1.6. Samhitas

During 400 to 500 AD several authentic Vāstu texts were written in Sanskrit, some of which are included in the Samhita category such as BrihaSamhita, Artha śāstra, Natyaśāstra, Padmasamhita, Nāradasamhita, Kasyapiya etc. These Samhitas are taken as the authentic texts in Vāstuśāstra.

2.1.7. Jaina – Buddha Literature

Vāstuśāstra has given special emphasis in both the Jaina and Buddha Literature. We can see well defined descriptions about village and urban settings, big walls, entries (kavādas) etc. in the Jaina- Buddha Literature. The texts name d Cholluvasa and Mahāvāsa are the major books given emphasis to Vāstuśāstra. In Cholluvasa we can see descriptions about Major entries, doors, windows, beautifications, etc and also about the bricks, cement, roofs, etc. In Mahāvāsa explained about different methods of the construction of residential buildings, methods of constructing walls, its finishing works including paintings.

\textsuperscript{18} Ibid Introduction.
In Buddhist era the buildings are divided into five classes such as *Vihāra, Ardhayoga, Prāsāda, Harmya and Guha*.\(^{19}\) The details are not methodologically given in texts. *Vihāras* are the well known monasteries or temples of the Buddhists, originally implying halls where the monks met. *Ardhayogas* seems to be a special kind of building partly religious and partly residential. *Prāsādas* are wholly residential storied buildings; *Harmyas* are a larger and more pompous type of storied building. *Guhas* seems to be less dignified buildings, originally built underground of middle class people. The extensiveness of these building can be imagined from the length of time devoted to getting a house completely built. Thus, it is stated that with reference to the work of small *vihāra* is may be given in charge to an overseer as a *Navakamma* for a period of five years, that on *Ardhayoga* for a period of seven years, that on a large *Vihāra or Prāsāda* for ten or twelve years.\(^{20}\)

### 2.1.8. Arthaśāstra

*Arthaśāstra* by *Koudilya* is considered to be written in the 4\(^{th}\) century Before Christ. During this period few noted *Vāstuśāstra* books were also

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\(^{19}\) *Sthapatya Ved- Vastu Sastra* edited by Niketan Anand Gaur, pp8

\(^{20}\) Ibid
written the influence of which were evident in *Arthaśāstra*\(^{21}\). In Ardhaśāstra eight chapters are exclusively for Vāstuśāstra. Town planning, construction of Kottas and Dhargas, bungalows, homes, etc are discussed in these chapters. It also explains about the management of construction process, basic laws for land sale and construction etc. Scientific definition of Vāstu, which includes houses, gardens, construction of bridges, and lakes is given. The technical words like *Vāstuvidya*, *Navabhāga*, central plot of a plot size etc, different kinds of roads, construction of forts, royal places, temples architecture, *padavinyāsa*, construction professionals were included. It also explains about the management of construction process, basic laws for land sale and construction etc.

### 2.1.9. *Natyaśāstra.*

*Natyaśāstra*, the basic book on traditional dance written by Bharatha Muni explains Vāstu concepts in different occasions such as *Kūthambalam*, dance stages, back stages etc. In Chapter 2 of *Nātyaśāstra*, Bharathamuni describes three types of theatres such as rectangular, square and triangular each of which can be large, medium and small in size. The theatre is made up of the stage and auditorium. The stage is divided in to three parts, the two door room

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\(^{21}\) *Arthasastra*, Transalation by K. Vasudevan Musad, Introduction
at the back, the elevated stage head and the front acting space. The maximum length is 108 hastas, medium 64 and minimum 32 hastas. We can see like scientific observations on the construction of nātya mandalas. The descriptions including the pillars of Kūthambalam are the example for that. It never breaks the vision of the viewer.

2.1.10. Sukranitisāram

Sukranitisāram scientifically explains the methods of constructing prathimas. It also gives emphasis to the construction of kottas and Kothalas which includes the town planning, temple construction and also about the bimbarachanaśāstra. It is a rare book available for the Vāstu explanations on bimba śāstra. It also gives different techniques about the reconstruction or joining of broken bimbas and increase the finishing of the bimbas. It also described about the Tālamānam(measurements) and its usage at different occasions.

2.1.11. Bṛhatamhita

The Bṛhatamhita, usually classed under the astronomical and astrological treatise, deals with heterogeneous subjects like Purānās.

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22 Natya sastra (Bharatha Muni), translation by Prof. Narayana Pisharody pp 30-32
Bṛhatśamhita had been written by Acarya Varāhamihira born in Avantidesa the son of Adityadesa. He had been one of the navaratnas of the king Vikramāditya and stated to be the contemporary of Kālidāsa.

The literature on Vāstuvidya has been dealt in systematic way through chapters 53 to 60. The chapters open with a definition of the science of architecture and goes to describe briefly and to the point, the suitable building sites testing of soil, the general plan, comparative measures of the store’s and doors and carvings there on and other important part of the buildings.23 Chapter 53 deals purely on Vāstuvidya, Vāstupurusha, various types of houses, elements of houses, various sālas selection and tests of location in a comprehensive way. From example according to Bṛhatśamhita a catussāla having continuous verandah on all sides is defined as Sarvatobhadra24. This will have four doors on four sides and is suitable for gods and kings. 54th chapter is basically about the construction of well and 55th is about the vrikshāyurveda. Chapter 56 is devoted to prāsādalakṣaṇa, canons of various elements of temple and various types of temples. 57th chapter is about the application of preservatives (vajralepana) 58th chapter is about the prathimalakṣaṇa. The detailed canons of the iconography are given in the chapter. Chapter 59 is about

23 M R Bhat, Varahamihira’s Brihat Samhita
24 Brihat Samhita Ch 53.31-32
the use of trees and woods for construction work and 60th chapter is devoted to the rite to be performed for the \textit{pratista}.\textsuperscript{25} In conclusion \textit{Bṛhat samhita} is a concise dictionary of almost all sciences, glimpses of knowledge and practices.

\section*{2.2. The Basic Texts of \textit{Vāstuśāstra}.}

There are so many books deals with the concepts of \textit{Vāstuśāstra}. \textit{Mayamata} and \textit{Mānasāra} are considered as the basic texts of the \textit{Vāstuśāstra}. The researchers have not yet confirmed that whether \textit{Mayamata} or \textit{Mānasāra} wrote in the first. Even though, the \textit{Mayamata} is considered as the oldest one. The other basic texts on \textit{Vāstuvidya} are \textit{Manuṣyālayacandrika}, \textit{Vāstuvidya}, \textit{Tantrasamuccayam}, \textit{ViswakarmaVāstuśāstra}, \textit{Samarāṇaṅgasūtradhāra}, \textit{Isānagurudevapadhati}, \textit{Mānasollāsa}, \textit{Silpitatna}, \textit{Silaparatna} etc. The following part discuss about different textual works on \textit{Vāstuvidya}.

\subsection*{2.2.1. Mayamata}

In the extensive and widely disseminated range of works, the \textit{Mayamata} occupies a fairly well defined place. It is a general treaties written in Sanskrit

\textsuperscript{25} Brihat Samhita, Vyakhyatha Puliyoor Purushothaman Namboothiri.
but originating in Dravidian India, most probably from Tamil area. It is considered that the text Mayamata was written by the greatest Muni Mayan. It is said that the text was originally in Tamil and it was translated to Sanskrit. Maya is considered to be the architect of asuras.

The content of Mayamata is basically about the Vāstuśāstra and Prithimanirmānaśāstra. Through the 45 chapters Mayamata explained the Vāstu concepts including all the aspects. It also described about the construction of multistoried buildings, Gopura constructions, Bimba construction etc. It also discussed and gives specific directions to the construction of residential buildings.

2.2.2. Mānasāram

The detail on the author of the text Mānasāra was not mentioned in the book and we have no evidence yet to find out the author. Yet the author is said to be the Muni Mānasāra. The word mānam means measurement and Mānasāra can be defined as the essence of measurement. Mānasāra, the essence of measurement, is an authentic textural work on Vāstuvidyā. Through 70 chapters the Mānasāra spells out the details for the calculation of padavinyāsa, Vāstuprakāra, village planning, urban planning, perimeter of the

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26 Indian architecture, P.K. Acharya pp 34-38
residential as well as other buildings, bungalows etc. It also gives measurements to the *Vigrahanirmāṇa* and other divine related constructions.

The chapter 2 of *Mānasāra* discussed about the different types of professionals who engaged in the process of construction of a building. It is classified as *stapti, sūtragrāhi, takshaki and vardhaka*. In the modern construction management process we can see this type of classifications.

