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VERNACULAR ARCHITECTURE UNDERSTANDING THROUGH TODA SETTLEMENT OF NILGIRI

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ABSTRACT:

This paper aims to investigate and explore the design strategies in Vernacular Architecture of Toda settlement. Explore the Toda tribe's dwellings in Tamil Nadu and study their ingenious use of local materials and their profound understanding of environmental adaptation of local resources. The use of natural characteristics like the sun wind and the natural climate and produce a low cost, low maintenance and superior comfort in the dwellings response to prevailing climate. Study the strategy and climate adoptability in the settlement pattern as well as the dwellings. Exploring the uses of local materials like wood, Bamboo and Thatches in their Dwellings. Exploring these dwellings deepens the understanding of tribal communities of Nilgiris. Not only deepens our understandings but also gives valuable lessons in vernacular as well as sustainable architecture for the contemporary Development in architecture.

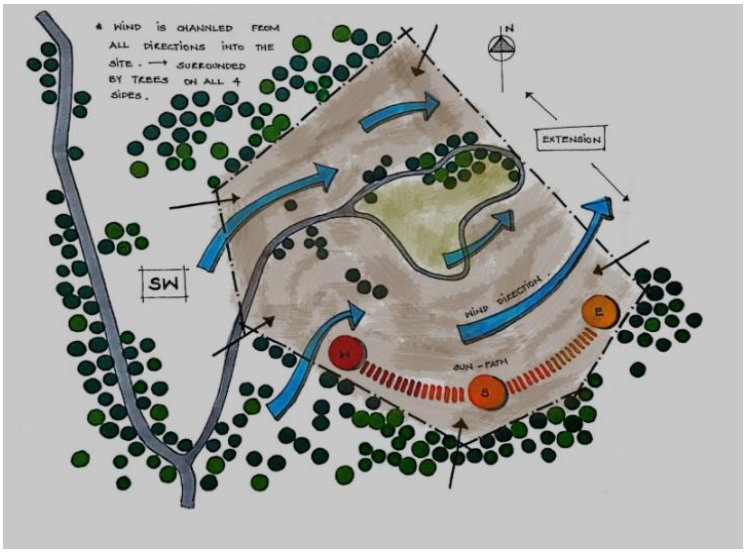
Keywords: Design Strategies of Toda Tribe, Todas Vernacular Architecture, Nilgiris Vernacular Settlement, Tribal Settlement in Tamilnadu

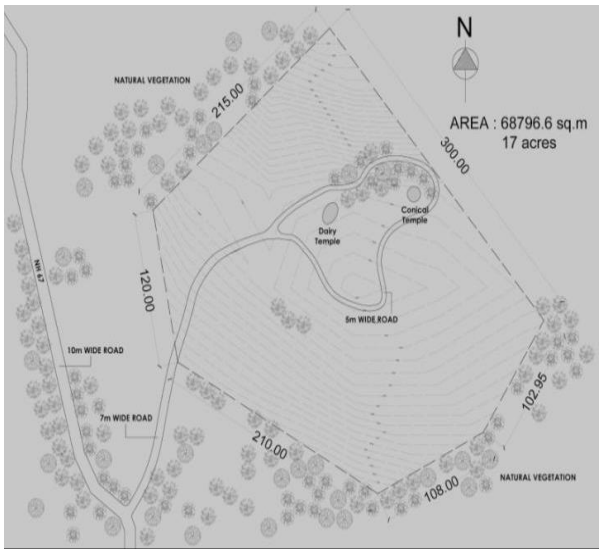
INTRODUCTION:

