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A Study on Vernacular architecture of Agumbe

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Abstract

With the advancement achieved in the field of building technology, we tend to ignore the importance of vernacular design. To optimize the use of natural resources and to achieve human comfort one may apply the concept of vernacular architecture. The objective of the study is to understand how typical structures are planned and designed in a region that experiences the heavy rainfall during the monsoon and how a typical building is constructed to respond and behave to overcome the after effects of adverse climatic conditions. This study is also to explore the knowledge and wisdom from the local masons, the village artisans and their life style and shaping their built environment, indoor and outdoor spaces, as response to the local climatic conditions and available local materials. Aim of the study is to explore the architectural, social, cultural, ecological significance of Vernacular architecture of a Agumbe.

Key Words: BuildingTechnology, Built environment, local materials, natural resources Vernacular Architecture.

Study area:

To study the salient vernacular architectural features of rural settlement of typical Malnad area known for heavy rains during monsoon period, Agumbe was selected which is in the heart of Western Ghats, Karnataka.(Fig.1)

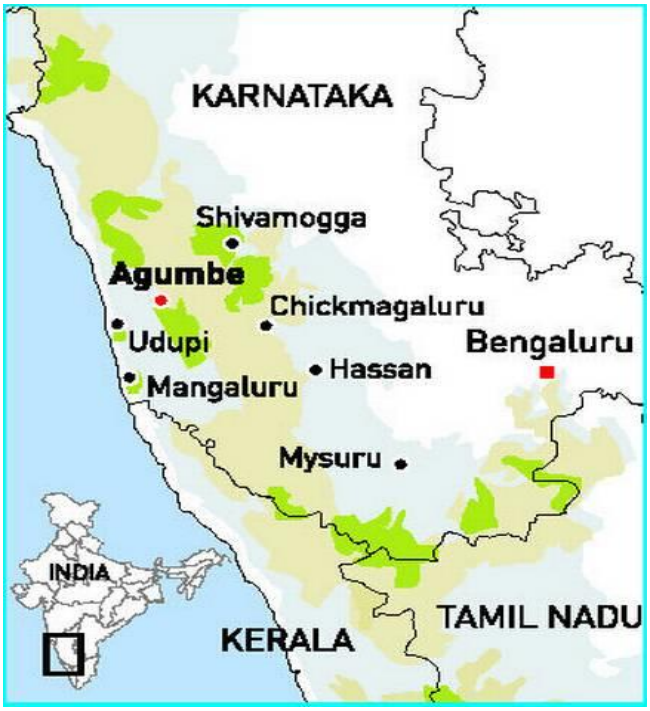

Fig1: Agumbe Village location map

Fig 2 : Site plan showing Agumbe village

INTRODUCTION:

Agumbe is a village (Fig.2) located in the shimoga district in the state of Karnataka, India. Located in rain shed area of Malnad region and in the heart of Western Ghats of Karnataka. Agumbe village covers an area of 3 sq.km, is at an altitude of 2725 feet above mean sea level. During the summer season maximum temperature reaches 32.30 C and minimum of 14 0 C with a mean average rainfall of 7000 – 8000 mm regarded as second highest rainfall in India after chirapunji, of Assam. Agumbe also known for its high number of 'King Cobra 'rich in biodiversity attracts many botanist and zoologists. As part of the Western Ghats mountain range, Agumbe village lies in UNESCO world heritage site.

Materials and Methods

Research method adopted for the study is qualitative and observational method. Primary data's are collected for Agumbe using books, journals, and literature reviews. A preliminary drawing of entire Agumbe is done using Google earth maps to locate road network and settlement planning. Public buildings are identified using Google earth maps and confirmed during the physical survey. First Physical Survey is carried out by the authors along with architecture students to map the settlement planning of Agumbe. Students were divided in to four groups for marking of Road networks, residential buildings, public buildings and natural settings. One of the groups carried out the survey of physical characteristics of types of vernacular houses sketched construction details of typical house and taken photographs of the houses. Through photographs details of house, indoor space, activities in indoor and outdoor space, ornamentation in the pillars was documented. Observation methods are used to document built form, culture, social aspect and natural settings. Questionnaire was prepared for the interview to know their culture, occupation, life style, dependence, climate comfort, socioeconomic and religious settings, activities in indoor and outdoor space etc. After the survey, detailed Site plans are prepared showing Road network, Residential and public buildings. Detailed drawings of cluster houses and individual house details are done. Drawings at all levels and interview outcomes are correlated with the plans and analysis is carried out to know context in which typical vernacular houses are identified.

