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| Author/s | Aritra Gupta |
| Affiliation | VIT, Vellore, India. |
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Architecture without architects: Eavesdropping into the Reang House's dialogue with its environment

Aritra Gupta

VIT, Vellore, India. Email: guptaaritra2@gmail.com

Abstract

'Vernacular Architecture', according to Kingston Heath, represents a localized response to broad cultural systems, historical events, and environmentally determined regional forces, in short, an observable condition of dynamic cultural and environmental change and accommodation expressed in built form, whereby simultaneous identities exist (Heath 210). True to this spirit of a dialogue with the environment, it can also be defined as built form, or building techniques, that are distinctly indigenous, arise out of need and are driven primarily by materiality. The North-East of India, in particular Tripura, has a distinct cultural identity that also translates into its architectural style. Tribal architecture is highly risk resistant, bi-climatically sustainable and culturally relevant to the region. It is also very unique in its approach to overcome the site-specific restrictions that it is prone to. The social, cultural and ethnic significance that this style carries helps to define the architectural heritage of a region whose rich building traditions have not yet been investigated enough. This paper aims to look at an indigenous housing typology of Tripura- the Reang House, investigate it through the parameters pre-established for "Vernacular" architecture and dissect the socio-cultural implications of the same. The typology is examined through the lens of building climatology, technique, materiality, regional and social context, and cultural significance. The aim of this investigation is to again, define the typology and its relevance, given the region it is born out of and largely represents.

Keywords: Tripura, Reang, Vernacular, Indigenous, Housing, Architecture, Bamboo.

Academic architectural scholarship in Asia has been almost solely concerned with major high-style monuments, hardly at all with vernacular building, or towns as such.

(Wurster and Bauer, 1959)

Introduction

Coming to terms with the "vernacular" in architecture

In the historical sense, the terms "vernacular" and "regional" are often considered virtually interchangeable. Vernacular, as a term, is derived from the Latin root "vernaculus" which describes something as native, domestic and/or indigenous (Paul Oliver, 1997& 2006). In the linguistic context, vernacular refers to a native language or dialect, especially its normal colloquial or spoken form with its commonly used, recognized, and decipherable speech patterns characteristic of a specific region, something that Dell Hymes refers to as "ethnography of speaking" (Hymes 1996), in contrast to the formal literary language of a society that is oriented toward global academic

discourse. The same distinction applies to vernacular buildings and vernacular landscapes as well. Vernacular buildings and settings are regionally distinct, regionally representative, and regionally understood. Architecturally, vernacular broadly points to building typologies and technologies that have developed without influence from western academic architectural nous and training (Robert Brown & Daniel Maudlin, 2012).

A definition that is derived to such an extent from exclusionary principles, unfortunately, casts a wide net. Broadly speaking, the Favellas of Brazil, Igloos of Finland, and Chettinadu houses of Tamil Nadu all qualify as vernacular (Robert Brown & Daniel Maudlin, 2012). This definition, thus, is not very fruitful in establishing a qualitative understanding of what exactly vernacular signifies in architecture all the more since 'Vernacular Studies', 'Vernacular Architecture'etal. and all such related fields of inquiry nucleate around the notion of regional identity by prioritising terms and phrases such as "authenticity," "a sense of place," or *genius loci*, assuming that an authentic landscape is a fixed entity, a fragment of the past that has endured the ravages of nature and human action. And it is exactly here that scholars like Nezar Al Sayyad suggest that tradition and cultural heritage (of which architecture is a part) should be understood in terms of a world in flux, rather than as an enduring or fixed concept. Hence, Heath speaks of arriving at the realisation that regional settings are linked inextricably to cultural processes and, in turn, serve as the kernel of vernacular architecture studies today (Kingston Wm. Heath, 2006/2007). In sync with these arguments, this paper too attempts at understanding the Reang House of Tripura as a case in point that initiates a multilayered discourse between its built form and various other stakeholders viz. climate, topography, ethnicity, religion, social forces, cultural systems, community participation, historical events, and environmentally determined regional forces. It has to be remembered here that vernacular architecture often points to an observable condition of dynamic cultural and environmental change; it speaks of transition rather than stasis (*ibid*). Heath further adds, "when aspects of a unique building response are embraced in a collective and consistent manner by representative numbers within a region, they produce something that is no longer idiosyncratic, it is culturally syncretic. It is vernacular" (*ibid*).