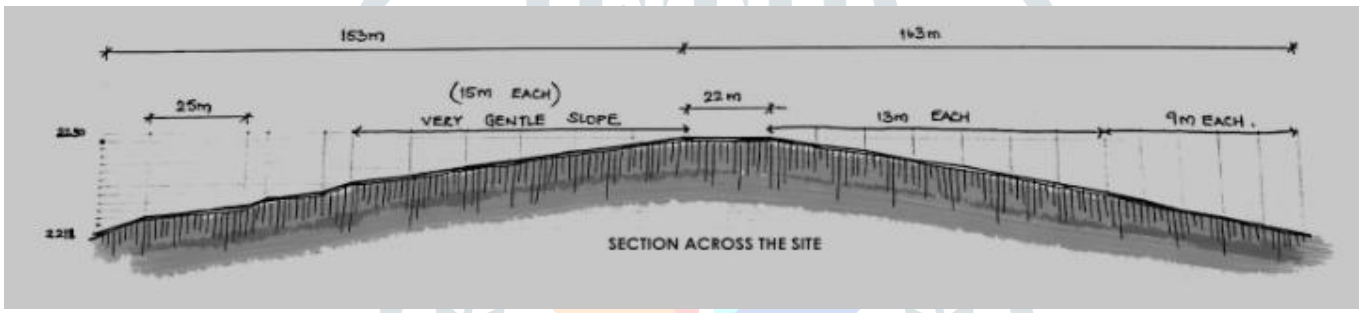
The Toda people are a small tribal community who live far away from the Nilgiri plateau in the hilly terrain of Southern India. These tribes are the Dravidian ethnic group of Tamil Nadu. There are 14 villages and 60 sub villages around Toda in Nilgiris. Todas are purely the pastoral race as ,The Toda culture revolves around their cattle herds (domestic buffaloes), whose Dairy products were traded among the neighboring people of Nilgiri hills. The Toda traditionally live in settlements consisting of three to seven small thatched houses, constructed in the shape of half-barrels and spread across the slopes of the pasture. They traditionally trade dairy products with their Nilgiri neighbor peoples Toda men were into the manufacturing of dairy products whereas women were engaged in making their traditional embroidery which is known as the puttukuli. During the last quarter of the 20th century, some Toda pasture land was lost due to outsiders using it for agriculture (a forestation) by the State Government of Tamil Nadu. The Toda lands are now a part of The Nilgiri Biosphere Reserve, a UNESCO-designated International Biosphere Reserve; their territory is declared a UNESCO World Heritage Site in the 21st century.

TOPOGRAPHY:

The site is a small hillock that is surrounded by the thick Nilgiri vegetation which gives the entire environment a private enclosure (essential for a private community who strongly believe and worship nature).The Ooty lies at 2214m above mean sea level, and Its climate is classified as warm and temperate.







CLIMATIC CONDITIONS:

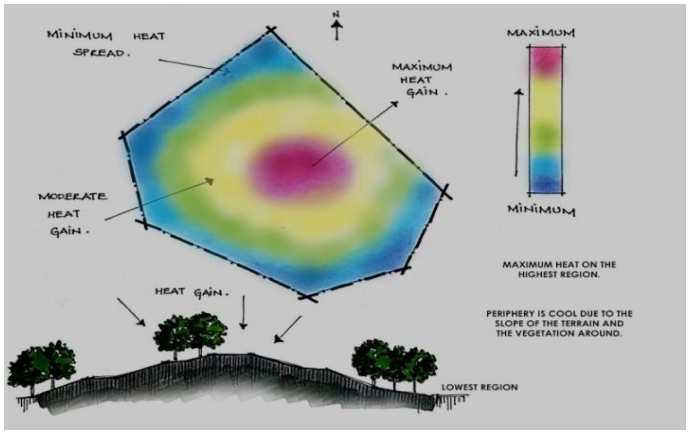
The outer ambient temperature recorded during summer varies from 26°C - 32°C and during winter varies from 17°C - 27°C. The climate is considered to be CWB1 (Subtropical highland climate) according to the Koppen Geiger climate classification.

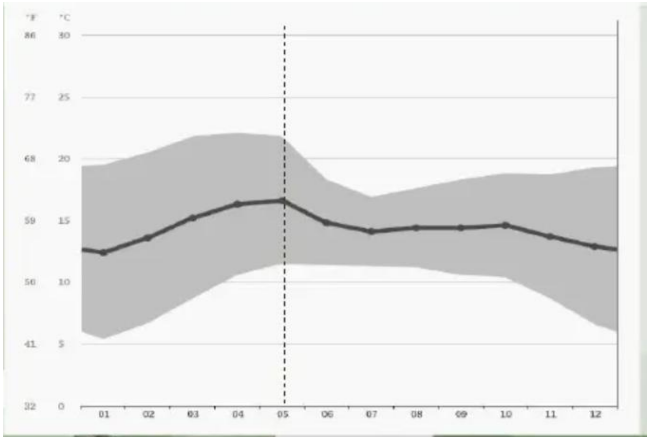
WEATHER & MONSOON CYCLE:

In winter there is much less rainfall in Ooty than in summer. Each year Nilgiris undergo double monsoon cycle: Westerly monsoon-June-August. Easterly monsoon-October-January Due to the presence of high mountain ranges, southwest monsoon is less stronger than the northwest monsoon. The least amount of monsoon occurs in February. The average is 20mm with an average 369mm, the most precipitation falls in July.