Analysis, Result and Discussion:

In the course of interview, it was found that Agumbe Village has stood the test of time, has retained the features of a typical village responding to climate, topography and culture.

During Vijaynagar period, the ancient Gopalakrishna temple was built and this lead to the development of the houses around the temple. Portuguese and other travelers and people who are the worshipers of the temple are to first to settle in the village. Village began to expand linearly towards the surrounding areas for natural resources. The village has a square space in that community gathering happened during festival which takes place every year. On the main road commercial establishment have taken place, the side roads leads to residential areas. The houses are clustered,(Fig.3) facing street built on high raised platform with central courtyard . The houses are built using locally available materials.

Land use of Agumbe village include 29% public, 5% mixed land use, 54% commercial and 13% - residential. The villagers are basically farmers and grow ragi and areca. The total population of the village is 2000 people. Joint family system was quite prevalent but it is observed that gradually it is losing its importance. The people in the village are mainly depending on agriculture.

Fig 3 : Site plan showing public buildings and residential buildings

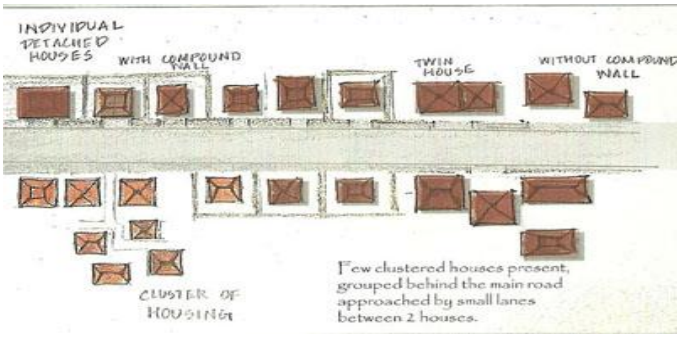

Fig 4: Sketch showing Roof plan of cluster house

Sustainable features of the dwellings

During the study of the village, it was found that the land is very well utilized with compact planning of settlement and compact planning of the household (Fig.4). Houses were constructed with locally available mud, timber and laterite stone blocks. Traditional houses in the settlement are being constructed on the basis of functional requirements of the users and the availability of the suitable building materials and construction techniques developed, during these time Majority of the houses are Individual single storey detached houses (Fig.7), few houses are double storey houses and other houses

are twin and clustered houses. Houses are distributed on either side of the main road. Few clustered houses are grouped behind the main road approached by small lanes between two houses. Some houses have large courtyards also used to perform various outdoor activities during all the time.