**2.2.3. Mānasollāsa**

King Somasvara, in his *Mānasollāsa* made an outstanding contribution in to *Vāstuvidya* by renewing styles of dwellings mentioned in traditional canons. The basic norms of *Vāstu* followed in the *Bharatakhandha* are same, but some variations are found in different location and traditions. However King Somasvara who ruled over Karnataka and Andra as well as the neighborhood areas (AD 1126 to 1138) states that the *Mayamata, Visvakarma śāstra and Matsyapurāṇa* were in vogue in his time and that he is giving directions as *Vāstu* accordingly.

**2.2.4. Isānagurudevapadhati**

*Isānagurudevapadhati* is considered to be written by *Isānaguru* *Misra* giving an indication that *Isānaguru* happened to be North Indian. The
scholars who studied later concluded that Isāna guru happened to be a Keralite Brāhmin²⁷.

2.2.5. Samarāṅgaṇaśūtradhāra

Samarāṅgaṇaśūtradhāra is one of the standard texts in the field of Vāstuvidya. It was written by the King Bhoja. In the first volume it deals with the main principle branches namely residential architecture, engineering, Palace architecture, temple architecture etc and in the second volume is about silpa and citra. A total of 83 chapters in the Samarāṅgaṇaśūtradhāra among the first 48 chapters treat the principal subjects such as the needs, origin, scope and subject matter of architecture and the qualifications of the architect. It deals with the house architecture in the subsequent chapters. 20 chapters are devoted to temple architecture and the last chapters deal with iconography, both sculptural and pictorial.

2.2.6. ViswakarmaVāstuśāstra

The ViswakarmaVāstuśāstra consists of seven chapters which contains 1800 verses. The Vāstuśāstra section begins with the explanation content of East-West line and extent of shadow for different latitudes, materials to be

²⁷ Isana Gurudeva padhati Vol 1 Edited by M.T. Ganapati sastra.Introduction by Dr N.P. Unni. Pp 4-5.)
used, *bhuparigraha* (Chapter 5& 6) community planning (Chapter 7 to 10), planning of *prāsādas* (Chapter 11) palace architecture and fortifications house architecture (Chapter 14 &15) *natyasāla*, interiors and elements in palaces and royal houses and ancillary houses elements of various *sālas* etc. Chapter 85 to 87 deals with decoration of temples and the installation of divine deities\(^{28}\). The text more specifically dealt with the planning of lay outs, proportion and grouping in general, town planning, palaces, assembly halls, temples, structure of special purposes, roads, bridges, accessory buildings etc.

### 2.2.7. Tantrasamuccayam

The classical work of *Tantrasamuccayam* was written by Sri. *Chennas Narayanan Nambūthiri* at *Vennair desom* in *Ponnani Taluk of Malappuram* District. The text contains 12 chapters and 2896 *slokas*. In this book the author describes the rules and regulations of Hindu temples. It also enlightens the techniques for making icons and mural paintings.\(^{29}\)

Tantrasamuccaya is in line with Agamas, and has referred to various previous texts like *Aparājita Pracca*, *Kāśyapiyam*, *Mānasāra*, *Samarangana*

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\(^{28}\) Ibid, pp 90-97

\(^{29}\) Tantrasamuccaya by Karuva Neelakandan Achari
sutradhara, Mayamata etc. *Tantrasamuccayam by K. Neelakandan Asāri* written in Malayalam containing 142 slokas. It contains *Bhuparigraha, Adhistānavidhi, ekasāla, Dvisālavidhi, Bimbalak śaṇa, Linga lak śaṇa, nātyamandapa, Gopuravīti, etc.* throughout 12 chapters and 142 slokas (*Tantrasamuccaya Silpbhāga Vyakhyata Kanippayyor Damodaran Namboothiripad*). It is the widely accepted book in Malayalam for the tantra practices, iconography and temple planning.

### 2.2.8. Vāstuvidya

Even though we have no authentic information about the author of the book *Vāstuvidya* it is considered as a basic text for the Vāstu literature. The seven manuscripts published as a book in 1913 compiled by Ganapathi Sastri from the scattered materials from different sources helps us to get much about the text. The main contents of the text Vāstuvidya are; *bhulak śaṇa*, qualification of *silpins as Sādhana kathanam* in chapter 1. Chapter 2 deals with the slopes of the land, suitability of the land, trees and plants etc. Chapter 3 deals with *vāstu puruṣa and Vāstudevatas*. Chapter 4 is devoted to *vāstu puruṣa samstānam*. Like this *vītivīnyāsa, marmas and sutras, yoni samkalpa*,

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30 Vastuvidya compiled and edited by T. G. Ganapathi Sastri
sālavīdhāna, roofing and elements, doors and gates, house warming etc are discussed in other chapters. And the final chapter (Chapter 16) deals with the technology for the construction of buildings.

2.2.9. Manuṣyālayacandrika

Sri Thirumangalam Neelakandan Mūsat who wrote the classical work in Vāstuvidya named Manuṣyālayacandrika. This is the only book which is specifically written for the construction of residences. The author referred to main textural works in the śāstra such as Mayamata, Prayogamanjari, two Nibandhas, Bhaskariyam, Manumata, Gurudevapadhadi, Mārkandeyam, Ratnāvali, Kāsyapamata, Kumāragama, Harisamhita and Vāstuvidya. It has mentioned in the book itself by the author. The other books written by the author named Māthangaleela and Vedikkambavidhi are available today. Other one named Silpacandrika which is not available right now.

The book Manuṣyālayacandrika is a systematic arrangement of the concepts and ideologies of our ancestors in this area. Manuṣyālayacandrika is a
unique work dealing exclusively of residential building\textsuperscript{31}. Some poems are in the same words. Through 247 slokas in 7 chapters the author systematically explained the Vāstu methods for the construction of residential buildings. 

Acaryavaranam, stapathi and other master craftsmen and their requisite qualifications and duties, bhulak ṣaṇa, vrikshalak ṣaṇa, soil tests, selection of sites etc are discussed in the first chapter. Chapter two deals with the dik-nirnaya, squaring, veethi samkalaa, marma, vāstupuruṣamandala etc.

The perimeters of a house, wall size and height, basement, etc are specifically explained. 9 types of nalukettu, ekasāla, dwisāla, trisāla etc. are also discussed well. This book is considered as the basic book for the construction of houses in Kerala Vāstuśāstra mandala.

2.2.10. Šilparatna.

\textsuperscript{32} The text written by Śrīkumāra deals with māna, bhūlakṣaṇa, padavinyāsa, marmas, āyādilakṣaṇa, dikparicceda, village and town planning, capital cities, garden cities and also yāna and śayana. It is considered to be an authentic text in the Kerala context.

\textsuperscript{31} An engineering commentary on Manusyalayacandrika, Dr A. Achyudhan, Dr. Balagopal Prabhu pp xii

\textsuperscript{32} Šilparatna, Śrīkumāra. Ed. T.Ganapati Sastri, Trivandrum Sanskrit Series, 1922.
2.2.11. Śilpiratna.  

It is an authentic text on temple architecture and iconography from the theoretical and practical point of view. It is written in Malayalam verses and it is easy to comprehend the concepts and practices.

2.2.12 Vāstu Related Modern works(texts)

There are several vāstuvidyā related texts were written in various languages from 19th century A.D onwards. These texts were compiled, edited, translated, interpreted or explanations given in vernacular by the authors who studied well about the branch of knowledge. The books having some special features of vāstu concepts are selected to be included here for review.

Vāstuśāstra Vol. (I and II) - Hindu Science of Architecture based on Samarāṅgasutradhāra. The Vol I of Dr. D.N Sukla's doctoral and post doctoral work gives a scientific, engineering and fresh look to vāstuvidyā and iconography, śilpa, citra and graphics in Vol. II. Common aspects like stapāṭiḷakṣhana, śālas, residential architecture, mechanical constructions, towns and palaces planning etc are dealt in great detail. The text gives extensive literature survey, research methodology and serves as a referral work for future

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33 Śilpiratna, Karuva Neelakandan Asari, S.D. Reddiar and Sons Pvt. Ltd., Main Road, Kollam, 1996.
researchers and students on vāstuvidya. Dr. Puṣpendra Kumar\textsuperscript{35} also compiled explanations and elaborate introduction on Samarāṅgasutradhāra is another classic work in modern texts.

Vāstukoumadi\textsuperscript{36} and Silpavijñānasamgraham\textsuperscript{37} authored by Karuva Neelakandan Asari are often referred by stapatis due to their practical approaches and applications.

Bālarāmam.\textsuperscript{38} This text book authored by Payyanur Keśavan Aśari, though considered as a book for beginners is an authentic book for the stapatis reflecting a particular tradition.

Indian Architecture according to Mānasāra.\textsuperscript{39} Dr. P. K. Acharya's studies are based on Mānasāra but gives critical studies and compares the concepts, with the principles and common practices. His work on the topic written in 7 volumes is considered to be a monumental work on many facets of vāstuvidya. His compilations as an encyclopedia on Indian architecture has become a treasure in vāstuvidya.