Therefore, to define vernacular appropriately in the architectural context, a different approach has to be taken. A literature survey on the topic revealed that the architectural styles highlighted are neither uniform in planning, aesthetics, tangibility, nor in building techniques. One common thread however that links all the "vernacular" styles is that they are highly contextual. That is, the styles highlighted have all inevitably developed through methods of trial and error due to specific geological, cultural and sentimental necessities of a hyper specific context, a paradigm that the researcher in this paper calls a 'dialogue' between the built form and its environs . If we take this contextual definition as gospel, a lot of the seemingly unconnected aspects of different vernacular styles all over the world now suddenly appear to have developed certain observable common qualities. This, thus, establishes vernacular architecture as a product of the people, their traditions, the locations they live in and what they have available around them. People alter objects, buildings, spaces, and settings in accordance with prevailing opportunities, constraints, and sensibilities. The study of vernacular environments, therefore, leads inevitably to understanding the range of forces acting on a particular society that prompts regional building patterns and spatial adjustments. This also brings to fore the concept of "Cultural weathering" - the vernacular as a collective response to regional conditions. This contextual and evolving definition of the

vernacular in architecture is, thus, in most academic discourses the more appropriate one, and as such will be taken as the foundation for all observations, analyses and inferences in this paper.

Significance of vernacular architecture

There is a fundamental difference between someone who commissions a house to be constructed and one who actually builds it with his own hands. The builder of the latter has different needs and expectations, and his house, therefore, displays an integrated pattern of values, whereas one which is built by an architect imposes elements that are not the patron's and therefore it becomes a blueprint for living rather than the reflection of a lifestyle. The study of vernacular architecture, therefore, helps us to holistically comprehend the cultural identity of a locale, and in turn, the people who live there. A brief understanding of their daily lives, the evolution of their social dynamics, and their cultural identities, as well as a historic perspective of the geography and climate of the area in question, can also be gained through the process. In addition to all these, certain mythological, ritualistic and superstitious norms can also be deciphered through an analysis of the same.

An analytical look into the vernacular identity of a community, localized to a certain extent, especially architecturally, speaks volumes about the aforementioned issues. Social and technological inferences can be made through simple investigations of such typologies. A lot can also be inferred about the climate history and risk proneness of the region in question too. All in all, academic investigations into the vernacular typologies of a place reveal a lot about the nature of the place, its history, and about the people who inhabit it. In 'Bamboo dwellings in a concrete age - Architecture of the hill tribes of South India', for instance, Caroline Stanley-Millson while speaking about the Kurumbaⁱ tribe, points out that it is worthwhile to consider the varying attitudes to architecture expressed by the different communities who occupy the forests and grassland of the mountain ranges. In order to comprehend the complexity of this paradigm that involves a dichotomy comprising of the universality of the regional in vernacular architecture vis-à-vis the uniqueness of contextual responses, this paper draws an analogy between the Reangⁱⁱ House of Tripura and the Chettinaduⁱⁱⁱ House of Tamil Nadu. For example, upon investigation of the Chettinadu house, it is easy to see the effects that vernacular materials such as egg plasters, Athangudi^{iv} tiles and terracotta roofing have on the climatological performance of the typology (S Radhakrishnan & RS Priya, 2014). The rationale behind drawing an analogy between two dissimilar vernacular typologies, one from South India and the other from India's North East (instead of selecting vernacular architectural praxis points from the same geographical area) is to substantiate for the claim made by the researcher that seemingly unconnected aspects of different vernacular styles all over the world appear to have certain common observable qualities.

Figure 1

A Chettinadu House



Figure 1. A Chettinadu house, with visible thinnai and terracotta roofing. Adapted from "My ancestral home" by Vidhya Parani, 2017. Source: <https://www.vidhyaparani.com/2017/07/06/my-ancestral-home/>

Located close to the equator, Tamil Nadu has a hot and humid climate throughout the year. Climatological performance, and in turn, thermal comfort has a significant impact on the lives of the people inhabiting the typology. Solar radiation is almost incident at a 90-degree angle, and thus a gable roof works well in reflecting a lot of the incumbent radiation. Eggshell plaster and terracotta roofing keep the interiors cool, and not very uncomfortable. Athangudi tiles also help in maintaining thermal comfort internally, while at the same time mitigating water seepage through the floor. The usually country-baked brick walls also work to keep the interiors insulated due to their thickness. A simple square plan tells us that domestic life is not very complex, with the inhabitants spending a majority of their time outdoors. This is corroborated by the fact that the majority of the people who live in rural areas, where these typologies are common, are involved in agriculture. The presence of the thinnai, an informal social space on the immediate outer wall of the typology, also speaks of how social interactions take place. The thinnai also tells us of a strong sense of community (BS Prakash & PS Mahalakshmi, 2017).