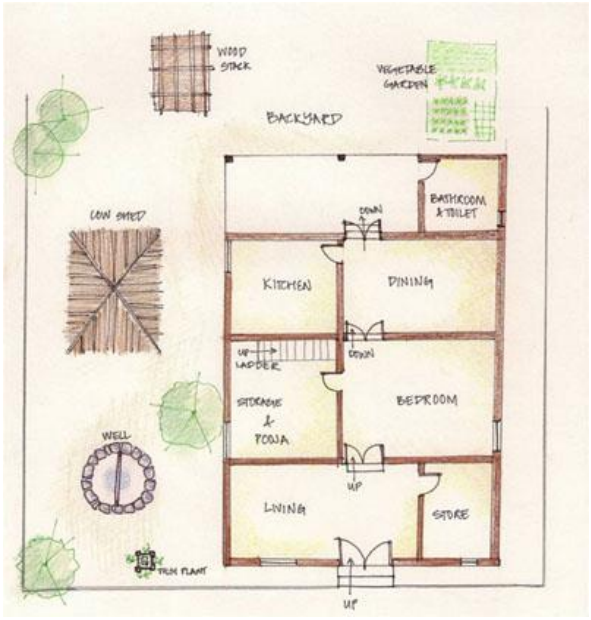

Fig 5 : Sketch showing Typical plan of house

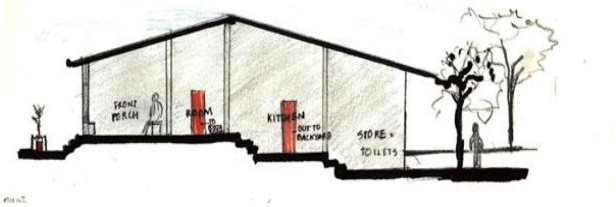

Fig 6 : section of the typical house

The house planning is simple and functional. Houses are designed with the hierarchy of indoor, semi outdoor and outdoor spaces. (Fig.5) Spaces are designed into living room; bed room multipurpose room etc., (Fig.6) usage of rooms varies throughout the day for different purposes. Kitchen placed in the back of the house with separate store room and detached toilet in the backyard with cowshed. The back yard was used extensively for drying cloth, as drying yard it was important gathering place for the ladies. All the houses were having high plinth for protection (Fig.7) from heavy rain. Houses with jagali, a seating platform (Fig.8), in front of the house for interaction and vertical wooden grills with wooden shutters are provided for better wind flow and ventilation. Most of the houses have entrance semi covered verandah with highly ornamented timber columns supporting the overhanging of roof.

Fig 7 : Front elevation of the house

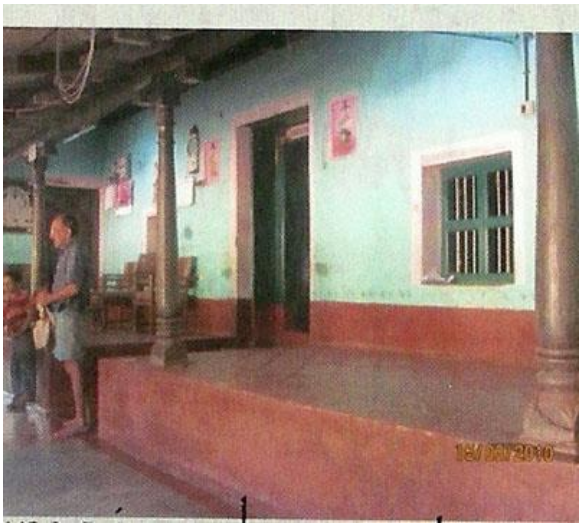

Fig 8 : jagli (sitting space)

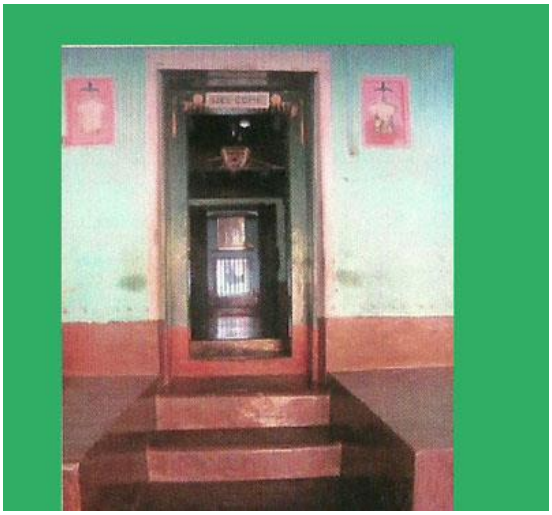

Fig 9 : Typical entrance of house with jagli

Fig 10: Interiors of the house

The houses built in this village have used mud walls of 450- 600mm thick. These heavy walls provide a very good thermal insulation, keeps the interior of the house cool in summer and warm during winter for the good part of the year. Typical entrance of the house is with flight of steps with decorative doors. (Fig.9)

