

## **Traditional Settlement and Dwelling Culture of Diasporic Manipuri Community in Bangladesh**

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**Abstract:** *This study intends to explore a distinct typology of vernacular architecture built by the Manipuri communities of Bangladesh. This ethnic group, which is the largest in Bangladesh, is recognized for its diverse cultural practices, including its dance form. This research aims to reveal the cultural entity of the Manipuri community, which has been embedded into their living environment and household architecture. Architectural elements adopted by them are assessed as a part of cultural symbols to gain a precise view of their ethno cultural lifestyle. This study is a documentation of the Manipuri habitat culture which aims to motivate future work on this subject. It shows that, despite a rapid socio-economic change of the context, the Manipuri habitat culture is deeply connected to their socio-cultural and religious values. The authors used an observational and ethnographical approach for this study of vernacular architecture.*

**Keywords:** *Traditional settlement, Vernacular architecture, Manipuri Community, Sylhet.*

### **1. Introduction**

In recent decades there has been a growing interest in the study of vernacular architecture. It is often called 'building without architects', based upon vernacular principles, localized knowledge, and material culture (May, 2010). This style develops through generations, shaped by indigenous knowledge and experiences. No architect is involved and very little specialized labor is required, while the planning system follows the traditional pattern. Ethnic groups tend to be closely linked to their tradition, and their cultural ties are excessively expressed through vernacular architecture (Dowsett, 1987). Eminent researchers like Amos Rapoport, Paul Oliver, Rudofsky have laid a foundation to study vernacular architecture as a socio-cultural phenomenon (Rapoport, 1969;

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Oliver, 2006; Rudofsky, 1964). Various research works have also shown that vernacular traditional knowledge can significantly contribute to modern design practices, in terms of sustainability aspects (Nguyen, 2019; Salman, 2018).

Bangladesh has been home to many ethnic communities with diverse races, languages, and cultures over time. This ethnic diversity of place and culture has also been reflected in the different vernacular architecture of the Bengal delta. The Manipuris migrated in the seventeenth century from the Indian state of Manipur (Sheram, 1996). Since the migration, they maintained their integral identity through cultural practices. Their distinct characteristics, while adapting to the local context, are remarkably reflected in their language, dress, cultural practices, rituals, and architecture. As Rapoport stated, vernacular architecture is a direct expression of society and culture (Rapoport, 1969). Therefore, Manipuri's traditional architecture, as a visual art reflects their cultural identity as an agrarian society. Tangible material culture has blended with intangible values of ethnicity and religious spirituality. Unfortunately, in the field of architecture like most traditional houses of Bangladesh, this vernacular style is under extreme threat of extinction.

This research is a preliminary step to reveal the significance of their cultural ethnicity through traditional architectural expressions. The objective of this research was to determine the architectural, cultural, and technological significance of vernacular households of the Manipuri community. The authors tried to explore, to what extent their vernacular architecture retained their traditional style while adapting to the Bengal context. Besides, the authors also explained how this indigenous style has been addressing sustainability issues over the years.

## **2. The Manipuri Community In Bangladesh: History And Society**

The word 'Manipuri' originated from 'Manipur', which is a northeastern state of India (Banglapedia, 2020). Ethnologically, Manipuris are the Kuki-chin group of the Mongolian race with an Aryan mixture (Banglapedia, 2020). Most of the Manipuris belong to the 'Meitei' community, the largest ethnic group of Manipur. However, the term Manipuri is also used to refer to the 'Bishnupriya Manipuri' community, which is a group of Indo-Aryan people living in Manipur and neighboring states (Tunga, 1995).

