CHAPTER - 1

INTRODUCTION

Introduction

The essentials like the background of the study, review of earlier works, research problem, conceptual framework, significance, purpose, scope and limitation of the study, objective and methodology are given in subsequent paragraphs.

1.1  Background of the Study.

The temples were/are constructed with the purpose of installing the deity or idol of the desired god or goddess, whose presence concentrated at the heart and focus of the building. The main deity is installed in garbhagriha mostly square in plan shape with in the ārikovil. The ārikovil may be square, rectangle, circle, apsidal or polygonal in plan shape as generally seen in Kerala. The spaces, forms and decorations vary from temple to temple to bring uniqueness to
individual temples. Many other geometrical shapes, space, forms and decorations are prescribed in *vāstu* texts and are built in other parts of the country.

*Prāśāda* is such a structure, which pleases the soul, mind and the eyes of human and non-human beings. It has the interior, the exterior and the essence of expression. As per Viñudharmottara- *purṇa* (3.94) temples were built in towns, villages and inhabitant places only during *Kaliyuga* for the people to worship god/goddess in iconic forms. *Tantric* way of worship was followed in the state of Kerala and temple architecture developed and built accordingly.

Tantrasamuccaya, āeĀasamuccaya, āilparatna, Kīyapeya, Ḥijnagurudevapadhati, āilpiratna and to certain extent, Mayamata supported partially or fully the *tantric* way of worship and styles and functions of temple architecture.
The initial studies carried out through initiation to relevant literature, site visits and discussions with experts revealed that the basic plan shapes of Kerala temple ārikovils are limited. Many plan shapes adopted elsewhere are absent. The spacial constructions are also limited to three storeys, though texts give details for storeys up to 16. The Kerala temple ārikovils have definite forms, though simple to complex forms are prescribed in texts and practiced on ground. However, varieties are created in the shapes, spaces and forms, by certain additions/modifications in the interior and exterior to create the uniqueness of the temples. There is unity in diversity. Vistu texts allow considerable amount of flexibility in concepts, canons and constructions. These in-built flexibility also provide unity in diversity and vice versa.

1.2 Review of Earlier Works.
Vṣṭuvidya is spread over vedas, vedaṅgas, upavedas, aranyakas, sūtras, samhitas, purīnas, iṭhāṭhas, iṭgamas, compilations, translations, commentaries and research works. The main information sought for from earlier works are from Matsyapurīna, Garudapurīna, Agnipurīna, Viṣṇudharmottarapurīna Bāhatsamhita, Kṛṣyapeya, Vṣṭuvidya, Mayamata, Mīnasāra, Samarāṅgasāstradhāra, Tantrasamuccaya, āeÀasamuccaya, Vṣṭustusutropaniṣad, Aparajitapucca, Prīṣidamandana, āilparatna, Viṣvakarma Vṣṭujstra, Vṣṭuśilpāśa, Kriyādipika, āulbasutra, Tantrasamuccaya, Kuzhikkattupacca, PutayērbhiĀ, Kṣmikīgama, Suprabhōdhikama, Vaiṣṇavigama, Thacujiṣtram bhīĀ, Hindu temples of India, Vṣṭujstra Vol. I and Vol. II, Tantradarpanam, and so on.

A review of the Ph.D. theses authored by previous researchers include the works of Dr. D. N. Sukla based on Samarāṅgasūtra-dhāra, Dr. P. K. Acharya
based on Mānasīra, Dr. Stella Karmarisch on Hindu temples, Dr. Balagopal T. S. Prabhu’s post doctoral work, "Engineering Commentary on ManuĀyālacandrika", Dr. C. V. Lal’s work on Materials in Vāstu constructions, Dr. Arundhati Devi’s work on Mānasollāsa, Dr. V. R. J. Ambadkar’s work on Industrial Vāstu, Dr. P. V. Ouseph’s work on ManuĀyālayacandrika, Dr. Sethumadhavan’s work on Bhāparigraha, etc indicate that only few research works had been done in the past in vāstuvidyā. Out of those works given here, the works done by Dr. Stella Karmarisch, Dr. D. N. Sukla and Dr. P. K. Acharya have relative relevances with temple architecture. They have given extensive literature reviews, tried to compare the concepts of various authors and given their interpretations on broad spectrums of temple architecture.
The Sanskrit versions of the texts/books make it difficult to understand, interpret and put them into practice. Further, the body of knowledge is scattered over several books and some are out of prints.

1.3 Research Problem.

The initial literature review, discussions with experts and site visits revealed that the previous studies gave a broad spectrum of temple architecture. Specific and critical studies on Kerala temple ¿rikovils were not taken up before seriously. The body of knowledge is scattered over several texts and there is need for an attempt to bring them in a comprehensive manner as much as possible. Probably, none before has attempted to study the concepts, canons and constructions of Kerala temple ¿rikovils from engineering points of view. There are several variations in the shapes, spaces and forms of Kerala temple ¿rikovils as diversities, though at macro level there is unity in diversity. These aspects not
studied or investigated or researched before are intended as the research problem in this study.