\textsuperscript{35} Samarāṅgasutradhāra-Vastuṣṭras, Dr. Puṣpendra Kumar, New Bharatiya Book Corporation, New Delhi, 1998.
\textsuperscript{36} Vastukaumudi, Tannirmukkam Vasu Asari, Vidyarambham Press, Alleppy.
\textsuperscript{37} Silpavijñānasangraham, Tannirmukkam Vasu Asari, S. D. Reddiar and Sons, Quilon, 1921.
\textsuperscript{39} Indian Architecture According to Mānasara, Acharya P.K, Manshiram Monoharlal Publishers (P) Ltd, New Delhi, 1996.
There are several books published by Vāstuvidya Pratiṣṭanam on vāstuvidya authored by Dr. Balagopal T.S Prabhu and Dr. A. Achuthan. Are a great modern reference books on Vāstuvidya. These books have the uniqueness of analytical approach and logical presentation. The main books are: A text book of Vāstuvidya[^40], Design in Vāstuvidya[^41], Vāstuvidyādarśanam[^42], Engineering commentary on Manuṣyālayacandrika[^43], Indian Architectural Theory.[^44] This classic work by Vibhuti chakrabarti Canons of Indian Architecture.[^45] The text by Bhattacharya T.P has been acclaimed as an authentic work on vāstu canons etc.


[^41]: Design in Vāstuvidya, Vastuvidya Pratistanam, Calicut.
[^42]: Vāstuvidyādarśanam, Vāstuvidya Praristanam, Calicut.
[^43]: Engineering Commentary on Manuṣyālayacandrika, Vāstuvidya Praristanam, Calicut.
[^48]: Taccuśāstram Bhāṣa, Cheruli Narayanan Namboodiri, Devi Book Stall, Kodungalur.
Manusyālayacandrika and Vāstuvidya are some of the recent works on Vāstuvidya.

Prof (Dr). P.V Ouseph is another contemporary author whose approach is innovative, scientific and gives impetus to practical aspects in the present day situations. Vāstuśāstra Philosophy and Manifestation., Citrabhāsa, Vāstuvidya, Vāstuśāstram-Samagrapatanam, Vrikshayurvedam, and translation works of Vāstuvidya and Manusyālayacandrika etc contributed a lot to the modern archtechs and academicians authentically.

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49 Vāstuśāstra-Philosophy and Manifestation, P.V. Ouseph (Dr), Dhanya Publications, Trichur, 2001.
50 Citrabhāsa, P.V Ouseph (Dr), Dhanya Publications, Trichur, 1999.
51 Vāstuvidya, P.V Ouseph (Dr), Dhanya Publications, Trichur, 1999.
52 Vastuśāstram-samgrapatanam, P.V Ouseph (Dr), D.C Books, Kottayam, 2006.
2.3. *Manusyālaya Vāstuvidhi.* (Principles of Residential Housing)

This part of review of literature is discussing about the major references about the construction of residential buildings in Vāstu texts.

The natural habitats of many of the living creatures such as bird nests, tortoise shells, snail shells, bee hives and so on, are closely connected to the shape and form of the creature that inhabits it. The habitat is also designed so as to best enhance the activity of the group in coordination with the environment. No bird would build a nest in the windward or rain ward side, nor in the path of predators. There for any wisdom that comes down from the past which does not integrate the local needs and the constraints into its design solution cannot be either effective or functional.

The human resources involved in the construction process should have sufficient knowledge in different aspects of the Vāstuśāstra and related branches of knowledge. The geographical directions have played a very significant part in the design of individual buildings and group housing in the tradition. The physical environment affects the human inhabitants in a direct manner. The energies that exist in the environment, on the other hand, trigger the tribal memory patterns within each of us and create physical pushes and
pulls which operate subliminally. The influence of these subtle energy patterns is not felt immediately but has far-reaching effects on the physical and spiritual health of the people\textsuperscript{53}.

In the design of building, the owner (\textit{Yajamāna}), the adviser (\textit{acharya}), and the master builder (\textit{Stapathi}) have specific roles. The text Vāstuvidya (compares them to \textit{Visnu, Rudra}, and \textit{Brahma} respectively, the trinity of Indian theology.)

For the craftsmen engaged in the design and execution of buildings, a four tier classification is recommended. Each class has specific and distinct responsibilities and roles. Stapati is the master builder who makes the design and coordinates the works of the other builders. He should know all the sciences including mathematics, climatology, geography, geology, material science etc. In addition to this, he should be perfect in body and min, righteous, kind, warm-hearted, and free from malice and unfair competition. Other texts also stresses important role of stapati. He is comparable to the architect-engineer of the present day.

The basic concepts on the Vāstu texts Mayamatm, Mānasāram, Vāstuvidya and Manuṣyālayacandrika, the specific book on residential building gives detailed and scientific descriptions to the construction of the residential building (manusyalayam) and this is an attempt to coordinate the same.

2.3.1. Selection of Sites

Here in the selection of sites the Stapati plays a prominent role to keep the principles of Vāstuvidya. Experts call all places where immortals and mortals dwell, ‘dwelling sites’ (Vāstu), which are four in number: earth, temples, conveyances and seats. The Earth is the principle dwelling place because it is on the earth that constructed dwellings -Vāstu- such as temples have appeared and it is because of Her nature as site and because of the (temples) union with (site) that the ancients called them dwelling sites in this world.

The selection of site is based on climatic considerations, topography, geology, the availability, purity and flow of water and fertility of soil, medicinal value and abundance of flowering and fruit-bearing trees. In addition, richness of cattle life and the neighbours also are to be looked into.
The site suitable for Brahmins is square, white, without defects, planted with *udumbara* trees, sloping towards the north, perfect and has an astringent and sweet savour. Such a site is a guarantee of good fortune. The length of the site suitable for kings is one eighth more than its width; it is red in colour and bitter in flavour, it slopes towards the east, is vast planted with *asvatha*. Such a site invariably guarantees success. The length of the site suitable for *vaisya* is one sixth more than its width; it is yellow of sour taste and planted with plaksa; it slopes towards the east. Such a site is benificial. The length of the site suitable for *Sudra* is one fourth more than its width; it slopes towards the east, is black, has a pungent flavour and is planted with nyagrodha. Such a site is source of abundant riches and gain.

According *Manuśyālayacandrika*, the ideal land should be slope downwards to east. This is probably to ensure that the rising sun is visible from the house.

It is said that rectangular sites too are suitable for gods and for Brahmins. The shape of the site must be perfect and must rise towards the west to south.

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54 Mayamatam – Bruno Dagens Vol 1 Cha 2, pp 7-9.

55 Manusyalayacandrika.pp 14
The land with loose soil, filled up ground with voids, rocky surfaces and marshy or wet conditions will not produce good sound when treaded upon or tamped. Hence the prescription that the land should give sound when one walks over if ensures good ground conditions.\(^{56}\)

Soil which causes quick germination of seeds is good for vegetation. A level ground requires no leveling operations and hence economical. For testing the consideration of soil, a pit with one square \textit{hasta} area and one \textit{hasta} depth is dug and then filled up with the excavated soil. Excess soil indicates good consideration. This test is identical to the field density determination used in modern geotechnical engineering practice.

In the construction of an abode that is both propitious and auspicious for human inhabitation Vāstuśāstra seeks to maintain a harmonious balance between the various forces at play; planetary influences, cosmic radiation, magnetic electrical, gravitational, and various natural phenomenon such as cardinal directions, light, air, sound, temperature, moisture and colour with due regard for the enviornment and ecology\(^{57}\). This is done in four stages

\(^{56}\) Ibid pp 16
\(^{57}\) Vastusastra, Philosophy of Manifestation by Dr. P.V. Ouseph pp 8-9)
1. **Nirikshina** is of great importance at the time of site identification. There are specific roles for the stapati in this process. The environmental conditions and quality of the land can be determined by observing the climate, topography, geology, the availability and purity of water, fertility of the soil, fruit bearing trees and cattle life in relation to fauna.

Related to the process of **Nirikshana** are the factors of varna (colour), Rasa (taste), gandha (odour) and Sparsa (feeling of touch) of the soil. These factors are indicate the radioactive properties of the site.