The Bangladeshi Manipuris are diaspora communities who migrated from Manipur (Fig-1)



**Figure 1:** Location of Manipur (India) and Sylhet (Bangladesh) region.

1). Historically, Manipuri migration in Bangladesh is associated with the famous Manipur-Burmese war in the seventeenth century when thousands of Manipuris had to flee from their homes and settle in Assam and, Cachar ( India) and Bangladesh (Sheram, 1988). However, many references suggest that Manipur was in good contact with Bengal since the 13th century (Sheram, 1996). Hindu missionaries often visited Manipur to preach Hinduism in this region. During the 16th century, King Garib Nawaj declared Hinduism as a state religion by replacing the old Meitei religion, and a large number of inhabitants were converted (Ahmmed & Singh, 2006). Later the Chaitanya School of Gaudiya Vaishnavism gained immense popularity amongst the Manipuris (Devi N. P., 2017). The ideology of Gaudiya Vaishnavism made a major impact on the development of Manipuri culture by integrating traditional elements of Manipuri with the Bengali cultural practices. The Manipuris are descendants of a rich cultural legacy and religious customs. Highly inspired by the philosophy of Vaishnavism, art forms and performances show a distinctive expression of their socio-religious life. They are probably best known for their distinctive dance style, with a vibrant heritage of martial art, poetry, literature, and theater. The Manipuri Rasa dance, performed at the Rasalila festival, is incredibly graceful with its elegance and everlasting beauty. This is one of the major classical dance forms of India.

Most of the Manipuri settlements in Bangladesh are scattered in the greater Sylhet region. According to Sheraam (1996), around fifty thousand Manipuri people live in Bangladesh. Most of them live in rural areas and take up agriculture as their primary source of livelihood. Additionally, several families are engaged in handloom production. Usually, the Manipuris prefer to live together within their territory by creating a small neighborhood with 10-20 families (Ahmmed & Singh, 2006). Nearly every neighborhood includes a temple with a large Mandapa, which is an identifying characteristic of a

Manipuri village. They possess strong traditional knowledge of medicinal plants which are used for various purposes (Rana et al., 2010).

The Manipuris have a distinct style of building construction method which has evolved over time. They are strongly bonded by kinship, which regulates their social, spiritual, and family life. Even today, a joint-family is preferred to a nuclear one. Female members take part in household works and economic activities with males (Ahmmmed & Singh, 2006). Over the years, one of the major problems the Manipuris face is the loss of local character due to infiltration of non-indigenous culture. Ignorance of traditional knowledge and lack of faith in kinship are other major drawbacks.

### **1. Research Method**

The authors adopted a qualitative and observational research method to study vernacular settlements of the Manipuri community. Both building elements and their functions were analyzed as an integral part of their society. The inhabitants were studied within the spatial settings how they respond to the spatial settings, how spaces influence the functional behavior of the community.

This research was based on a site visit and an extensive survey of the study areas. Two types of survey techniques were employed; physical measured survey and semi-structured interviews. Two types of relevant information were collected which included, physical characteristics of dwellings and the perception of dwellers. The visual Vernacular Settlement and Dwelling Culture of Diasporic Manipuri Community in Bangladesh observation data were then used together with the survey data to get the holistic scenario of the settlements. Environmental settings, physical properties, spatial behavior, and cultural expressions were collected and documented with sketches, drawings, photographs, and texts. The research method conducted the following stages:

#### **3.1 Documentary Research**

First, a set of documents were collected which included; books, drawings, and photographs of the Manipuri community.

#### **3.2 Selection of The Study Area**

Most of the Manipuri population lives in rural areas. Hence, the authors selected four such study sites in the rural countryside. These are Bhanugach, Konagaon, Shongaon villages in Maulvibazar district, and Dhantila village in Sunamganj district. The authors selected 10-12 structures from each village. Over forty structures were visually assessed and photographed. Five inhabitants from each village were interviewed with a semi-structured questioner.

### **3.3 Physical Survey of Site and Structures**

Site survey and documentation of structures were carried out by a team consisting of the authors and 8 students of architecture. A settlement map was collected from Google earth technology. Individual structures were first visually observed and hand-sketched. Later, major st surveyed with hand measuring tools. A good number of photographs were taken to document architectural details, spaces, activities, and landscape elements.