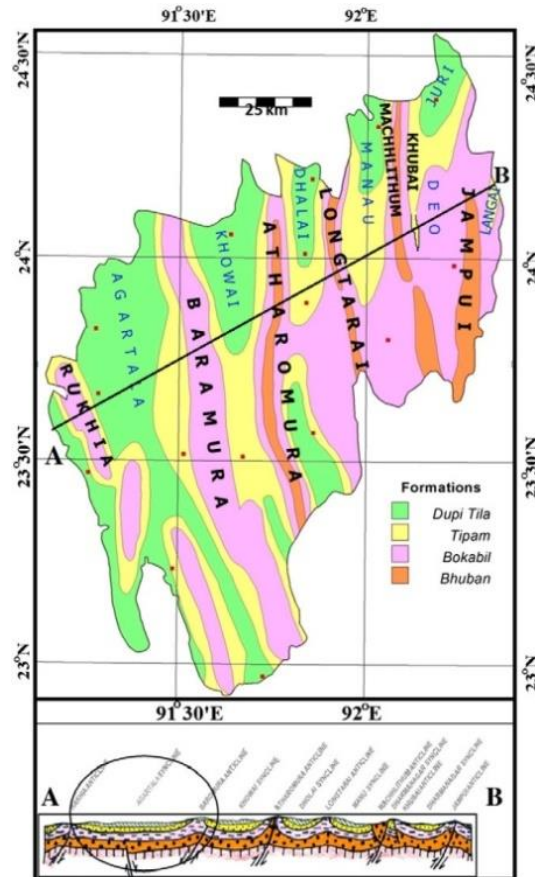
This paper attempts to compare Chettinadu House to the Reang House of Tripura known in Reang language or Kaubru as 'Chuklanok' (R. Reang, Personal Interview, 14th September, 2021). The Reang house is a housing typology found commonly in Tripura, a state in the North-East of India. For the Reangs, the spiritual well-being of the community is uppermost in their priorities. It is the prerogative of each individual family to select its own site. However, they do so in consultation with the headman, as it is important only to build on a place that is considered auspicious. No measurements are taken, although a line is employed to ensure the overall straightness of the structure. Such apparently crude methods joined with a high degree of inherited manual skill, produce an accurate result. The typology will be investigated using the contextual definition of

“vernacular architecture” as a reference, and then through the lenses of the technological and cultural parameters that define vernacular architecture separately.

Tripura at a glance

Tripura is a state in the North-East of India. The climate of Tripura is highly seasonal, with five distinct seasons: spring, summer, monsoon, autumn, and winter. The climate can be generally classified as a warm and humid tropical climate. As such, humidity is high throughout the year. Geographically, the State has three distinct physiographic zones: hill ranges, undulating plateau land and low-lying alluvial land. Five major hill ranges traverse the State in roughly north-south direction and continue southward into Chittagong Hill Tract in Bangladesh. Narrow valleys separate these ranges and are generally 20 km wide. The easternmost range is Jampui, being successively followed to the West by Unokoti-Sakhantlang, Longthorai, Atharamura-Kalajhari and Baramura-Deotamura. The highest peak lies at Bethliangchhip (Thaidawar, Shib-rangkhung), 975.36 m above sea level (Tripura Tourism, Geography).

Figure 2



Hill Ranges of Tripura

Figure 2. Physical geography of Tripura. Adapted from Shreya Bandyopadhyay, Sushmita Saha, Kapil Ghosh & Sunil Kumar De (2013). Channel planform change and detachment of tributary: A study on the Haora and Katakhal Rivers, Tripura, India. *Geomorphology*, 193,28. <http://dx.doi.org/10.1016/j.geomorph.2013.03.024>

The geographic location in which Tripura is located is classified as Seismic Zone V. This is a high-risk classification, and by definition, Tripura is highly susceptible to earthquakes (T.G. Sitharam & Arjun Shil, 2014). The hilly landscapes and heavy rainfall also add to flood and landslide risk.

The Reang House

Figure 3

The Reang House



Figure 3.A Reang house or Chuklanok with thatch grass or dry bamboo leaf roof and bamboo construction.

Source: <https://www.flickr.com/photos/goimonitor/15533410137>

Brief introduction

The Reang house, as stated earlier is a housing typology frequently found in Tripura. Usually located in the rolling hills of Tripura, these houses are built to suit site specific challenges. The building technologies employed are also very much dependent on the raw materials available. The typology is typically built of different species of bamboo, with woven bamboo acting as floors and walls. Gable roofs are a common feature of the typology. The typology is built on a stilted platform and is supported by bamboo crossbeams. These houses are found in small clusters and generally have shared common spaces in between. The planning of these houses is simple and very linear. Spaces inside are not highly differentiated, and function very flexibly. The construction of these houses sometimes involves the entire community, though more often than not, the scale of the typology allows for it to be constructed only by the family that will eventually inhabit it (Paul Oliver, 2006).