**Parikshana** is done after the site has been identified. Prior to selection three experiments are conducted.

2.3.2. **Direction (dig-vidik-samsthana)**

Determination of the direction in which a building is oriented is an important consideration. Known as **dig-vidik-samsthana** it consists of an ascertainment of the cardinal points. The **yuktī-kalapataru** has a section on the divisions of the house-site in terms of death- *mrityu*, fear- *bhaya*, firmness – *stīra*, force- *canda*, wealth- *dhana*, prosperity- *vibhuva*, valour- *vīra*, and heat- *tapa* corresponding to directions south, southwest, west, north-west, north, north-east, and south-east respectively.
The second consideration is the determination of direction which a building should face—Vāstustānānirnaya. If a house faces west, it is called banner (dvaja), and it secure prosperity for the inhabitant; if it faces the north-west, it is called smoke (dhūma) and spells disaster for the residents; if it faces the north, it is lion (simha) and foretells enjoyment. If this is to North-East, it is dog (sva) forebodes total loss; if it faces the East, it is bull (ṛṣa) and forecasts happiness; if it faces south-east, it is donkey (gardabha) and spells ruin; if it faces south, it is elephant (gaja) and the outcome is wealth; and if it faces the south-west, it is crow (kāka) and predicts death and disaster. 58

It may be noted that houses facing the four main directions are beneficent, while those facing the corner points forebode evil. Further, the planning of a house with regard to corner lines (konarekha) and pole-lengths (danda) with different directional orientations become relevant. For instances if the pole-length runs east-west, it is called Udaya-danda, and it augurs well: if, on the other hand, the pole length is south-north orientation, it is called yama-danda, and it fore bides destruction of the family. The architect (stapati) must plan in such a way that the evils of pole-lengths are avoided. 59

58 Vastu astrology and Architecture — Gayatri Devi Vasudev pp20-21

59 Ibid pp 22
There are also rules pertaining to locations, number and nature of the doors. The Brāhatsamhitā⁶⁰ speaks of defective planning of doors leading to distress and disaster (*dvāra-dosa*). Doors must be planned in the four major directions, and not in the corners, according to the Agnipurāṇa⁶¹ (104.24). Entering a house by door in the southern directions is commended by the Matsyapurāṇa⁶².

When we select the site for the construction the Stapthi should offer prayer to god with inclinations of *svasti* and *jaya*. Then the site should be leveled and directions marked. The common leveling instrument used is the A frame (*avanta*). The A frame should be calibrated with reference to the water level in a pit. For this a pit is filled with water and two poles are fixed in the pit such that their tops are in level with the still water level. The two inclined limbs of the frame are placed on these poles such that the vertex is at top. Then form the vertex a cord touches a base is marked by a chisel.

Either the entire land or at least an area of one *danda* square should be leveled in the middle of the plot for *sankustāpana*. The fixing of gnomon is called *sankustāpana*. It is important as this is the first act to be done in the construction. Moreover fixing the gnomon is necessary in determining

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⁶⁰ Brāhatsamhitā(53.72-80)
⁶¹ Agnipurāṇa( 104.24)
⁶² Matsyapurāṇa (255.29)
directions, which is basics to the proper orientation of the building. Therefore auspicious time is selected for the same. The fixing of gnomon and marking the cardinal directions are to be done either by the stapathi or by the disciple. Mayamata recommends the morning time in *suklapaksha* of *uttarāyana* for this act.

**2.3.3. Squaring (Caturasṭikaranam)**

When we discussed about the procedure for dividing the area into sectors and assigning specific sectors for building the houses the *Manusyalacandrika* described specific directions to the same.

Square (*caturasṭa*) is a primary shape in *Vāstuśāstra*. The four sides of the square are oriented in the four cardinal directions like the four faces of Brahma. Hence this is called *Brahmamandala*. This shape is the basis of evolving design of the town, villages, buildings, etc. The site analysis is based on a square *kshetra*. After the analysis the deductions can be transferred to other shapes.

When the larger plot is divided to 4 quadrants (*khandas*) by the two sutras with their fronts at east and north, Brahmins and others should construct their houses in the *isānakhanda* or *niṇīthikhanda*. If the plot is very large, each

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63 Manusyalacandrika pp
quadrant to be further divided into four subdivisions and both the North East sub divisions of South-west quadrant and South-west subdivision of North-east quadrants are auspicious.

When the plot is divided into four quadrants the *īsānakhanda* is called *manusyakhanda* and will cause prosperity to house. The *niṛithikhanda* is named as *devakahanda* and will cause desired results. These two quadrants are auspicious for the houses of human being.

The *agneyakhanda* is called *yamakhanda* and related to the god of death, and the *vayavyakhanda* is called *asurakhanda* is to be despised. The *Brahmānabhi* is considered as centre of mandala and the segments of sutras or *rajjus* on the sides are called rear and front ends. The passing of the centre line of the building through the rear or front ends of two sutras and two *rajjus* is called *vedha* (crossing). It is prescribed that when the buildings are designed, *vedha* should be avoided. The ill effects of *vedha* are highlighted to emphasis the importance of avoiding *vedha*. For example, in case of crossing in the east end the ill effect is separation from the spouse. The stapathi shall have to keep the rules when he engaged so.

The square plot (*mandala*) is divided into a grid of several cells for specifying the locations. A square of one single cell is called *sakalamandala* and
that 2 x 2 cells is called *pecakamandala*. A mandala of 9 cells (3x3) is called pita. Similarly grids up to 1024 (32x32) cells are described in Mayamata\(^\text{64}\). The grids recommended for house are; 7x7 (*sthandila mandala*), 8x8 (*mandukamandala*), 9x9 (*paramasayikamandala*), 10x10 (*asana mandala*), and 11x11 (*sthaniyamandala*). The stapatthi should take the right decisions to take the right selections.

### 2.3.4. Vīthivinysa

In *vīthivinysa*, the *Vāstumandala* is considered as a symbolic representation of the cosmos. The central region, called *brahmastana*, is the terrestrial space. It is surrounded by eight envelops (*vīthis*). The width of the *vīthi* is one *danda*. The width will depend upon the size of the plot.

In plot width ranging from 32 *hasta* to 128 *hasta*, the *grhamamandala* is obtained by dividing the area in to four quadrants and selecting the North East and South-west directions quadrants and if the area is larger, further subdividing the North East and south-west quadrants and selection the South-west sector of the North-East quadrant or North-east sector of the South-west quadrant. For plots width of less than 32 *hasta*, the whole *ksetra* becomes

\(^{64}\) Mayamata. Vol 2
grahamandala. For plots width more than 32 hasta, planning is done by considering the whole plot to consist of 9 vīthis. 

The inner most regions consisting of four cells around the Brahmānabhi is called Brahmaci. The expanding envelops from the innermost one are called Ganesavīti, Agnivīti, Jalavīti, Nagavīti, nagavīti, Yamavīti, Kuberavīti, devavīti and Pisācavīti. It is prescribed that the Ganesavīti and Brahamavīti are best for the houses. The vītis of nāga and yama should be avoided and the Pisacuvīti should never be used.

In a small mandala can be divided in to four enveloping paths; Brahmavīti in the middle followed by the vītis of Deva, manusya and Pisāca. For very small sites, it is not possible to divide them in to 4, because the resulting quadrants will be too small. The practice followed in small plots is to see that the Brahmānabhi and grahanabhi do not coincide. The grahanaabhi is shifted to the north-east or south-west side of Brahamānabhi.

2.3.5. Marma

The intersectional points of nādis and rajjus is called marma, which have special importance in the mandala. In a 9x9 grid there will be 109 intersection

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65 An Engineering Commentary on Manusyalayacandrika 66.
points. The intersection between rajju and rajju falling within these cells are not considered as marmas. Leaving these there are 100 marmas. The intersections of nadis are not considered to be important. The four points where 2 rajjus and 2 nādis intersect are called mahāmarma and are considered to be most sensitive of all marmas. No constructions are allowed over important marmas. If it is not possible to avoid any construction at the marmas, it has to be shifted by a distance equal to half the thickness of the sūtra.66

2.3.6. Vāstupuruṣamandala.

Vāstupuruṣa is considered as one of the basic concepts of Vāstuvidya. There are myths related to vāstupuruṣa related to sukra, the guru of asura. Whatever be the myth the concept in Vāstuvidya is that Vāstupuruṣa is held fast to a field defined by the square mandala with his feet in the nirṛti(SW) corner, head in the isana (NE) corner, knees and elbows in the Agni(SE) corner vayu (NE) corners. The gods occupied various limps of the prostate body.

The vāstupuruṣamandala adopts the shape of the site and the functional attribute of the mandala active in the mind of the designer in its ideal form of a square, acquiring a different shape in reality.