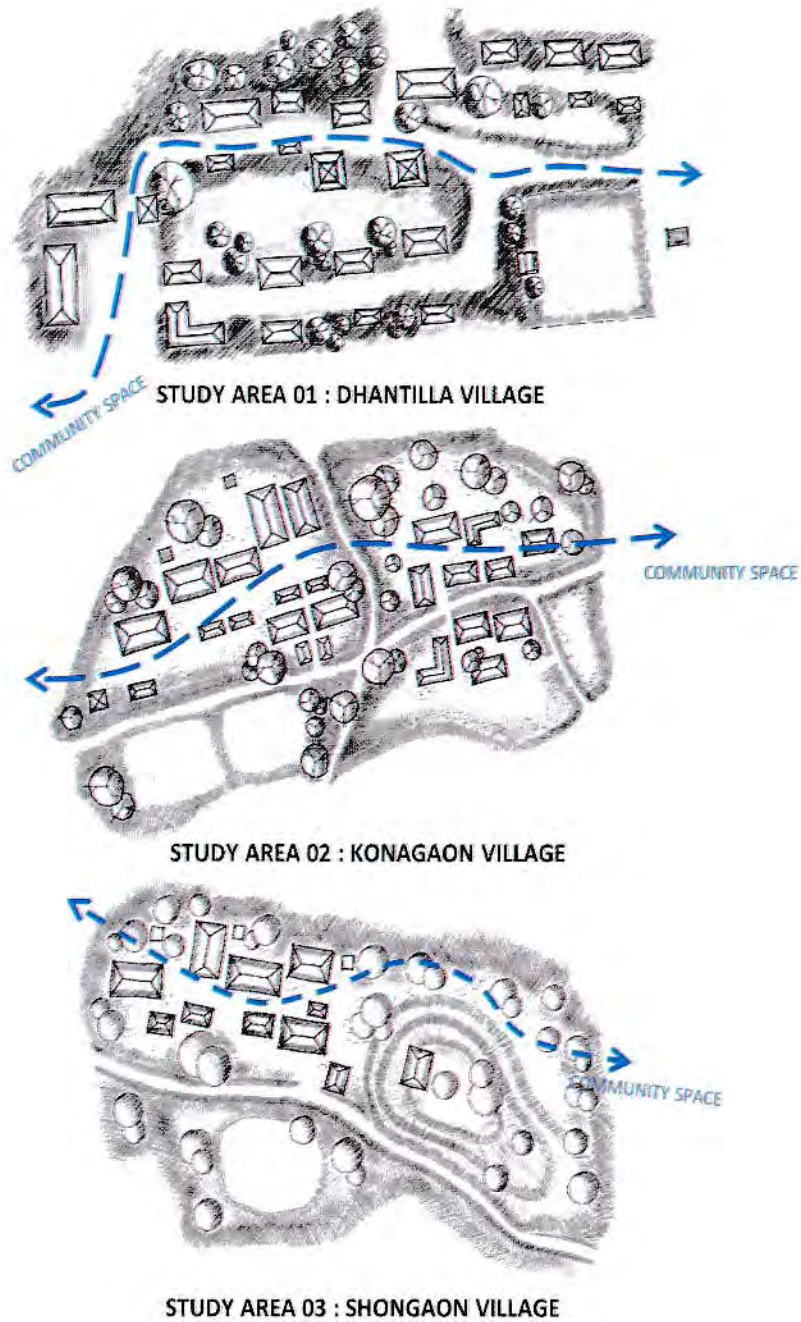
### **3.4 User Perception Investigation:**

Groat &Wang (2002) state that users' participation in the context should be the major source of information. In this research, user perception was collected through a semi-structured questionnaire. This questionnaire included settlement history, occupational information, land ownership, use pattern, climatic comfort, religious practices, sociological aspects, and other issues related to the living environment. The collected data were accumulated to understand the prevailing context on which condition this housing style emerged.

## **4. Result: Analysis of Manipuri Settlement And Architecture**

### **4.1 Settlement Planning System**

The survey results show that Bangladeshi Manipuris prefer to live in small clans comprising of 10-20 houses. Almost all settlements are built on flat terrain. Distribution of houses and open spaces are not dispersed, rather they are deliberately placed(Fig. 2). Tiny villages, locally known as Para, follow a similar set of spatial patterns and zoning systems. Most of the Paras surveyed have a linear-shaped master plan, connected parallel to the main service road. In most instances, a narrow strip of the household farmland makes a buffer between the road and the Para (Fig. 2). Houses are placed side by side facing a common cardinal direction. Inside the settlement, a linear courtyard connects every individual household of the community (Saha, 2008). This linear outdoor space gives a unique character to Manipuri Para, as this is not very usual in other local villages. This linear space functions as a community space and gives a sense of territorial association within the community. Besides, this narrow space functions as a buffer between public functions, services, and private residences (Fig.3). Overall zoning principle of a Manipuri Para shows a logical connection of different functional spaces, where individual households are tied- up with community functions. A socio-spatial hierarchy is visible from household scale to community scale.