AVERAGE TEMPERATURE:

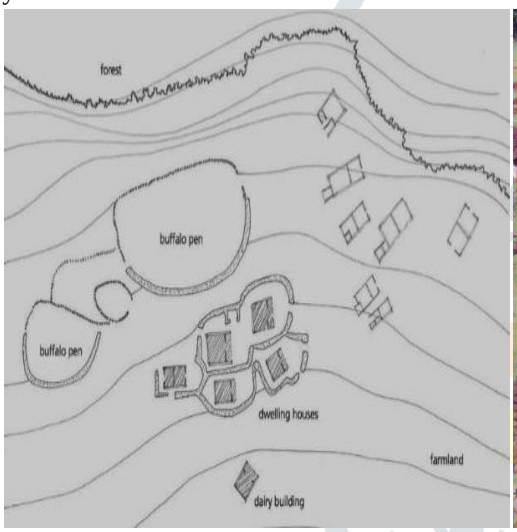
The temperature is highest on May, at around 16.6 degree Celsius. January has the lowest temperature, at around 12.4 degree Celsius. Heavy rain seeps down immediately when it falls on the ground. Surface drainage is also well thought while planning. People at the mund originally depend upon water on the nearby water body.

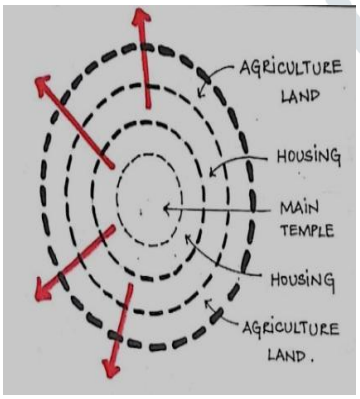


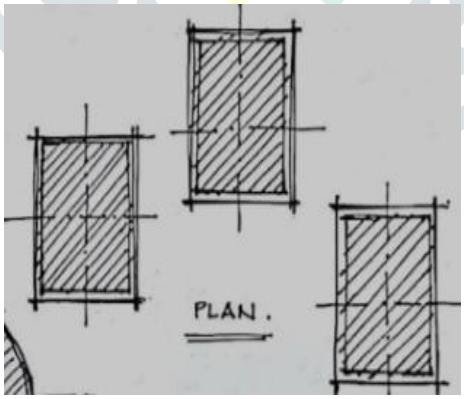


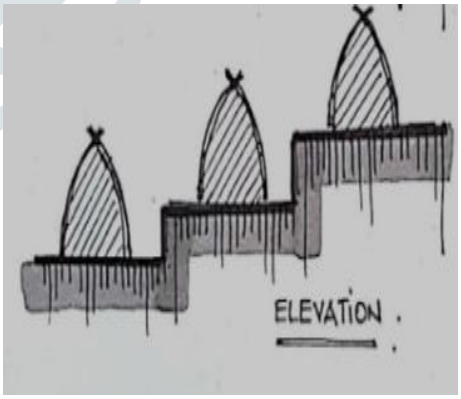
TODA SETTLEMENT PATTERN:

The settlements of Toda do not have any gate or fence or a defined boundary, but the units of the settlement are just dispersed in the surroundings of the landscape of Nilgiris. Also the settlement layout of Todas is based on hierarchy of function. The dwellings are all staggered to enhance visibility and also because of the terrain. The forms are based on the simple and rigid construction, with locally available materials and are in accordance with the traditional lifestyles.