66 An Engineering Commentary on Manusyalayacandrika Dr. Achyudan.
The mandala is a representation of the cosmos through geometric forms whereby the living space is laid out in a variety of patterns. In the nodes and joints of the mandala, important locations are given for critical action within and without. The outer circle holds the gatekeepers, the inner the formless energies. This movement inward is a re-entry and rediscovery of true spirit, and the outward movement a constant quest in to the interface and relationship with the world outside.\textsuperscript{67}

To maintain the magnetic balance in the plot a divine chart called \textit{Vāstupuruṣamandala} is drawn. This chart is in square shape and drawn considering the two sources of energy in the plot; \textit{prānikorja}-cosmic energy and \textit{jaivikorja}-organic energy.\textsuperscript{68}

The mandala of single square is called \textit{sakala}\textsuperscript{69}, the guardians of the four directions which are \textit{Aditya} or sun, \textit{Yama} or god of death, \textit{Varuna} or god of waters and soma or moon, rules the four sides that make the square. This mandala is using for the ritual of worship of fire, dining, and ancestral worship. The second called \textit{Pecaka} is the mandala of four plots and is used for structures of domestic worship and public bathing. In this mandala eight half sides of the

\textsuperscript{67} Vastu, the classical Indian Science of Architecture and Design, Sashikala Ananth pp 40-41
\textsuperscript{68} Vastusastra Philosophy of Manifestation Dr, P.V. Ouseph
\textsuperscript{69} Vastu, the classical Indian Science of Architecture and Design, Sashikala Ananth pp 42
square are ruled by Isa, aditya, agni, yama, Pavana, Varuna, Gagana and Soma in clockwise order starting with the northeast side.

Both the _candita or mandūka_ mandala of 64 squares and _paramasayika_ mandala of 81 squares have plots of 45 deities, and the subsequent ones are treated as _candita_, in case of an even numbered mandala, and as _paramasayika_ in case of an odd numbered.\textsuperscript{70}

2.3.7. Basic Units and Scales (Mānapramāṇa)

There is a basic book titled Mānasāra discussed earlier means the essence of measurements. The measurement system is based to the size of grain(_yavamāṇa_) and another system based to human figure (_manusyapramāṇa_). _Yava_ (barley grain) was universally accepted as the standard grain for measurements. The average width of _yava_ is 3.75mm and is equal to eight times width of _tila_ (gingili seed). The smallest measurement discussed in Vāstu measurements is called _paramāṇu_.

\textsuperscript{70} (Mānasara VII 71-75)
Table No 1.1.

Measurement system

<table>
<thead>
<tr>
<th>8 paramāṇu</th>
<th>1 trasareṇu</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 trasareṇu</td>
<td>1 liksa or romagra</td>
</tr>
<tr>
<td>8 likśa</td>
<td>1 yuka</td>
</tr>
<tr>
<td>8 yuka</td>
<td>1 tīla</td>
</tr>
<tr>
<td>8 tīla</td>
<td>1 yava</td>
</tr>
<tr>
<td>8 yava</td>
<td>1 angula</td>
</tr>
<tr>
<td>8 angula</td>
<td>1 pada</td>
</tr>
<tr>
<td>8 pada</td>
<td>1 vyama</td>
</tr>
</tbody>
</table>

Here this is the basic development of measurement system in Vāstuvidya. As per the text Vāstuvidya paramāṇu can be seen only by sages and takes it as standard unit and other units are derived units71. Paramāṇu, the minute measurement is described as equal to the size of minute floating particles seen when sun’s rays creep in to a dark space through a crevice.

The different units are used to measure different artifacts. For medium length Hasta is to be used. The long and large objects are to be measured using danda or rajju. The following table details the units and its different uses according to Vāstuvidya measurement system.

71 Vastuvidya sl
Table No 1.2.

Sub divisions of measurement system

<table>
<thead>
<tr>
<th>Unit</th>
<th>Sub units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yava</td>
<td>8 tila</td>
</tr>
<tr>
<td>Angula</td>
<td>8 Yava</td>
</tr>
<tr>
<td>Hasta (kol)</td>
<td>8 Angula</td>
</tr>
<tr>
<td>Danda (stick)</td>
<td>4 Hasta</td>
</tr>
<tr>
<td>Rajju (rope)</td>
<td>8 Danda</td>
</tr>
<tr>
<td>Yojana</td>
<td>1000 rajju</td>
</tr>
</tbody>
</table>

There are mainly two methods of measurements are used in Vāstuvidya such as direct or absolute method and proportionate method.

Direct method, we have discussed above in details are the yavamāna and purushapramāṇa. The method is tālamāna and dandamāna. In the tālamāna all measurements are made in proportion to the tala, which is the length of the palm including the fingers. Tāla is equal to the length of face. Tālamāna system of measurements is mainly used to build idols (vigraha). The measurements of various parts of body are reckoned as ratios of tāla. The total height of the idol can be taken as 5, 6, 7, 8, 9 or 10 times length of the face.\(^72\)

\(^72\) Manusyalayacandrika Ch3 Sl 14.
2. 3.8. Sālas

In Vāstuvidyā, sālas are arranged systematically around a quadrangle central court. This central court is termed as ankaṇa. Ankaṇa is oriented to the four cardinal directions. On the four sides of this ankaṇa sālas can be arranged. All the sālas faces to the ankaṇa.

The basic building structures are called Ekaśāla, Dvisāla, Trisāla and Catusāla depending on the sides of the central court occupied by the building. According to Mayamata there are six type of houses with one, two, three, four, seven and ten sālas for gods and Brahmins and other class. Samarāṅgaṇaśutradāra describes ten types of sālas from Ekaśāla to Dasasāla. It can be seen that the first four are the principle types and the others are different combination of them. For example Pancasāla is a combination of one dvisāla and trisāla or one catussāla and an ekasāla and so on.

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73 (Samaranganasutrādāram 18 18-19)
74 (Mayamatam Ch 26-1).
75 (D.N Sukla, Vaastusāstra Vol 2 pp 325.)
2.4. Devalaya Vāstuvidhi (Temple Architecture)

The temple architecture is unavoidable when we discuss about Vāstuvidya. There are many techniques and practices which shall be contributed in the line of assessing traditional cost effective techniques. Thus this sub section reviewed the literature on devalayavastu of Vāstuvidya.

Temple architecture forms significant branch of Vāstuvidya. In physical forms temples are structures built in durable materials and with pleasing aesthetic features and finishes. In metaphysical form temples are abodes of Gods and Goddesses, which bring joy to the devotee. Temples are thus called Prāsādas. Vāstuśāstras agamas and silpa synthesizes in temple architecture. In addition to Tantra and Jyothisa are also closely associated and incorporated in temple planning design and construction and maintenance including Naveekarana.

Every temple has a builder and in tantric terminology he is known as Yajamāna (thesacrificer) or sthapaka or Karaka. In Vishnudarmotharapurānā it is stated that the donor of the land for building a temple attains the abode of the particular deity of the temple. For selecting suitable site the yajamāna approached to an āchārya.
Achārya thus belongs to a high born Brahmin family, and who performs all the sixteen prefatory rites, knows the essence of the sacred texts, observes deeksa and follows the rules of conduct of his caste based on gunakarma⁷⁶. Above all should be a believer in God and sacred tradition. The āchārya is assisted by Stapati, also known as Viswakarma or craftsman, who is considered as a discipline of stapaka. At an auspicious time the yajamāna has to pay his respects to the āchārya and also get their blessings. This ritual is known as ācharyavaranam.

In simplest form Temples means the main shrine in which the deity is installed for worship. The cell in which deity is installed is called Garbha griha. The platform on which the garbagraha is built is called adhistāna. The walls of Garbhagriha are called Bhitti and roof as Shikkhara and on top the finale called as stūpika. The prastāra and greeva are added when the ceiling is provided and additional height provided from the ceiling to the roof.

2.4.1. Selection of Temple Site

The process of selecting land for the temples has to be carefully made on certain considerations. Hence the knowledge of the different types of land

⁷⁶ (Tantrasamuccaya 1.5)
becomes necessary in tantric rites. The land is generally classified in to sāmānyā and sankirna. The sāmānyā is fertile and inhabited by men and animals, where as the sankirna is unfit for living and cultivation. Sāmānyā is generally fertile and is divided in to four types; Purṇa, Supadma, Bhadra and Druma. Dhruma is unfit for constructing temples and performing rituals, Sankirṇa type of land has floods & typhoon, often disturbing the normal life.

Indian architecture insist on the greatest attention required for the selection of site of a house of God, as the temples are the centres of India’s cultural and spiritual life. It is prescribed in sacred texts that the temple should be built on the banks of a theertha, river, lake, seashore, on a hill-top or mountain slope; in a forest, grove or garden; midst of village, town or city or in any other lovely place. The availability of water exclusively for temple rites is a must.