Structural profile and building techniques

The use of raw bamboo is seen in almost every aspect of construction in the Reang house. Bamboo, depending on elasticity and ability to withstand compression, is used as a vertical and horizontal load-bearing member. As Tripura is located in a very seismically active zone, and is quite prone to earthquakes, the use of bamboo suits the local geological conditions well. Being highly elastic, bamboo structures sway along with tectonic activity, accommodating any sort of mechanical stress that this activity may pose. Bamboo is also very lightweight, and thus, if the structures are compromised in the case of devastating earthquakes, they seldom cause great harm to the inhabitants. Any rebuilding efforts afterwards are aided by bamboo as a raw material that is cheap and very readily available. The economic sustainability of raw bamboo along with its high availability and low carbon footprint also add to its sustainability profile, both economically and environmentally (Rashmi Manandhar, Jin-Hee Kim & Jun-Tae Kim, 2019).

The floors and walls of this typology are also often made of woven bamboo panels. These panels have spaces in between that allow air to pass through them. This ensures that there is always a great degree of ventilation, which in addition to being great from a quality-of-life standpoint also greatly increases thermal comfort. Air moving to and from the interiors of the house ensures that humidity is never an issue, as moving air greatly aids the evaporation of sweat and drying of surfaces rendered wet by moisture. This ventilation also dissipates the heat stored by the inanimate household objects as well as the body heat of the individuals inhabiting the house. This eliminates the need for fans and other electronic appliances for thermal comfort and greatly aids passive sustainability. The woven bamboo panels also trap air in the winters, insulating the interiors of the household. The trapped air in these pockets being a poor conductor of heat keeps the heat generated by the bodies of the individuals who inhabit it trapped inside. Given the context of Tripura, which has a hot and humid tropical climate with cool winters, this greatly enhances the climatological performance of the building (Manoj Kumar Singh, Sadhan Mahapatra & S.K. Atreya, 2008 & 2011).

Figure 4

Use of stilts in the Reang house

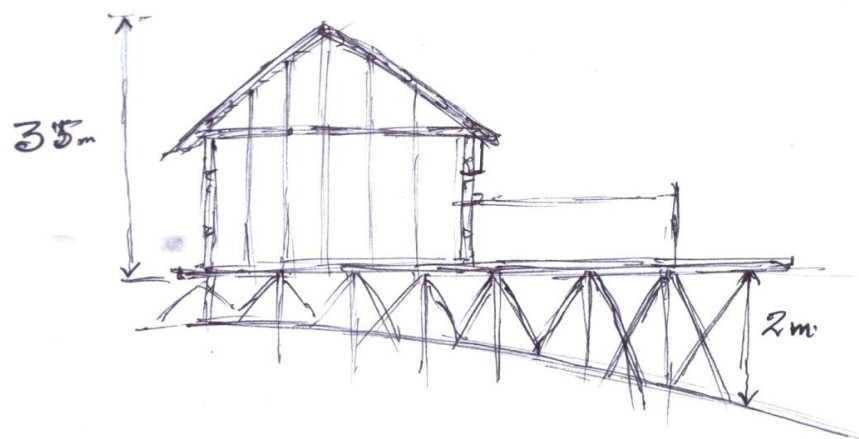


Figure 4. Use of bamboo stilts in a Reang house, with typical height (self-drawn during field visit on 4.09.2021)

The house is also built on a platform raised by stilts and these stilts consist of bunches of bamboo tied together and inserted deep into the ground (R. Reang, Personal Interview, September 2021). The space thus created under the platform is used to store grains, domesticated animals, and often, a dingy (a country boat). This stilted construction effectively mitigates insect infestation of the floor panels. The additional height provided by these stilts also works well to manage the risk posed by floods, which due to the house's location in the hills, are a constant threat. The increase in height also helps aid risk management from earthquakes as well. The stilts allow for greater swaying, and hence greater mechanical compensation to deal with the tremors without reaching critical failure due to shear stress (Sayantani Lala, N. Gopalakrishnan & Ashok Kumar, 2017).