1.4 Importance of the Study.

The importance of the study is given in brief as under:

(a) Very few research works using research methodology and modern tools have been done previously at academic level on such topics. This endeavour hence, has uniqueness in research of such nature and magnitude.

(b) The works/studies done previously were based on texts, especially so on temple vjstu. The study relating to ground realities on Kerala temple ċrikovils may be a premier attempt.

(c) The research on unity in diversity in temple ċrikovils is considered to be a novel attempt.
(d) The engineering discussions with respect to the planning, design, the shapes, space and forms contributing towards the durability, safety, stability and sustenance of temple ārikovils of Kerala are innovative additions to the body of knowledge in temple ājīstu.

(e) The study shall be useful to the students, teachers researchers and practitioners.

1.5 Conceptual Frame Work.

The research is directed towards the critical study of structural spaces and built forms of Kerala temple ārikovils with special references to apsidal forms. The literature survey revealed plenty of plan shapes, forms and artifacts. The spaces in three dimensions are described in texts ranging from one to sixteen storeys. The Kerala temple ārikovils previously built did not exceed three storeys. The mouldings, niches and artifacts to a large extent form part of the
structural members, impart not only architectural beauty but also provide additional strength and stability to the structures. Most of the researches carried out before on temple āstuvā are based on the textural works, restricting them to desk research.

It is intended in this study to combine the desk research, field studies and case studies. The secondary data is collected from the available texts. Primary data are collected through scheduled interviews with experts like tantris, engineers, āstuvā experts and discussion with priests, artisans and certain knowledgeable persons. Pilot study showed that the responses to mailed questionnaires are practically few. Scheduled interviews and non-scheduled discussions were found feasible. The schedules were prepared and discussed with the experts and modified as part of the pilot study.
Site visits were carried out to various temples at random. Taking measurements of grikovils (outside and inside) was found to be difficult owing to the restrictions imposed by temple authorities. However, measurements of few temples could be taken with the permissions and co-operation of temple authorities. The Kerala temple grikovils, in most of the cases, do not have proper documentation. It made difficult to obtain exact measurements. The only choices left are observations and approximations.

As far as possible, the engineering discussions are made on the vistu concepts, canons and constructions. The concepts, canons and rules are verified with those prescribed in various texts in certain cases.

The temple grikovils built as per Kerala temple vistu and form under the category of temples, only are taken up for the study. The stñnas, tharas, kñvas, puras, aras, paññiyaras, etc which are not built as per temple vistu, do not have
idols as *pratīśṭha*, do not have *prākyaras* and *pujas* on regular basis, have been omitted from the scope of the study.

Endeavour is made to follow appropriate steps of the research methodology in this study i.e., *Vekāna-nirekāana-parekāana-manovūcakalana-tatvadarājanā and granthvākarana* (viewing-observing-testing-analysing-deriving valid conclusions and forming book), akin to modern research methodology.

1.6 **Significance of the Study.**

The study is unique and significant as under:

(a) It is probably a new effort in researching on temple *vāstu* as an academic pursuit.

(b) Proper research methodology has been adopted, which is seldom followed in such studies.
Engineering discussions provide innovative approach in the research on temple vistu.

Simplifications of rules, principles and canons derived from Sanskrit lokas and their tabulations help in comprehending them in better way.

The thesis will be useful for further researches and serious studies.

1.7 **Scope of the Study.**

The main scope of the study is as under:

(a) Review of literature in general on vistu texts.

(b) Specific review of literature pertaining to the topic of the study.

(c) An overview of structural spaces, shapes and forms of temple erikovils in general.

(d) An overview of structural shapes, spaces and forms of Kerala temple erikovils.
Specific study of ērikkovils of apsidal forms in Kerala.

Case studies on ērikkovils of apsidal forms in Kerala.

Presentation of data, analysis and interpretations as per data obtained from (i) tantris, (ii) vṛstu experts, (iii) engineers and architects, (iv) artisans, (v) site visits and (vi) discussions with various persons.

Engineering discussions on the temple vṛstu principles and practices with emphasis on the sustainability, strength, stability and durability of Kerala temple ērikkovils.

Findings and conclusion.

1.8 Objectives of the Study.

The broad objectives of the study are:
(a) Carry out critical study of the principles, concepts and canons pertaining to the Kerala temple ērikovils with regard to the structural spaces and forms with special reference to apsidal forms.

(b) Carry out field study and relate the principles, concepts and canons to the ground realities.

(c) Give a beginning to simplification of canons, rules and concepts, pertaining to spaces and forms of Kerala temple ērikovils.

(d) Carry out engineering discussions pertaining to the structural spaces and forms with respect to the durability, strength, stability and sustainability of Kerala temple ērikovils.

(e) Serve the thesis for the award of the degree of Ph.D. of the University.

1.9 Methodology.
1.9.1 **General.** The methodology adopted is a combination of desk, field and case studies. Primary data are collected through scheduled interviews with experts like *tantris*, *vįstu pandits* and practitioners and engineers. Unscheduled interviews/discussions are conducted with priests, their assistants, temple employees, old people, artisans and knowledgeable persons to gather general, peripheral and historical information on the topic. The information collected from unscheduled interviews/discussions also form part of the primary data. The site visits were carried out to various temples as part of the case studies. It helped to observe the visible peculiarities of various temple *gri Kovils*.