The very concept of a temple or kshetra is moksha, the final liberation. This ultimate aim adds to the importance and suitability of the site. According to Tantrasamuccaya, a land is classified in to different types based on flora, terrain, texture of soil, slope etc. ie utama, madyama and adhama. The characteristics of the land are that it should have a level ground with trees fruit groves, flowery plants, cows and people and with a slope towards east. A place
where river flows in a clockwise direction is considered ideal. The fitness of the soil is also important and tested in several ways. A pit is dug and the earth which has been taken out is put back again. In a descending order of quality, it then either exceeds the pit in quantity, is level with or lower or water is poured into the pit over night; the quality of the soil is judged according to the quantity of the water found there in the morning; or flame put into the pit burns or else is extinguished, in the latter instance the soil is unsuitable, and has not to be abandoned.\textsuperscript{77}

The different kinds of earth recommended for the construction of the houses for the different classes of the society are likewise recommended to persons of various classes for constructing temples. The temple site should always be divided into 64 squares. It is central or main gate would be auspicious if situated in one of the four cardinal directions.

The height of the temple should be double its width, and the height of the foundation above the ground consisting of steps equal to a third of this height. The sanctum should be half of the temple. All round it there should be walls. Its door should be one fourth of the sanctum sanctorum in width and twice as high. The side-frame of the door should have a breadth of a quarter of

\textsuperscript{77} (Brihatsamhita I II 90-92.).
its height. Similar should be the threshold and the upper block. The thickness of
the frames is to be equal to a fourth of their breadth. A door consisting of three,
five, seven or nine frames highly recommended. In the lower part, up to a
height of a fourth of the door post, two images of door keepers being
ornamented with the carvings of auspicious birds.

_Matsyapurāṇā_ prescribes according to the colour of the soil white earth
for Brahmins, red for _Kshatriyas_, yellow for _Vaisyas_ and black for _Sūdras_.

Then comes the examination of the flavour of the earth. After the acquiring of
suitable land, the ground is ploughed, seeds are sown and quality of the soil is
tested according to the germination in 3, 5, or 7 nights and according to the size
of the young plants. All this is done to assure oneself of the fitness and ritual
purity of the soil.

It also been specified in _Tantrasamuccaya_ that a ground which is in form
of a circle, crescent like semi circle, triangle, pentagon, hexagon, resembling in
triton or winnowing basket or like the back of a fisher an elephant or a pig of
face of a cow is unsuitable for building a temple.

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78 (Matsyapurāṇā Ch CCL III 12-18)
80 _Tantrasamuccay_ 1.21
When the selection of land for the construction of temple over, The next step is to find out the suitable direction. This is known as Sankustapana. It means the shadow of gnomon.

The measurements are to be adopted according to the needs of the architectural patterns. In measuring lands the space covered by the foot is often taken as a unit. Thus Pada is technically denotes as an area of square foot.

The temples may be built only on good locality and at an auspicious time. An idol installed in an auspicious shrine at the proper times becomes worthy enough for the god to bestow his presence.

In order to find out the suitability of the land for building temples the area is to be ploughed to sow seeds. That must be done in astrologically favorable time. Once the land is ear marked for a temple the patron should find out the suitable priest to perform the installation ceremony etc. He is to seek cooperation of others in this ceremony. The next step is plough the land or site for the temple, and then seven types of seeds are sown during the ceremony. After the seeds are grown, they are to be grazed by cows.

Next step is clearing the site, up to the end of the proposed temple campus. The area is to be set out fixing the centre first and finding out the different directions. For making the area, stakes are to be fixed firmly driving
them into the ground using an iron hammer. These stakes are to be connected by threads of cotton tied to them to demarcate area. If there are any thrown like bushes on the ground they has to be removed.

2.4.2. Materials for Temple Construction

The main materials used for the construction of temples were stones, timber and bricks. The basic books *Brḥatsamhita, Mayamata, Tantrasamuccaya* etc. details how to select these materials and what are the process and varieties. These roles to be performed by different human resources involved in the construction process of a temple.

Man has never lived without some faith in the man Supernal, Material and Spiritual advancement of mankind have been going on since the very birth of human civilization. In India, this faith in the man Supernal has culminated in the towering personality of the Hindu temples, the *Prāsāda*. Each and every detail, right from its layout to the final speaks of the significance. Popularly the *Prāsāda* is the seat and dwelling of the God.

The Sanskrit literature available on Vāstuvidya is not yet explored and utilized by the modern construction managers as well. Even though there are certain attempts in this regard, the scientific enquiry and its practices are not yet recognized in a broader sense. The hereditary practitioners and the believers are
the available sources and the lack of scientific approach to the traditional architecture resulted to the faulty practices.

This is an attempt to understand the Vāstuvidya program of architecture in a systematic way and to find out its contemporary application and relevance.
2.5. *Silpa and Citra*

Silpa and Citra is an unavoidable part of Vāstuvidya and the review of literature towards the area is also important and expected contributions to the study area.

Every human being is inherently sensitive to his surroundings and reacts to whatever he looks at; expresses or communicates his reaction and feelings voluntarily or involuntary in the form of shape, color and size; which in other way is called an art. The earliest man expressed his observations of nature and the experience of life, perhaps even his desires in the form of rock-shelters, which formed his dwellings paintings were made on the surface of the plain rock, representing the theme of hunting, singing, dancing, birds, animals and other natural elements. Till this stage the expression of art form is global in nature.

Silpa and Citra are the Indian system of Iconography. Sometimes Silpaśāstra is a synonymous word denote as Vāstuśāstra. The Sanskrit word ‘Silpa’ literally means whatever is done with intense concentration (from the route Sil, Samadhu), whatever has been cleverly designed and skillfully constructed by hand. The word Citra means picture or wonder.

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81 Iconography of Religions, Albert C. Moore, Introduction, p.18
Matsyapurāṇa, Agnipurāṇa, Garndapurāṇa, Visnudharmottarapurāṇa, Agmass, Tantras, Brḥatsamhita of Varauhamihirara, Mayamata, Samarangana-
Sutradhāra of king Bhoja, Visvakarma-Prakasaka of Viswakarma are the
important works on Indian iconography in Sanskrit. Like other branches of
literature, Kerala also has a remarkable collection of works in this field. Tantrasamuccaya of Cennas Narayanan Nambutiri, Isanagurudeva-Paddhati of Isanagurudeva and Silparatna of Srikumara are the important Kerala works in this field.

Citra and Silpa are the tradition of Indian iconography. It deals with the
documents which man has created in Visual art. Iconography is concerned with the content-the subject matter-rather than the form of art. The study of iconography is the attempt to understand the meaning of images. It is very interesting to note that man had the power to draw long before he could write.

The etymological derivation of the word iconography is the following. The word “Icon” is derived from the Greek word “eikon”. The corresponding word of icon in English is “image”. It may be derived from the old French and

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82 Iconography of Religions, Albert C. Moore, p.19
83 Ibid p.20
latin-‘Imago’, basically meaning likeness. The word ‘Graphein’ means to write\textsuperscript{84}.

Study of iconography helps to equip one for the deeper quest for understanding the meaning of the image by identifying its typical features and symbols. It also helps one to study and understand different religious tradition which can be attained by modern man through travel study and mass media\textsuperscript{85}.

2.5.1. The Classification of Pictures

The religious history of India is giving rise to so many faiths or cults. The Buddhism, Vaiśṇavism, Saivism, Jainism and Saktism together with Saura and Ganapatya cults are the principal ones in the illustrations. A good many minor sects also arose in their respective folds, some of which assumed the character of a school itself. The Mahāyānism and Hinayānism in Buddhism, schools to Svetambaras and Digambaras in Jainsm are notable examples of this fact. Similarly, Vaisnavism and Saivism too had their minor schools of thought and ritual. All these varieties in the religious life of India as a consequence, increased correspondingly, the varieties of sculptural representation in the realm of National iconography in India\textsuperscript{86}.

The pictures are broadly classified in to three such as

\textsuperscript{84} Technical literature in Sanskrit, P.91
\textsuperscript{85} Iconography of Religions, Albert C. Moore, P.20
\textsuperscript{86} Vastu-Sastra, D.N Sukla, Vol. 2, P. 76
1. *Pūrṇacitram*,

2. *Ardhacitram* and

3. *Citrābhasam*.

In modern art it can be classified as three dimensional, two dimensional and paintings respectively.

*Pūrṇacitram*: is the complete picture such a manifestation in which all the limbs of every pictured portion can be visible. This idea is used in the sense of statues or idols.

*Ardhacitram*: is the picture which is beautifully made on the wall and other structures in such a way that it can be seen half-projected in to the outer side view is known as half projected picture (relief picture).

*Citrābhasam* (painted picture): is a picture which is beautifully painted by means of multi—colour paints is categorized in to the group of *citrābhasam* by architectural experts.

Based on the religion images can be classified as

Vedic - i.e. those based on the concept of the Vedas.

*Purānic* - i.e. those based on the concept of the *Purānās*.