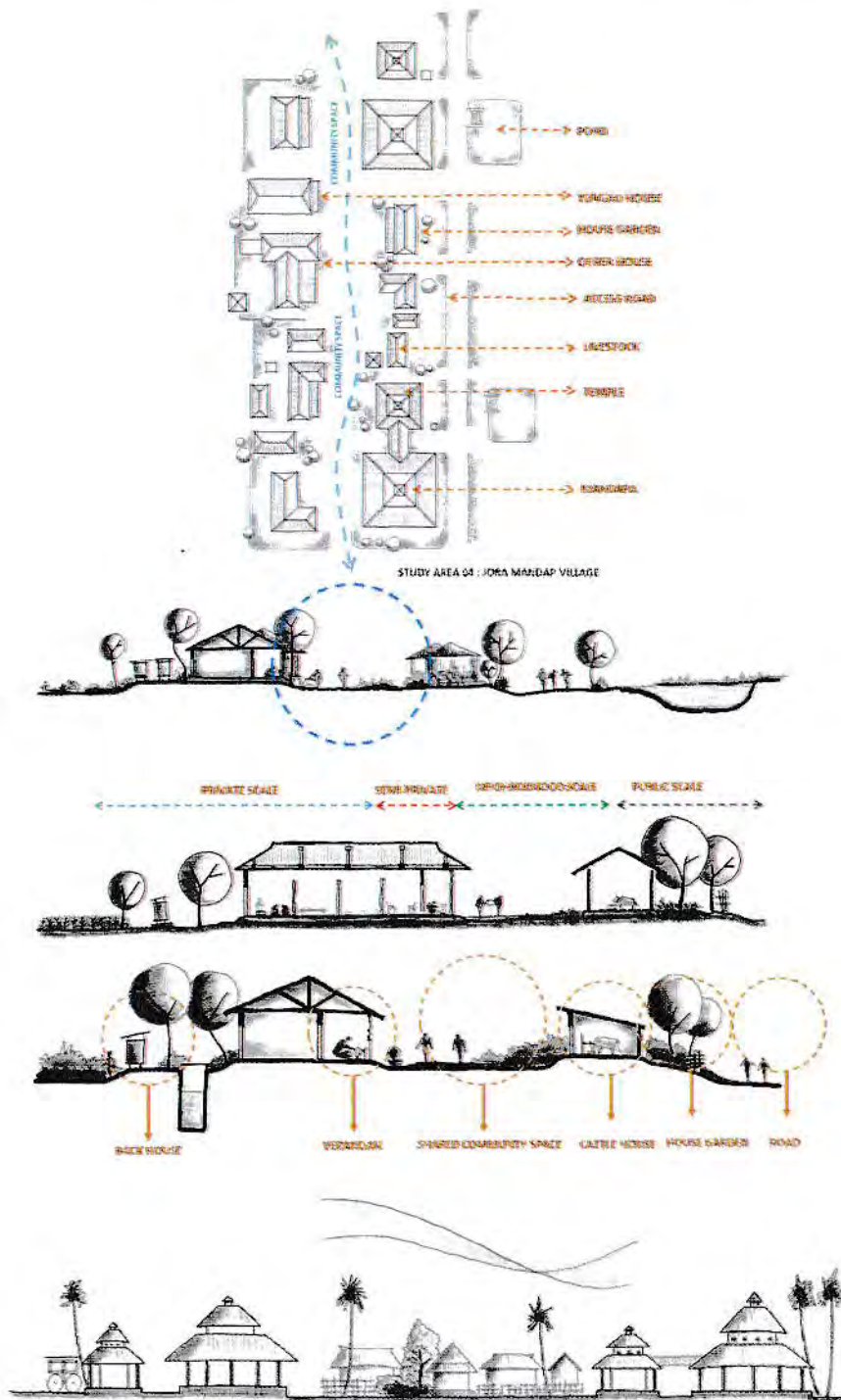
**Figure 2:** Spatial Formation of Manipuri Villages (By authors)