Secondary data are collected through the study of literature in the form of published books, mainly the *vįstu* texts and books relevant to the topic.
1.9.2 **Sampling.** There are about 24,000 temples in Kerala. The small temples like *kṣiu, ara, pārṇiyara, pura, stāna*, etc which do not conform to *vīstu* principles and temple rites and do not have deities installed are excluded. *Tantris* selected at random gave details of temples in which they perform the rites. The number of such temples came to be 2837, a fairly good number of samples for validation. It gives representation of temples in North, South and central parts of Kerala. The sampling error works out to be 0.8% at 95% confidence level. The details obtained from *vīstu* experts on temples pertain to 3257 temples with sampling error of 0.75% at 95% confidence level.

1.9.3 **Pilot study.** The researcher had visited a number of temples. In the recent past, deliberate attempts were made to look for the specific *vīstu* aspects such as shapes, spaces, forms, materials of constructions and artifacts.
Taking measurements was difficult owing to technical problems/objections. Some temple authorities co-operated willingly.

Draft questionnaires were prepared separately for tantris and vistu experts, circulated and discussed. The responses were poor to mailed questionnaire. Hence the interview method was adopted.

1.9.4 **Scheduled interviews.** Separate schedules for interviews are given at Appendix A, B and C for tantris, vistu experts and engineers respectively.

1.9.5 **Site visits and discussions.** Carried out visits to temples at various locations having varieties of shapes, spaces and forms. The researcher carried out discussions with temple authorities, āṇthis and other persons and gathered data to the possible extent. People are found to be hesitant to recording of conversations or taking photographs. However,
fruitful information could be gathered on assuring the confidentiality of identities and information.

1.9.6 **Case studies.** From the information gathered from the discussions with tantris, a few temples having certain uniqueness were taken up for site visits. A separate chapter is devoted for case studies on apsidal grihovils.

1.9.7 **Statistical tools.** Simple statistical tools are used to make the study comprehensive and clear. The tools used are: scheduled interviews, case studies, tabulations, charts and diagrams, simple comparisons like averages and percentages.

1.10 **Chapters of the Thesis.**

The thesis has 10 chapters. They are:

(a) **Chapter 1.** Introduction. In this chapter, brief background of the study, review of earlier works, research problems, importance of the study,
conceptual framework, significance of the study, purpose of the study, scope of the study, methodology and limitations are given.

(b) **Chapter 2.** Review of Literature. The review of literature has been done under the sub headings of *vāstu* related texts and literature specific to the study.

The postulates from the review of literature have been derived. A total of 89 texts/books have been reviewed. Literatures specific to the topic are arranged as per the main elements in tabular forms.

(c) **Chapter 3.** In this chapter a brief review of Hindu temples with respect to their classifications, origins and developments comparison of *vimyana* and *prṣṭā*, comparison of south Indian temples, and peculiarities of Kerala temples in general have been discussed. The synthesis and postulates have been derived.
(d) **Chapter 4.** In this chapter the structural shapes, spaces and forms of built 
¿rikovils in Kerala have been discussed in brief. The v¡stu canons are 
summarised and presented in tabular form. The postulates have been 
derived.

(e) **Chapter 5.** Specific study on the apsidal shaped ¿rikovils with respect to their 
shapes, spaces and forms have been carried out. The inferences are drawn 
and included in this chapter.

(f) **Chapter 6.** Case studies of 22 apsidal ¿rikovils of Kerala and the discussion 
have been included in this chapter.

(g) **Chapter 7.** The data collected through interviews with tantris, v¡stu experts, 
enGINEERS AND ARCHITECTS, SITE VISITS AND DISCUSSIONS WITH VARIOUS AUTHORITIES 
and persons are presented separately relevant to the study. The data are 
ANALYSED AND INTERPRETATIONS MADE USING VARIOUS SIMPLE TOOLS OF ANALYSIS.
(h) **Chapter 8.** Engineering discussions on the structural spaces and forms of built ėrikovils are made in this chapter and specific references to the apsidal forms are discussed. The stability, strength, sustainability, durability aspects, seismic measures and materials for construction are discussed from engineering point of view. The views expressed by the respondents are also analysed from engineering point of view and interpretations included in this chapter.

(i) **Chapter 9.** The findings derived from each chapter are summarised in brief in this chapter in general and specific to apsidal forms.

(j) **Chapter 10.** The brief conclusion pertaining to the study is given in this chapter.
1.11 Bibliography of 118 books is given at the end of the chapters. Number of diagrams, sketches, plates are indexed and included. The Appendices and Annexures are given at the end.

1.12 Limitations of the Study.

The scope of the study is immense. It has to be restricted due to the time and space constraints. Other limitations are:

(a) Geometrical vastness in the spread of temples in Kerala is large. Hence the extensive coverage has to be restricted.

(b) Temples having ērikośis with deities and built as per vṣtu principles only have been considered.

(c) Hesitation on the part of the tantrās, temple authorities and learned people in divulging the information and technical/other restrictions in taking measurements were the other main constraints.