Tantric - i.e. those based on the concept of the Tantras.
Images are divided into three classes on the basis of its portability they are:

1. *Cala* — Movable

2. *Acala* — Immovable


Another classification of images from the point of view of centers of art as *Gāndhara* sculptures, *Magdha* sculptures, Nepalese sculptures, Tibetan sculptures, Dravidian sculptures and Mathura sculptures.

Many scholars advocate three broad divisions of Indian images as Orthodox Hindu or *Brāhmanical* images, Buddhist images and Jain images.

### 2.5.2. The Materials of Painting

Collection of good varieties of materials is mentioned by the basic texts of *citrakala*. The following are some of the classifications of the materials.

**Chitrabhitti**

For the purpose of executing a painting, at the first instance, the wall is to be white washed (*sudha*); then it should be coated with the paste (*lepanadravya*) without any cracks, breaks, wounds or blots. At this point, King Someswara gives the methods of preparation of the *vajralepa*. It is stated that
the skin of buffalo is to be cooked in milk till it becomes a soft paste like butter.

This *lepana* is to be rubbed with pressure; when it dries and becomes harder, it is called *vajralepa* and is the best suited always for the purpose of drawing the paintings. It is further narrated that this *lepana* is to be kept on sticks (or made into sticks) which are again kept in an earthen pot which in its turn is kept in boil water. By adding *vajralepa*, the colour of the painting will not fade of scale off. Further, the *swetha mrittika* (white clay) is mixed with *vajralepa* and coated well smoothly and evenly on the wall three times for the purpose of drawing the paintings. So also the powder of couch and soft sand are to be mixed with *vajralepa* and coated on the wall is equal, even, smooth and bright.

Further it is stated that a *dhātu* called *nāga* which is white like moon and is available in the hills of Nilgiri also is to be mixed with the *vajralepa*, stirred well and applied on the wall with the palm delicately, slowly and freely. on the wall prepared thus, an intelligent painter should draw the outline of the pictures, fill with tasteful colors scheme, decorate with suitable ornaments and make it full of *rasa* and *bhāva*. the preparation and uses of *vajralepa* given by *someswara* is unique. Besides as binding materials to the colors, the *vajralepa* is used for preparation the ground also. Thus the technique of tempera is given by king *someswara*. 
**Brushes**

The types of brushes required or used in painting consist of two parts. The handle made of bamboo in the size of the little finger, called *tūlika*; and the copper pin in the shape of a *sankha* in the size of *yava* seed with a little projection fixed or pegged to the bamboo called *tinduka*. This serves as *atylus* and is used for drawing the outlines of the figure on the wall.

The *kajjala* is mixed with a little sand and boiled with rice; this mixture is ground into a paste and made into a lump. This is called kanduka, and is used for making into pencils called *vartica*. This *vartica* works as crayon or pencil; used for drawing the outlines of the painting.

The types of brushes used in paintings are also described. It is stated that the hair that grows near the ears of a calf are collected and bound at one end and again tied to a *tūlika* (strong and hard bamboo stick) with the help of *laksharasa*. This brush is called *lekhini*. The technique is explained by *someswara* for the first time.

The brush called *lekhani* is of three types for purpose of drawing the paintings; i) *Stūla* (broad), ii) *Madya* (medium) and iii) *Suksha* (fine).

The *stūlalekhini* is used for the purpose of filling or applying colour to the painting (*lepaniya*) on the wall; and for the downwards or slanted strokes or
in a titled position (triyak). The *madyalekhini* is used for drawing the outlines and for filling and figure with colour; for the purpose of upward or sidestrokes and for filling the central portion of the wall without disturbing the sides. The *sukshma lekhani* is used for drawing minute and small lines and for final touching by those who are well versed in the art and technique of painting.

2.5.3. **The selection of stone.**

The stone should be very thick is suitable for the *silpa* making. The stones have big sound while it is tamped, the stone has very huge size, the shape of the leaf of banyan tree is better. The stone has a good sound and icy is considered to be good.

The stone avoided: The stone is laid on unholy place like cemetery should be avoided. The stone is also used for other work shall be neglected. The stone which are burned by fire, air, sun is also avoided for the *silpa*.

2.5.4. **Prathimalak ṣaṇa; on image making**

The stone for making images should always be without defect. Three types of stones are considered best.

1. *Muguni*-(black granite)
2. *Sahana* (sandstone) and

3. *Kundika* (course grained sandstone).

Two types of *muguni* granite black and bluish green (*nila*), are most suitable. The stone called *sādhana* is best for images and easy to sculpt. It is grey, smooth, pure, and of consistent colour. Stone which is full of sand and whitish or yellow is not good for making images. These are four excellent procedures for image-making according to silpaśāstra\(^{87}\). In the opinion of thantrasamucaya, the good stone is laid in the holy place or in the asramas of saints. The colour of stones are poor white or whitish is good for Brahmins, the red is good for ksatriya, the green and yellow is good for vaisyas, the black is good for sudras. The stone laid on earth that side should be the stones face\(^{88}\).

### 2.5.5. Measurements

The tālamāna is a silpa measure used in painting. Tala is the standard scale used in iconography. A Tāla length is equal to 12 Angulas. The length of a face inclusive of head is taken as the unit of measurement. But it seems more convenient to have the particular span, mainly, the distance between the tips of this fully stretched thump and middle finger, which is technically called tāla as

\(^{87}\) [SilpaRatnakosa-P-No:183]

\(^{88}\) [Tatrasamucaya-V/1]
the unit. The measurement Angula has three distinct bases. They are *Mānangula, Mātrangula and Mulabherangula*. *Mānangula* is the basic unit taken. It is the prescribed number of yava grains. It is the absolute measure. *Mātrangula* is the relative measure. This is the length of the middle digit or mark of the middle finger or the length of the thumb of the right hand of the sculptor. *Mulabherangula or Dehalabdhangula* is the total height of the icon89.

Generally 10 tāla measures are mentioned by silpa texts. each of this ten tāla measures again divided into three types namely Uttama,(large), Madyama(intermediate), and Adhama (small). Thus a picture is of the dasatāla measure when its whole length is ten time the face. In the large types of the dasatāla system, however, the whole length is divided into 124 equal parts which are proportionately distributed over the different part of body; in the intermediate type the whole length is divided into 120 equal parts. In the navatāla system, the whole length would be nine times the face, in the ashtatāla eight times and so forth.

Different varieties of arts are meant to serve the scientific needs of human mind. When each form of arts is made, the goal of the creator should be the same principle mentioned above. Whether they are in the temples or in the

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89 Pratimakosa Vol.III,p.9
houses of human habitation, the forms of art which are constructed according to
the suitability of the respective atmosphere will ever account for the welfare,
prosperity and success of human race. The creation of art which are based on
nature and beautified as per the imaginations derived from nature will impart
joy and happiness to their viewers, just as they accord pleasure to the creators.

In conclusion the Vāstuvidya , traditional Indian science of architecture
and house-building, is explored in terms of its secular uses, at the levels of both
theory and contemporary practice. The Indian architect once in a while chooses
the theme of traditional images and myths sprinkled over the functional
requirements. In conclusion there is no doubt the literature on Indian
traditional architecture has scientific and universalized approach which
supports the requirements of the contemporary housing scenario. .
2. 7.0. Introduction

This part of literature review discussed about the Assessment techniques, Cost effectiveness, Rural Housing and related terminologies essential to the research.

2.7.1. Assessment

For getting a systematic way of assessing the traditional construction techniques there are different type of approaches developed by the scholars for different occasions.

2.7.2. Assessment Techniques Used in the Past

Vāstu texts describe the results of individual aspects only. All the results are not distinct in nature, as combinations are also used simultaneously. Normally four types of predictive results are seen. There are 1. Relating to material prosperity (gain of wealth, loss of money, poverty, etc.); 2. Relating to overall status (prosperity, royal favours, imprisonment); 3. Relating to family and society (birth of son, daughter) and 4. Relating to spiritual or manual aspects(happiness, enjoyment, slavery, fear). Some times the results are indicated only as auspicious these are difficult to interpret.
The professionals, therefore use these results directly and on individual basis only. Each of them depending on his understanding and experience keeps changing the relative importance. Professionals do not find necessary to assess totality of the situation as the qualitative inferences are difficult to add...it is also debated whether the results as predicated in the text ot discourage people from doing wrong things. In the process, predictive astrology, the slope and shape of the plot and the placement of rooms gets an edge over the other aspects.

2.7.3. The Modern Techniques of Assessment

In order to get a structure for the assessment there are various methods adopted by the researcher to reach the objective of the study. The method adopted to assess the current scenario done using the statistical methods and descriptive analysis.

The building may be viewed as a combination (system) of options of various concepts of design principles. The results of these (selected) options vary in the nature and intensity, and at times contradict each other. The options may or may not be well knit or to be called a proper system. Evaluation of such a complex situation needs an effective technique of assessment. Dr.P.S.Shinde has analyzed in detail, the various techniques of assessment in order to develop
a new technique, for the assessment of mageability of urban areas. The formal techniques of assessment may be summarized as follows.