#### 4.2 Traditional House Form: The Yumjao Houses

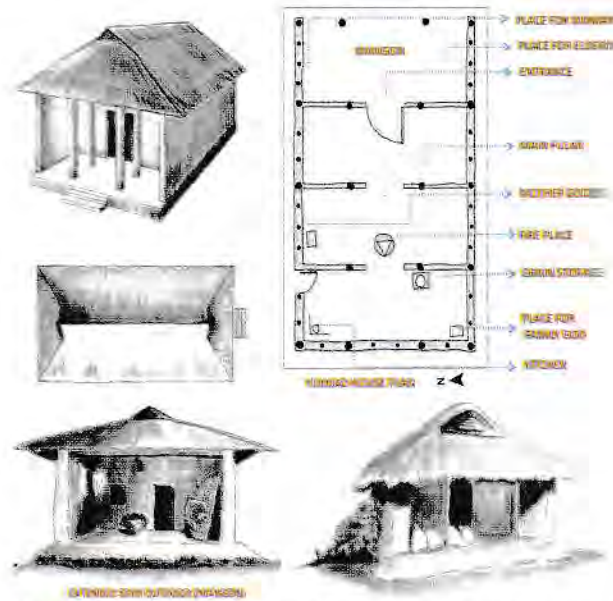
As a diaspora community, Manipuris introduced a variety of cultural elements to the Bengal context (Sheram, 1996). The Yumjao houses are a distinct typology of Manipur traditional housing which was introduced by migrant Meitei communities in Bangladesh (Fig. 4). Authors have discovered several traditional Yumjao houses in areas surveyed. Given the fact that, over the years, housing technology and material culture have changed, Manipuris are still adopting the basic principle of Yumjao houses. Thus, the Yumjao houses have become a symbol of their ethnic identity and cultural heritage in Bangladesh.

The Yumjao is a single form unit with a traditional gable end roof. The rectangular plan is enclosed by four walls and built on the center of the plot known as Yumpham (Singha, 2013). These houses strictly follow the eastward cardinal direction. This means the entry is always designed on the east with a wide semi-outdoor space. House forms are elongated in the east-west direction. According to Meitei custom, a person should face east to pray and take a bow towards the morning sun (Singha, 2013). Houses are designed so they get morning sun in their house and show respect. The house plan is usually divided into four equal parts. The entry part is a spacious semi-outdoor space called Mangon (verandah), which accommodates multiple functions; such as a sitting place for family members and guests, and temporary storage space for harvested grains. Additionally, their handloom Iyongkham, is kept on a side by some families. The authors interpret that the Manipuri Mangon is a substitute for a typical square courtyard commonly found in mainstream practice. Therefore, spacious Mangon functions as a shaded multifunctional courtyard.

As internal planning, the Yumjao houses contain a single large space inside the house. This space is a partition to create rooms for different functions and to maintain privacy. A narrow corridor connects all the rooms. So they are not entirely physically separated. Traditionally the Yumjao houses have specific guidelines to arrange the internal spaces. For example, every room dedicated to individual family members is called the 'room of father', and 'room of mother'. The bed in the bedroom should be on the northern side. The central part of the house is used for family dining. A small fireplace called Phunga is placed right in the center of the house. The Chakhumka (Kitchen) and the Sanamahi (place for family god) are located in the corners of the room at the end. Sometimes, the kitchen is separate from the main house (Singha, 2013). Livestock is kept in a separate shed. A storehouse outside the main house is used to store seasonal grains.