Figure 5

a. Reang house structure under dead load

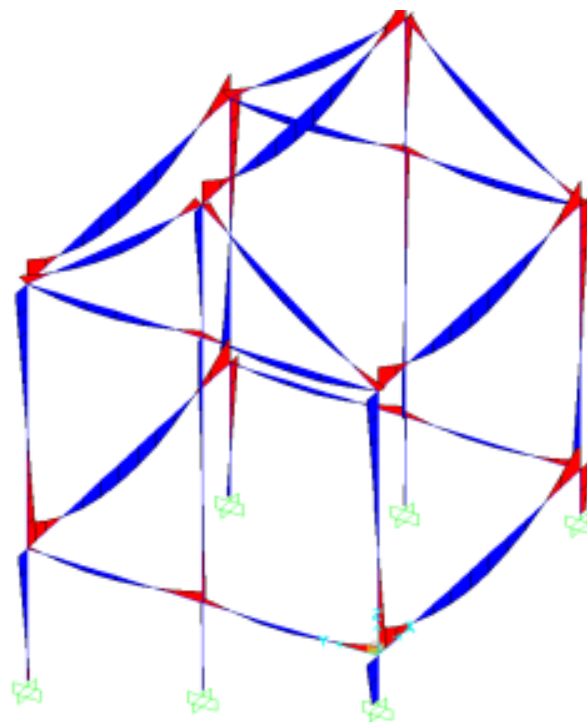


Figure 5 (a). Nature of bending moment and shear on horizontal bamboo members due to the dead load of the Reang house. Bending moment on the structural members of the typology due to dead load. Dead load is cumulative of all the forces that exist by virtue of the inherent weight of the occupants, appliances and furniture inside the typology. The moment is visible primarily on horizontal structural members of the typology. Adapted from Lala, S., Gopalakrishnan, N., & Kumar, A. (2017). A comparative study on the seismic performance of the different types of bamboo stilt houses of North-East India. *J. Environ. Nanotechnol*, 6(2), 71. <https://doi.org/10.13074/jent.2017.06.172249>.

b. Reang house structure under seismic load

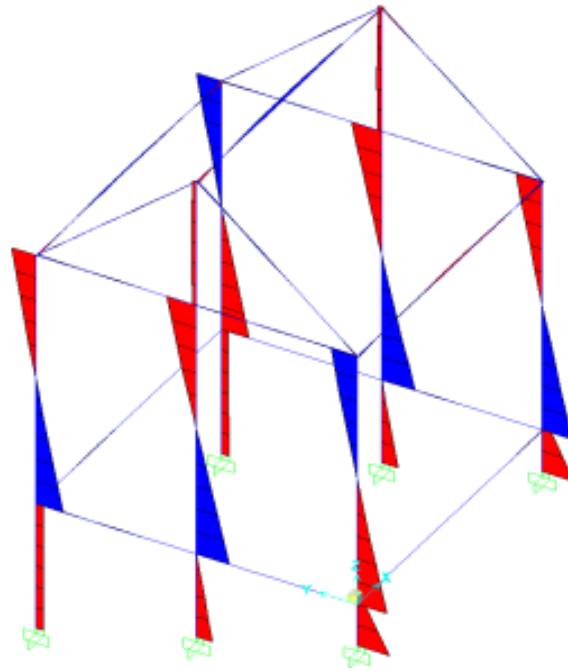


Figure 5 (b). Nature of bending moment and shear on vertical bamboo members due to the seismic load of the Reang house. Bending moment and shear on structural members due to seismic load. Seismic load is caused by virtue of plate tectonics and resulting earthquakes. These are visible on the vertical structural members of the typology. Adapted from Lala, S., Gopalakrishnan, N., & Kumar, A. (2017). A comparative study on the seismic performance of the different types of bamboo stilt houses of North-East India. *J. Environ. Nanotechnol*, 6(2), 71. <https://doi.org/10.13074/jent.2017.06.172249>

Planning of the housing typology

Spatially, the typology is planned quite linearly. This linear layout aids in cross-ventilation, again benefiting the thermal performance of the typology. Spaces that arise from this type of layout are very simple and flexible. These multipurpose spaces qualitatively do not have a lot of complexity. Simple spatial planning which is linear also benefits visual connectivity to the outside, which tells of a great degree of passive community interaction. This translates to a sense of community identity which is very tangibly present in these clusters. Simple spaces in a typology are also indicative of a not very developed sense of the domicile, relegating it to a place of congregation and rest. This is supported by the fact that a majority of the people that this typology belongs to are very agriculturally active. Agriculture as a profession is very taxing from a daily investment perspective and thus, doesn't lend itself well to sedentary qualities present in a space, be it complexity or furniture. This also tells us of a very balanced gender dynamic, as it can be seen that the women of the community are also almost equally active in the day-to-day activities that pertain to agriculture and selling produce, more so than the domestic duties that are traditionally associated with the gender. This can be corroborated by empirical data and the great degree of gender equality present in these communities, with property gifts, often given to women by fathers, which is far from the case in other mainland communities (Biswajit Ghosh & Tanima Choudhuri, 2011).