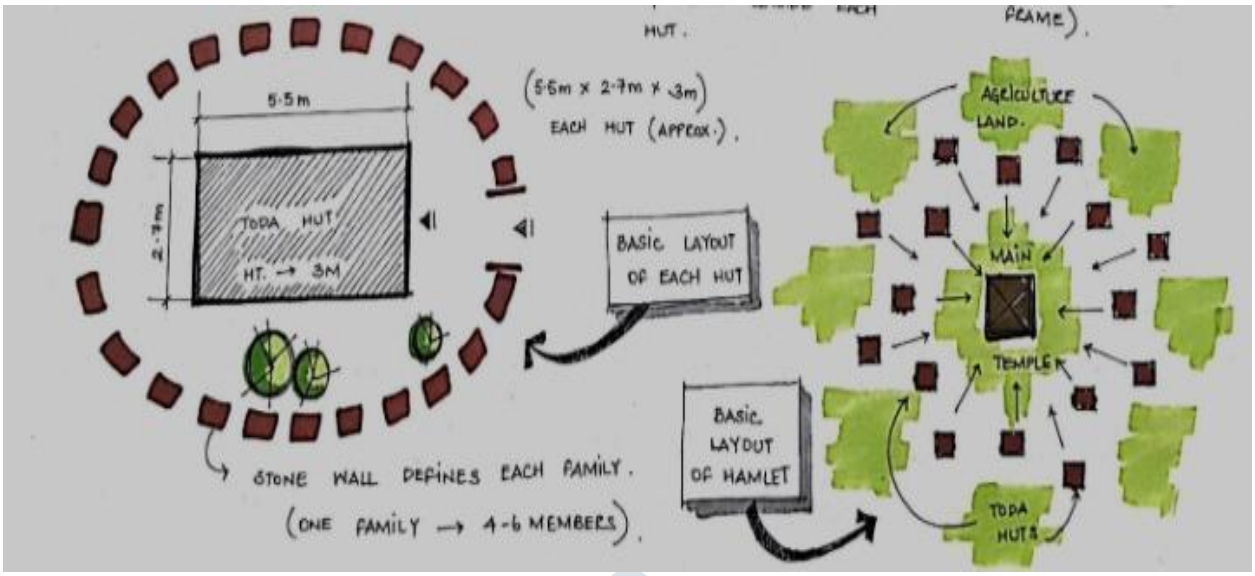


TODA HAMLETS:

Toda tribes reside in small Toda huts also refer to as Todas hamlets (mund). Every mund consist of:

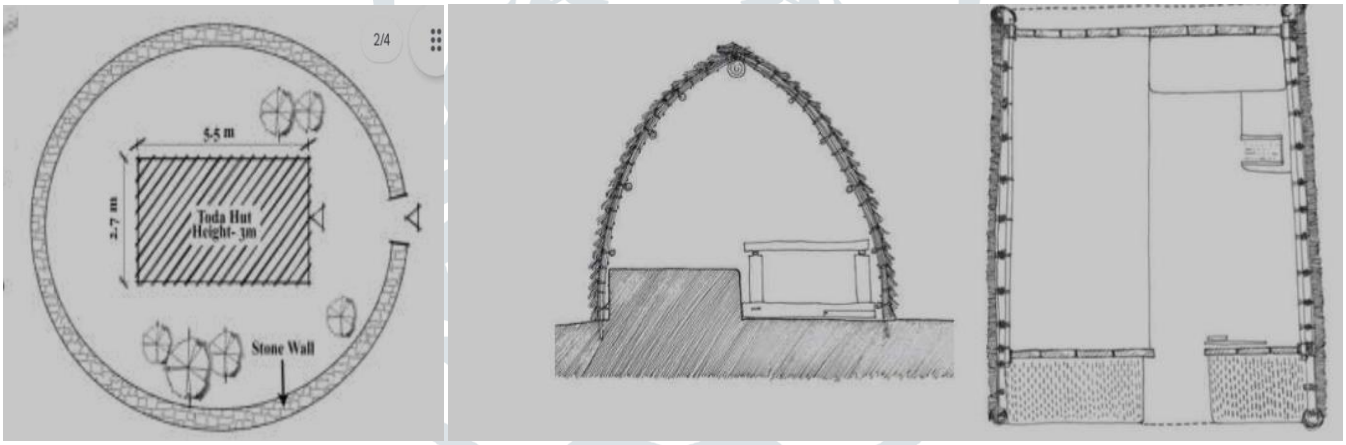
- A dairy temple.
- A buffalo Hundi.
- A shed to shelter calves.
- Cluster of huts.