**Figure 3:** Elements of a Manipuri Settlement (By authors)

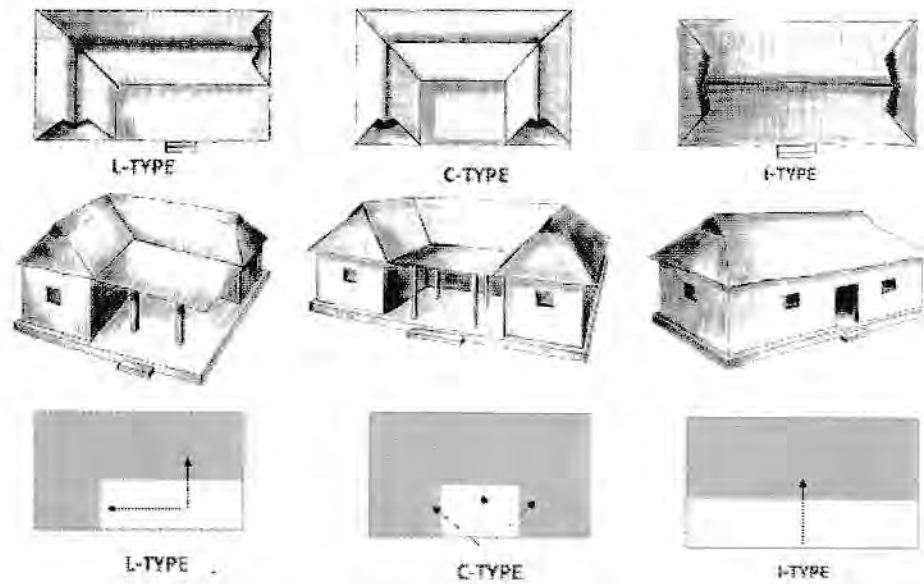


**Figure 4:** Traditional Manipuri Yumjao House form (By authors)

#### 4.3 Non-Traditional House Forms

Besides Yumjao houses, the authors identified several other typologies of residential houses built by rural Manipuris. These houses are highly influenced by typical housing styles widely practiced in the Bengal context. There is no doubt that, with time, these alternative styles have become more popular and is the mainstream practice. Based on formal patterns, these houses are classified into 3 types: I-shaped, L-shaped, and U-shaped houses (Fig. 5). These houses are planned in such a way that they solve the functional problems associated with Yumjao houses. For example, linear circulation through the house has been replaced with direct central circulation from the semi-outdoor space. These changes ensure better privacy and circulation.

Besides, most of the house plans include an attached kitchen and toilet. Alternative forms are north-south, elongated with the entry on the east. Almost every house has a small semi-outdoor verandah. Most of these alternative forms have pitched roofs. Nowadays few buildings have RCC flat roofs.



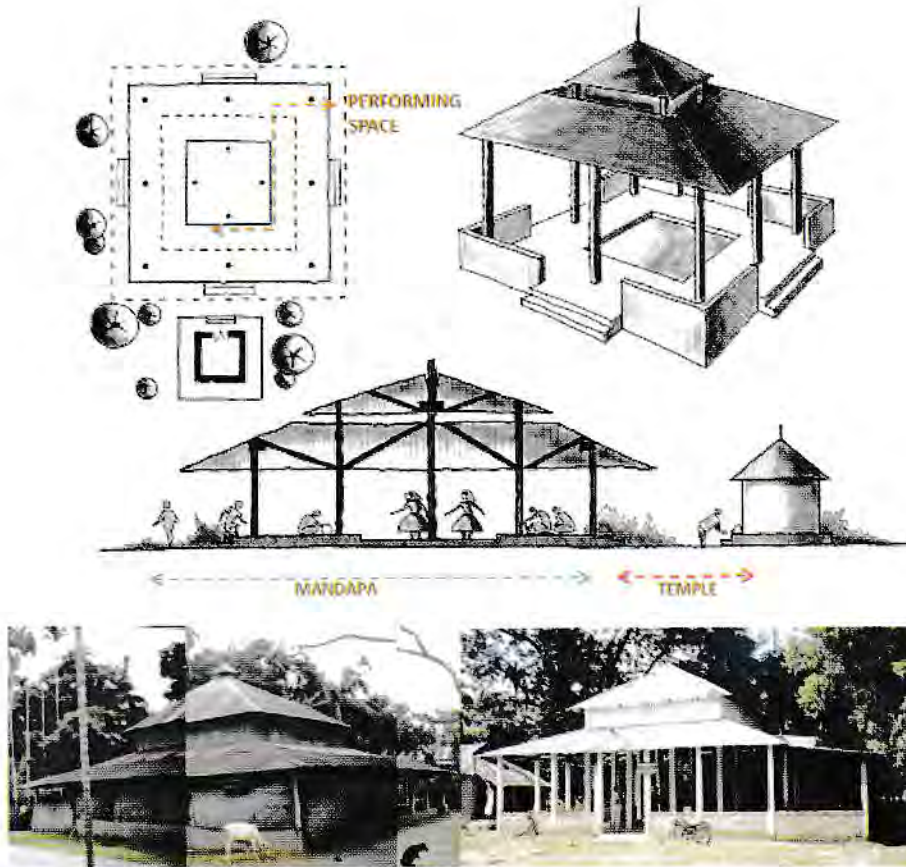
**Figure 5** Alternative house forms.(By authors)