Figure 6

Typical Reang House plan

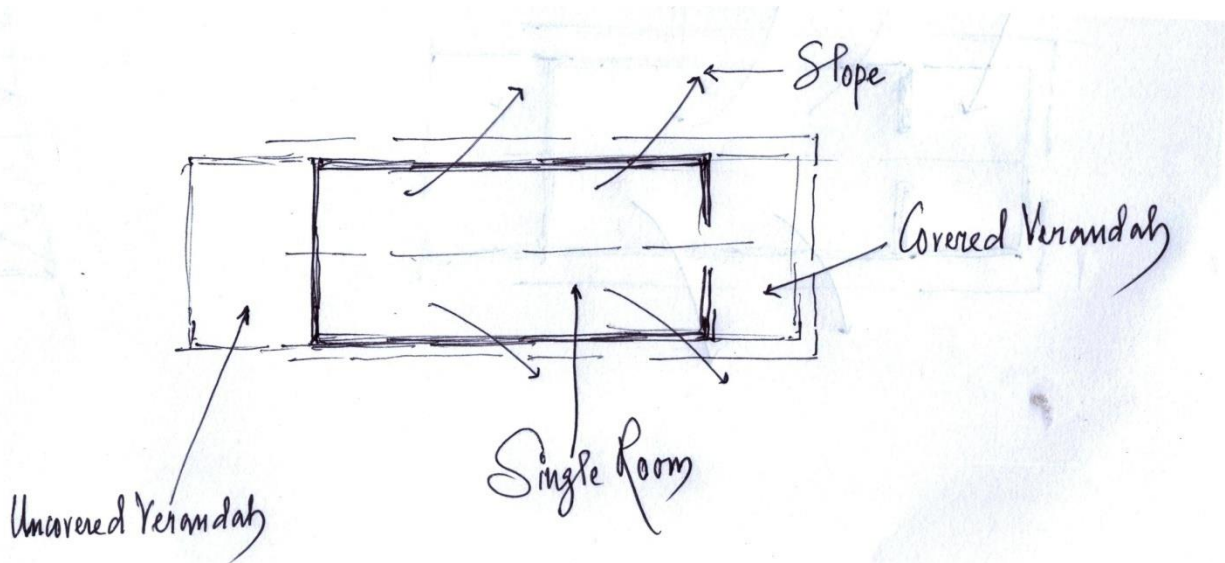


Figure 6. Sketch showing the simple spatial planning of a Reang house (self drawn during field visit on 4.9.2021)

Cultural and social relevance

According to Raju Reang, SDPO of Korbuk sub-division in Tripura and a resource person of his community, the Reang house known in Reang language or Kaubru as 'Chuklanok' is meant for the ordinary members of the community. However, the 'Kaskau' or the Chieftain has a larger house known as 'Nokyungma'-which is a bigger version built by the community. An attendance sheet in the form of a long bamboo strip is kept in every community meeting (separate for male and female attendees) held in the 'Nokyungma' and the attendees have to break the bamboo strip to mark attendance (R. Reang, Personal Interview, 14th September 2021). These details point to the social and cultural dimensions of the Reang house in community living and their life practices.

Bamboo is of great cultural significance to the Reang community. Handicrafts that form the backbone of their economy primarily use bamboo for raw materials. Bamboo, in addition to being readily available, is relatively cheap too. These factors make bamboo an ideal raw material. Bamboo is also integral to the housing typology. Stilts, floor boards, wall panels, and even furniture, all are made of woven bamboo. The primary structural components of the building typology are often pieces of raw unprocessed bamboo. All these speak of the way bamboo is integrally woven into the culture and sentiments of the Reang community (Sukhendu Debbarma, 2005).

The typology planned the way it is, also increases passive community interaction through visual connectivity. Even its construction is undertaken by a single family but often draws upon the entire community as a whole, fostering a sense of community and belonging. Houses are also often clustered in small groups, with common intangible spaces in between. This again promotes active community involvement through interactions with other members of the community. This

sense of community solidarity and unity establishes a culture that does not really identify the personal property as a construct. After all, a house built by the entire community has a certain degree of investment from the entire community. Enhanced social security and remarkably low crime rates are a by-product of this very facet. The remarkable amount of social security that these pockets of habitation provide is a testament to this very hypothesis. This community spirit is of great value during times of hardship such as floods and earthquakes, both of which are relatively common.