**Descriptive technique:** This technique describes the suitability or strength of the Vāstu (building and plot) in spoken and written words. Such techniques lay more emphasis on the literary quality of expression and therefore, has a high degree of subjectivity.

**Pictorial techniques:** An assessment with help of photograph and pictures, models or sketches, etc. come under this category. Captions or comments are added to the pictures. Though there is less subjectivity in this technique, it can be manipulated by over or under emphasising certain aspects. Photographs are more reliable than sketches, as sketches may over emphasise or ignore certain aspects.

**Analytical technique:** A combination of the above two, this technique tries to study the objects in parts or stages on certain constant parameters. This has more scientific attitude because it compares on a common platform and hence is less subjective in nature. Since the object is studied in parts, it allows more precise and qualitative evaluation.

**Semantic Technique:** This method uses the value system of a society or the religion for comparison and assessment. Every object has pragmatic
meaning and in the context of Vāstu, such techniques are often used. The concepts and results are normally extended beyond logical understanding with help of rituals and symbols. These have a very high degree of subjectivity.

Statistical technique. Most commonly used in research, this technique is more objective in nature than the other techniques. It quantifies the elements and presents them in the form of numerical analysis. It is more suitable to quantifiable variables, and is used for census of all countries. Though this technique leaves many things like visual (appearance), social and individualistic aspects to imagination, it is most effective for generalization and additive or deductive totality of the situation. Based on scientific analysis by quantification, this technique is regarded as most reliable even for qualitative analysis.

2.7.4. New trends

Most of the modern practitioners of Vāstuvidya talk of direction and placement only. If the major components like storage of water, furnace/kitchen and electrical mains; and stores of heavy articles are placed in the northeast, southeast, and south west corners respectively, the building is said to be in order. The assessment does not consider the aspects of built form, grid or mandala and procedure etc. Some authors, who are practitioners also,
relate mathematical signs, temperaments, body parts, fingers, yogic postures, energies etc., and finally depend on the astrological calculations and charts of the owner. They talk of dasa and disai.e. astrological (vimsottari) period of operation and the Vāstu directions. However, on the formal front the astrological considerations are brushed off and the scientific and engineering aspects of Vāstu are discussed. It appears that the modern pundits, who prefer to talk of science in public and use astrology as a secret weapon in practice. The assessment of the total situation or net results is often avoided as there is no defined method or research available on this aspect.

Sustainable cost-effective building materials can be defined as materials with overall superior performance in terms of specified criteria.

The following criteria are commonly used:

- Locally produced and sourced materials
- Transport costs and environmental impact
- Thermal efficiency
- Occupant needs and health considerations
- Financial viability
- Recyclability of building materials and the demolished building
- Waste and pollution generated in the manufacturing process
➢ Energy required in the manufacturing process

➢ Use of renewable resources

➢ Toxic emissions generated by the product

➢ Maintenance costs

Very large quantity of energy consume in the construction of building with conventional materials like cement and steel. Mainly the energy consumption in buildings occurs in five phases. The first phase energy required for the manufacturing of building materials and components, which is termed as embodied energy. The second and third phases correspond to the energy used to transport materials from production plants to the building site and the energy used in the actual construction of the building, which is respectively referred to as grey energy and induced energy. Fourthly, energy is consumed at the operational phase, which corresponds to the running of the building when it is occupied. Finally, energy is consumed in the demolition process of buildings as well as in the recycling of their parts, when this is promoted. Cost-effective construction technologies can bring down the embodied energy level associated with production of building materials by lowering use of energy-consuming materials. The cost-effective construction technologies would emerge as the most acceptable case of sustainable technologies in Rural India both in terms of
cost and environment. Cost-effective construction technologies, which apart from reducing cost of construction by reduction of quantity of building materials through improved and innovative techniques or use of alternate low-energy consuming.

2.7.5. A mixed Approach

Sree K.Narayan Tantry 5 (96) has attempted a method of evaluation of Vāstu in residential buildings. He chose the concept of five elements viz. earth, water, air, energy (fire) and ether(akasha). This concept has origin in Nyaya, Vaiseshika and Sakhya systems of philosophy. Vaisheshika deals with classification of matter and its product. It is responsible for formulating atomic theory. Every product is produced out of combination of these products and properties of product are to be traced out of those of the atoms. The Vāstu or body is said to have constituted from five basic elements known as Panchamahabhutas. These are Apa(water), Teja(energy- light- fire) Vayu (air and wind). Prithvi(earth) and ether (akasha). Balance (as desired) of these elements in any body makes it stable and prosperous. Vāstu (building) like human body is supposed to prosper and hence auspicious when these live elements are in the state of desired balance.
The evaluation of five factors (elements) is added at par giving 20% weightage to each of them. The concept of the factors are as follows:

1. Earth –(20)– configuration of site-5, levels-2, soil-1, roads- 2, house plan-10

2. Water- (20)- well -10, sump/water body-5, over had water tank-5, soakpit, surface drain-5

3. Fire-(20) location of kitchen- 5, fire place/ chimney-5, direction of cooking -5, location of electrical mains-5.

4. Air-(20)- location and number of doors-5, location and number of windows-5, doors placed on exaltation-5; main door on exaltation-5.

5. Sky/ ether-(20)- coverage and side open space- height (building, basement, etc.)- 5 and open space outside the plot-5

This system of evaluation appears to suffer three major limitations.

Very few concepts are identified. House plan included in the earth is too big and concept to compare with direction of cooking under fire. For the given breakup, the equal weightage to all five elements is not justified. The element of earth and water deserves more weightage. In evident from the breakup that item under air and fire are repeated. The element of sky is comparable to the
central space only. The side spaces and off site open spaces are part of *pisacaviti* and not element of sky.

The process of evaluation is isolated from the results. Though in a limited way, Sree Tantry has demonstrated that it is possible to quantify the amount of Vāstu- strength of a building.

The statistical techniques, though most effective and scientific, do not indicate the qualitative aspects or the areas of improvement. The other techniques project the situation in parts, and there is no uniformity on the emphasis. These cannot always be added to get the advantages of all the techniques. Vāstu- index is such as a module which shall add the values of the different aspects of Vāstu in one consolidated unit, which can be expressed as a percentage. The ideal situation could be envisaged as 100 percent. The percentage has more flexibility over fraction and hence may be more acceptable. On the lower end, either fifty percent or zero may form a base, which describes a situation, which is neither auspicious nor adverse. However the zero bases shall require negative values to be evaluated and may not be convenient. Thus the strength of a building based on the principles of
Vāstuvidya may be expressed in percentage, where 100% indicates (theoretically) maximum possible auspicious or beneficial situation; 50% indicates combination of good and bad in such a way that the net effect is balanced; and 0% may be a (theoretical) situation where everything is advised to the maximum possible extent. Both the 100% and 0% are not expected to be achieved as the results may restrict or counter each other.

These results can also be indicated graphically by chart, pie, or bars. The index should be supplemented with a comment or a symbol to indicate the shortcomings in terms of aspect (land, entrance, etc.) and adverse result (material or spiritual). This could be achieved by indicating the index in form of a polygon each axis representing one aspect of the index. When the index is composed of six factors, a hexagon can indicate the references and the actual value of the index. It is also possible to use five axis, out of which four axis may indicate four factors and the fifth indicates the total. The index of prosperity with its four components could be overlapped on this diagram for comparison.

2.8. Rural Housing

Housing is one of basic requirements for human survival. For a normal citizen, owning a house provides significant economic security and dignity in society.
The word "housing" is understood narrowly to denote a shelter or dwelling without regarding other things which go to make up a satisfactory or acceptable dwelling place. In modern times' housing has broader meaning which include not only residential building but also its environment.\(^{90}\)

For a shelter less person, possession of a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social milieu.

Smith defines housing unit as "a collection of facilities for the exclusive use of separate social group called a household and that the set facilities involved in this concepts seems to changing fairly predictable ways as general living standard rises"\(^{91}\)

Housing promotes family formation. Family is a very important social institution. Now the sociological and biological factors are of great importance in the construction of houses. Today the position of shelter is linked with the improvement of the quality of life. It not only fulfils the need of housing but also creates conditions conducive to the achievement of some important goals of development such as improvement of health, sanitation, education and so on.

\(^{90}\) "Housing Social and Economical Elements' Smith Wallace. F. (1982),pp 18

\(^{91}\) Ibid pp 21-22
A child is given birth to a house where he normally spends his adolescent period. The location influences the type of nurturing that he receives, the physical health he enjoys and the mental experiences which will have far reaching influence on his adult personality.