Flooring is done with mud and cow dung and with red oxide cement flooring and plinth made from random rubble masonry using local stones. The upper floors are made of timber planks and timber joists.(Fig.10) The use of timber also prevents and reduces the heat gain and loss to a great extent. Thus passive thermal effect is achieved in the house by use of mud or laterite stone wall with higher ceiling height and mud and red oxide flooring.(Fig.13)

Pitched roofs are common features in Agumbe village due to heavy rain. Pitched roofs were provided with rafters and purlins made of locally available timbers. Roof covering was done with Mangalore tiles. Below the roof, a ceiling was constructed with timber. The attic was normally used for storing food grains.

Since Agumbe receives heavy rain throughout the year, steep sloped roof is dominating features and for better thermal comfort large overhang of the roof is provided in the house to protect the wall from heavy rain, during monsoon.

Each house has individual soak pit and septic tank, Garbage disposal is by burning in specific areas every weekend. People of this village totally depend on wells situated nearby house for drinking and for other domestic needs.

Doddamane : The highlight of the village was a heritage house, which is almost 150 years old called Doddamane (Big house) (Fig.11). This house is two storey building with spacious front verandah multiple bed rooms, living room, dining space, store room and front verandah. All the rooms are around the central open to sky courtyard. (Fig.12) The central courtyard is the center of attraction. The central courtyard is used as drying yard, drying cloth, gathering space etc., the walk way around the central courtyard space is supported with decorative wooden columns.

Fig 11: Doddamane (Big house)

Fig.12: Courtyard of Doddamane

Fig.13: Red oxide flooring

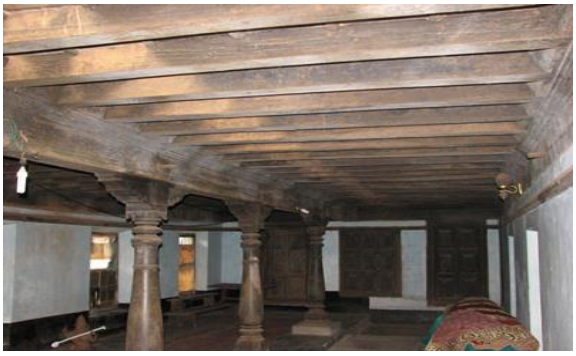

Fig 14: wooden ceiling and columns

Public buildings:

Agumbe village has all the basic amenities like schools, post office, primary health centre with traditional vernacular style with steep sloped roof and mud walls, whereas bus stand is built with laterite stone which is locally available. Gopalkrishna temple (Fig.15) is an important congregation space, was built during 14th century exhibits Hoysala art and sculpture. Due to heavy rain, the architecture of this temple differs from other Hoysala temples. Inner sanctum covered with additional external hall .This temple played an important role in the evolution of the village and its developments.

Fig. 15**:** Gopalakrishna Temple

Fig 16 : Community Space

Fig 17: Augumbe Village square

Community space (Fig.16) and Village square (Fig.17) is a common space, where people gather to celebrate and conduct fairs, regional functions and serve as common meeting place for village folks and women.

Conclusions:

The area identified for study is a small village in a typical Malnad area; one will notice the strong vernacular characters and styles. Buildings were designed with climatic and geographic conditions in mind that helped to achieve human comfort by using locally available materials and self adopted construction technology. Apart from being cost effective and eco-friendly, these materials impart unique character and culture to the place and its identity.

It's amazing to know that how these traditional value adoptions can be carried forward to the present day and future days with change of time, weather conditions, and modern materials, techniques in construction and detailing without sacrificing the well set in character and style and vernacular approach in building forms, and planning of settlements. The study findings highlights that even though Agumbe has threat of urbanization, many part of the village still retains vernacular architecture even today. Study also finds that the later development in the village, lack the traditional style of architecture. If it continues then this beautiful village may lose its character, style and become part of History.

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