Figure 7

Layout of a Reang community

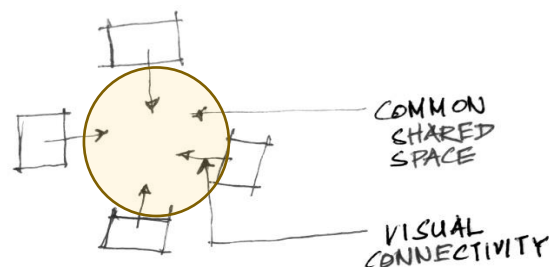


Figure 7. Layout of a typical Reang cluster, highlighting the common shared space in between houses and the visual connectivity between the houses and the space (self drawn from field visit, 14.9.2021).

The identifying feature of the Reang house, that is its reliance on bamboo for construction and ornamentation weigh heavily on its cultural significance. In addition to being the most identifiable domicile in the community, the additional cultural relevance that the prevalence of bamboo lends to it makes it almost a cultural and social rallying point for community pride. In addition to its material aspects, the spatial functioning of the typology, which speaks of and fosters a sense of great community pride, further enhances the community-defining role that it already has.

Economics of construction

Since the house does not require a great deal of investment for construction, it is not often looked upon as a status symbol or as a means to establish a social hierarchy. The simplicity of engineering, cheap cost of construction, low material costs, and tremendous climatological performance contribute greatly to economic viability and sustainability. Thermal comfort generated by building technologies also mitigates the need for electrical appliances. This again reduces maintenance costs.

Taking into account the precarious context this typology is found in; frequent reconstructions and repairs are also a viable option in face of great adversity such as floods and earthquakes. The abundance of the raw material, which is bamboo, the presence of abundant specialized labour, and community involvement in construction all point to a built typology that is flexible in its lifespan. This community solidarity in times of trouble further deepens the sense of belonging to the community. What results is a community that is tremendously strong in character and exhibits

solidarity in the face of adversity. Investment of the entire community in each house further speaks of a certain kind of community spirit that translates into a plethora of varied aspects, such as social security, reduced crime, high levels of co-ordination between resident members and scaled down materialism in terms of possessions and property (J.C. Lallawmawma, 2012).

All these things speak of a social climate that is not very profit-oriented but rather, co-ordination driven. The sense that good for one is good for the community and vice versa can be easily observed. The presence of a barter system as a basis for community economics often instead of a monetary one corroborates this to a great extent. The low rates of theft and crime, in general, can also be interpreted in the same light. A community where sustenance is not profit-oriented but community-oriented would result in members logically not looking to steal possessions, but rather barter.

Vernacular nature of the Reang house

Vernacular architecture often has ramifications beyond simple sustainability and pointers to a simple lifestyle. Buildings of vernacular tendency often act as a form of social and cultural rallying point. They also present themselves as points of pride for those indigenously involved. These typologies ultimately serve as bastions of ethno-nationalist pride. Vernacular architecture also functions as the "other" to architectural norms that are propagated by academia that is highly influenced by western architectural theories. It acts as an identifier for a community in face of architectural styles that are in vogue and commonplace universally (Robert Brown & Daniel Maudlin, 2012).

The Reang house conforms to all the criteria that can be used to identify a structure as architecturally vernacular. From specific environmental considerations to highly localized issues, this typology effectively solves all these design challenges. The specificity in origin and evolution, contextual fit, and material properties that it embodies all point towards a conclusion that the Reang house is indeed vernacular.

The significance of this shows up in dialogues of community identity and pride. The typology, or rather, the house is for the people belonging to the community who live where they live, and live how they live. The vernacular aspects of it embellish this sense of tried and tested design, one which is based primarily on context-specific evolution and not western academic schools of architectural thought. The typology, therefore, becomes as much a part of the community as the people who are a part of it. It would even not be wrong to say that the typology comes to represent the values, engineering and culture of the community itself.

Conclusion

Vernacular architecture by nature is highly contextual. It is developed over time through trial and error, to solve design challenges that are highly localized. From site-specific topographical constraints to overarching geological challenges to accommodating the cultural and traditional tendencies of the people it serves, vernacular architecture can truly be defined as architecture for the people and by the people. Marcel Vellinga points out that vernacular architecture studies, as a more dynamic approach that explicitly focuses on building traditions rather than buildings, how such traditions, through human agency, change and adapt to the cultural and environmental

circumstances and challenges of not just the past, but of the present and the future as tales of vernacular persistence and vibrancy. True vernacular is commonly said to consist of the architecture of the people, having been built by the owners or inhabitants themselves, using local materials and traditional technologies that have been handed down through the generations, in keeping with local cultural values and needs, and in response to local climatic circumstance. (Marcel Vellinga, 2006/2007). The construction of a vernacular house is indeed a communal affair, the whole family working together under the guidance of a master builder, while the building process is regulated by the performance of specific rituals and social festivities that were meant to enhance the vitality and fortune of the house. All vernacular traditions constitute dynamic and creative processes that result from cultural encounters and borrowings.