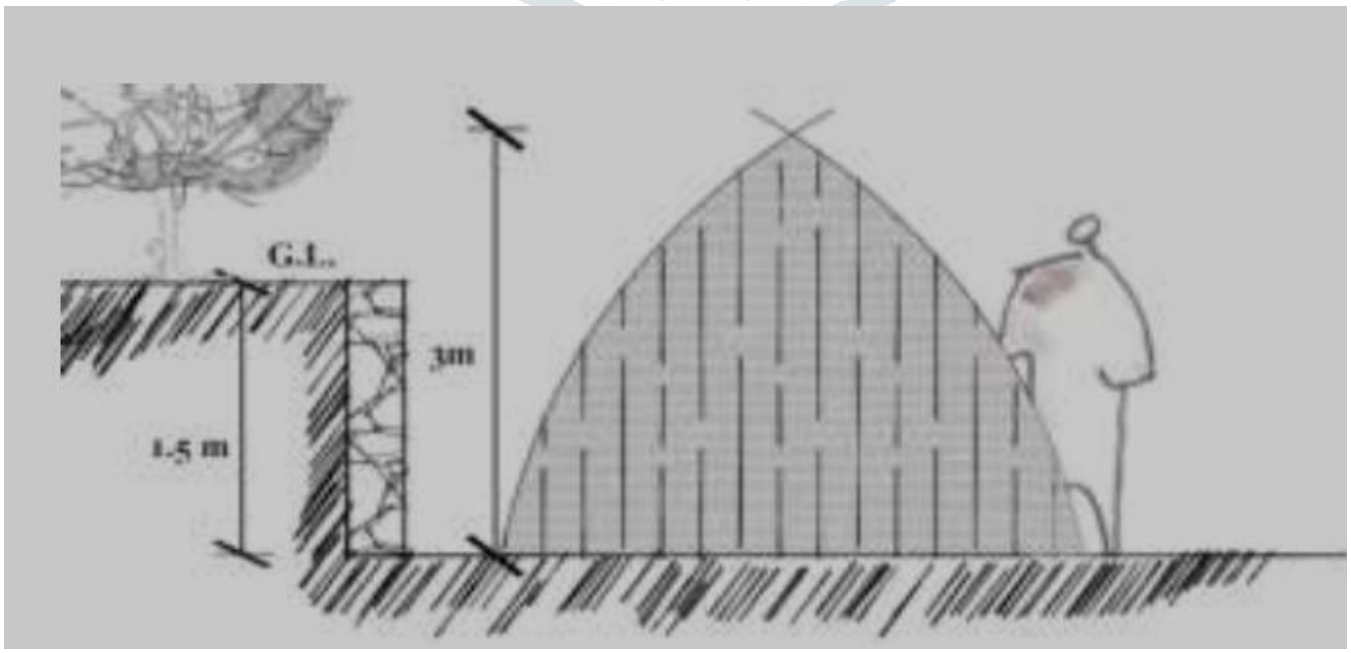
The site has a well planned landscape which ensures clear drainage of storm water, while each part of the hut is delineated/ recessed with a sense of enclosure and security of the slopes and wind currents as they are located at the high altitude. These structures, though specially suited for the place, aesthetically and functionally. These vernacular dwellings represent the principle of climate oriented architecture.



TODA HUTS / ARSH:

The Toda huts are also known as arsh, they are semi barrel shaped huts. It is constructed of wooden planks (thaw), reeds, bamboo and grass. It is surrounded by a boundary wall of 3 feet in height to define the territory of each hut and also it functions as a windshield to prevent the arsh from extreme wind at high altitude. All the houses are oriented towards the eastern and western direction to receive maximum radiation. The entrance is slightly to the left between two sitting platforms within the front porch. The entrance doorway of the arsh is small at a height of 2 feet high by 2 feet wide to keep out cold and damp and also to protect themselves from the wild animals.





Details of an Arsh

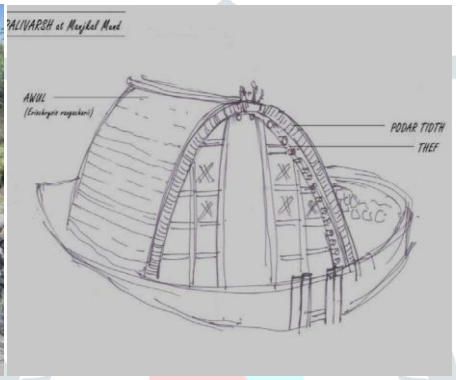
STRUCTURE OF AN ARSH:

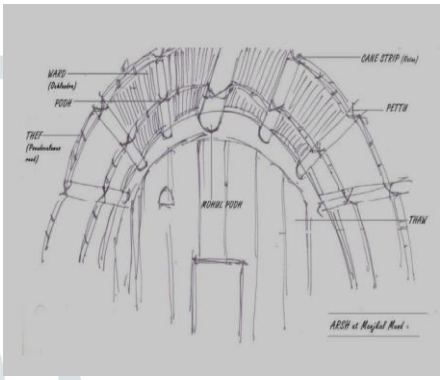
The arsh has a curvilinear roof starting from the ground to top and a rectangular plan. These are east facing structures with width of around 4.2m, height 3.3m, and the depth ranging from 4.5m - 6.3m. Inside the arsh there is an earthen sleeping platform which is 45-60cm high to the right and the working area to the left.