The Reang house, when put under scrutiny, stands up well in terms of vernacular in architecture. The design principles involved are climatologically relevant to the region it is local to, that is Tripura. The building technologies employed make use of local craftsmanship and materials and are very culturally relevant. The spatial dynamics also work well in tandem with the activities and sensibilities of the people who inhabit it. Moreover, the building typology also employs relevant risk management strategies given that the sites it is built on are prone to natural disasters such as earthquakes and floods. Culturally, the materials involved in construction are materials that are of great significance to the community. The overall layout of the clusters this typology is found in also promotes and speaks of a strong sense of community. This falls well in line with the tendency of strong community spirit that the Reangs display. In addition to all these things, the typology is economically viable given its precarious context.

The typology being culturally relevant and vernacular in nature lends itself well to a sense of community pride. It would, thus, not be wrong to say that the typology itself is an identifier of the community. As such, it can be a focal point for ethno-nationalist pride, and thus, any investments made would allow us to further develop this typology as a viable, and to an extent, a better alternative for the brick-and-mortar constructs that are commonplace today.

Declaration of Conflict of Interests

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Notes

¹A tribe living in the Cardamom and Nilgiri hills, west-central Tamil Nadu state, southern India. Originally pastoralists, the Kurumba were probably identical with or closely related to the Pallavas. With the decline of the Pallava dynasty in the 8th century, Kurumba forefathers dispersed over a wide area of southern India, becoming geographically separated from each other and culturally distinct. The members of these subdivisions survived by hunting and gathering, by petty agriculture, or as slaves. Today some Kurumba are

field labourers or hunters who market jungle produce. (see: [https://en.wikipedia.org/wiki/Kurumba_\(tribe\)](https://en.wikipedia.org/wiki/Kurumba_(tribe)), accessed on 4.7.2021)

ⁱⁱChettinad is an area comprising of 76 villages near Madurai, originally inhabited by Chettiars, a trading community from Tamil Nadu in South India. Chettinadu House is a built form typical to Chettinad. (see: <https://en.wikipedia.org/wiki/Chettinad#Community>, accessed on 12.6.2021)

ⁱⁱⁱ Belonging to the Indo-Mongoloid racial stock, Reangs are the second largest tribal community of Tripura. They are recognized as one of the 75 primitive tribes in India. Reangs are said to have come first from Shan State of upper Burma (now Myanmar) in different waves to the Chittagang Hill Tracts and then to Southern part of Tripura. Similarly, another group entered Tripura via Assam and Mizoram during 18th Century. Reang language "Kaubru" has affinity to Austro-Asiatic groups under Tibeto-Burman family. This tribe is famous for its semi-acrobatic ethnic dancer form known as 'Hojagiri' (see: <https://en.wikipedia.org/wiki/Reang>, accessed on 29.7.2021).

^{iv} Located within the traditional Chettinad area, Attangudi or Athangudi is a village in Sivaganga District, in Tamil Nadu, India and is mainly known for its floor tiles called as "Athangudi tiles". These durable, economical and eco-friendly tiles are handmade and have traditional patterns and design. They are made of locally-available sand, cement and naturally occurring oxides. These tiles are cast by hand and dried over time; no fuel is burnt during drying or during any other of its processes (see: <https://en.wikipedia.org/w/index.php?title=Attangudi&oldid=1019147548>, accessed on 21.4.2021).

v. Due to its ready availability in the hills and forests of Tripura (typical variety used for construction of the Reang house or Chuklanok being bambusa balcooa, local name 'borak'), it is primarily used as material for building Reang houses. Its lightweight enables it to negotiate and withstand seismic disturbances. Screens made from bamboo are interwoven and used as inlay for walls, floors and even ceilings. Their porous nature enables sufficient ventilation. The interiors of such houses are kept cool because bamboo is also a poor conductor. Bamboo leaves are used for thatching the roof of the Chuklanok. Just below the floor of such houses elevated by stilts, there is ample space for mooring a dingy or a country boat and shelter domestic animals. In a typical Chuklanok there are two verandas, one covered and the other uncovered. The roof is typically single with double slopping to prevent rainwater from accumulating (see: <https://en.wikipedia.org/wiki/Bamboo>, accessed on 25.5.2021).

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Aritra Gupta, a BArch student from VIT, Vellore, has been selected for MS in Urban and Regional Planning, University of Michigan, US Fall 2022 and is joining the programme in August 2022. Aritra is also a painter and an avid reader who is deeply interested in films and music and has been associated with several organisations working for the poor in the state of Tripura.