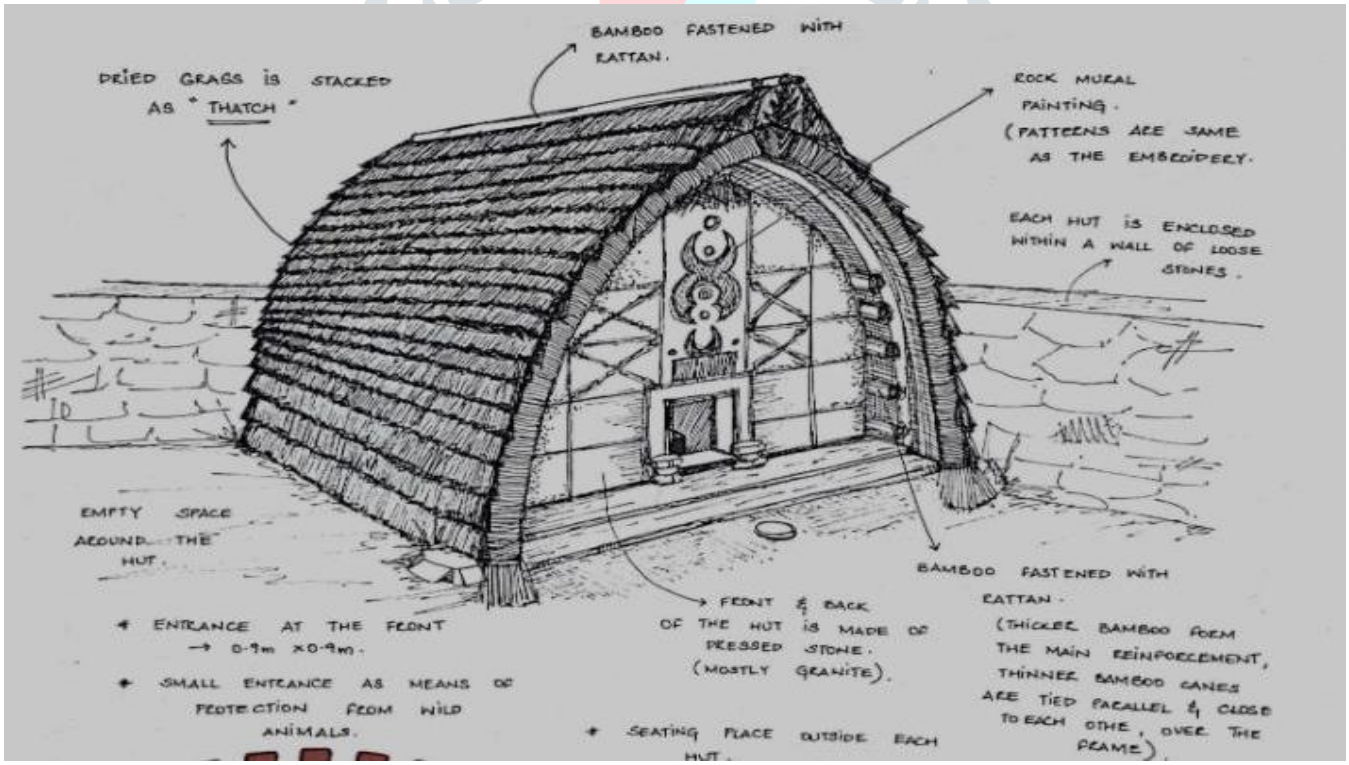
CONSTRUCTION DETAIL OF AN ARSH :

At the either end of an arsh, two arch-shaped frames are made into long bunches of bamboo splits, lashed together by a spiral of a cane or bamboo splits called thef. The thef is balanced by the two opposite walls on either end of the hut fixed with mud mortar. These two arches support the podh which are strong poles , often 11 in number running along the length of the building.

At 1 foot a hoop of Thef (Bamboo split bunches) lashes over the poles forming a ribcage. On this framework, courses of sticks (ward) are tied horizontally forming the laths to which rows of thatch (awul) are lashed, giving the surface ridged effect. In the center of the podh a strong pole of 12cm diameter runs along the length along the structure. Thinner and stronger poles of wood go parallel to it at its interval. To give a grand appearance to the facade, the thef in front is covered with a cylindrical bunch of hay (Podar Tidth).The air gap between the roofing on its top and wall below are filled with mud plaster and also sometimes with buffalo dung. The interior, windowless and dark, consist of a single space .The raised earthen platform takes up one side of the space to serve as a sleeping place. The hearth is the focus of the end farthest from the door. The kitchen, which continuously emits smoke inside the hut, is the key to its sustenance from the weather and termites.



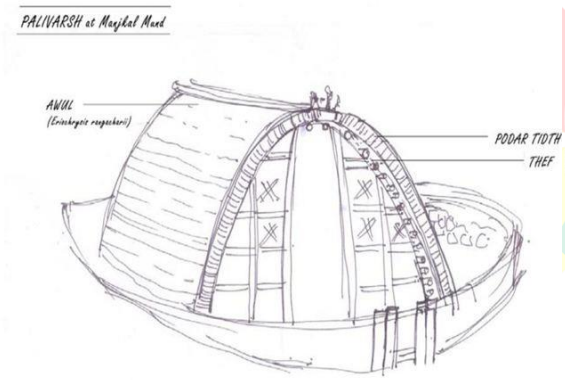




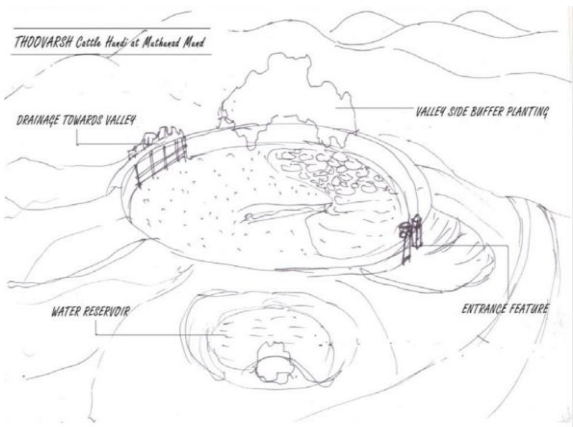

Construction of Arsh / Hut

INTERIOR SPACE:

The interior is windowless and dark, consisting of a single space. There is a raised earthen platform which takes almost a part of a room. The rest is made for sitting and sleeping place. The hearth is the focus of the end which is the farthest from the door. The kitchen which continuously smokes is the key for weather and termites.



The Dairy Temple (Palivarsh)



The Cattle Hundi (Thoovarsh)

Calves Shed (kodharsh)

Traditional Temple (Porvash)

Present Scenario of the Settlement

CONCLUSION:

VERNACULAR MATERIALS AND TECNIQUES USED IN TODA SETTLEMENT:

1. Structure of the Dwelling aligned with the topography and wind pattern

2. Smaller opening ensure the safety from wild animals in the forest

3. Smaller opening responded to the local climatic condition

4. Bamboo and thatch are used in construction of walls and roof. Both locally available native material as well as sustainable material. This combination ensures durability, while also blending seamlessly with the natural surroundings

5. The conical shape of the Toda hut allows for efficient rainwater drainage during monsoons. Additionally, the design facilitates natural ventilation, ensuring a comfortable interior environment. The planning well ensures drained landscape. Delineated with sense of enclosures

6. Security with slopes by use of simple retaining structures, grading and planting

CURRENT SCENARIO:

This is a comparative analysis between the oldest Toda architecture and the later development in it .Those times the huts were barreled which were later transformed to tiled roofing. Only the older generations live in Toda hut. The new or the upcoming people tend to move. The settlement first start from valley and the gradually spread towards hill tops. The Todas used to be a pastoral people but now are increasingly venturing into agriculture and other occupations. Although many Toda have abandoned their traditional distinctive huts for concrete houses, a movement is now afoot to build traditional barrel-vaulted huts and during the last decade forty new huts have been built and many Toda sacred diaries renovated.

Hence conclude with a note that though Toda architecture is one of the earliest architecture people have started to migrate from that culture to a developing habitat. People still have not transformed completely. May be thatched is made into tile, but the transformation in plan i.e. circulation space is still a single one.