#### **4.4 Religious House Forms: The Mandapa and Temple**

Mandapa is the most iconic element of a Manipuri settlement, which gives a unique cultural identity to the community (Fig 6). Historically, the Mandapa is an essential part of Hindu temple architecture. This is a pillared pavilion hall to accommodate ritual performances or dances (Brown, 2010) The Mandapa culture prevails in Manipur from the ancient ages, used to perform Nata Kirtana ritual. The Mandapa is square-shaped, with pillars holding a traditional Chala type pitch roof. Pillars are made of bricks, wood, or bamboo. The roof is often made with reeds or metal sheets. The central part of a Mandapa is the Mandali where worshipping deity and offerings are placed during festivals (Basu, 2018). The Nata Kirtnan performance is placed in this space. The floor is flat and usually made of mud. The authors have identified two types of Mandapa, such as the 8 pillars pavilion and the 12 pillars type. The 8 pillars Mandapa is a simple, square-plan structure commonly used to accommodate social and ritual performances. However, 12 pillar pavilions are a special one to accommodate Rasa Lila and Nata Kirtana. This type can be seen in Brahmin Manipuri villages where Rasa festivals are often taking place.

The Mandapa is used as the religious and cultural festival venue as well as the venue for community gatherings like weddings, rice ceremony and thread ceremonies (Basu, 2018). Besides, Mandapa is often used for the schooling of dancing and singing. The Manipuri temples are much smaller in shape compared to the Mandapa. Temples are built south facing and on the northern side of the

Mandapa. It contains a square chamber and a semi-outdoor ambulatory surrounding the chamber (Saha, 2008). The deity of God Radha-Krishna is placed inside the chamber.



#### **4.5 Construction Technology and Material Culture**

For the last 500 years, Manipuris have developed their method of building construction known as Yumsharol (Singha, 2013). Yumsharol is a written manuscript describing traditional housing techniques and planning principles. The houses are made by local inhabitants, the owner often employs skilled craftsmen to assist the construction process. Traditional Manipuri architecture is lightweight and made from easily available materials ( Fig 7). Structurally, Manipuri houses follow the principles of post-lintel techniques (Fig. 7).The weight of the elongated roof is carried by purlins and rafters made of bamboo and the bamboo frame is covered with straw. In Yumjao house, thick parallel mud walls and bamboo pillars carry the load of the structure. The major construction material is bamboo, straw, mud, and straw. The foundation is made

of mud. For wall construction, they use bamboo, mud, cow dung, and rice husk. The wall making process includes several stages such as; building the bamboo wall, covering it with a paste made by mixing mud, cow dung, and rice husk (Kangjam, 2020). Once it is dried, the walls are painted white. A hemp type plant Khakap is often widely used as a fiber for the walls. Khakap is used as a binder to strengthen the thick mud walls. However, over the years, traditional building construction techniques have been replaced by modern materials (Fig .7). A change in material culture is visible in modern houses. The mud walls have been replaced with brick walls, bamboo posts with narrow concrete columns. Corrugated iron (C.I.) sheets are commonly used for roofs. Brick, cement, and sand have emerged as new building materials.



#### **4.6 Climatic Responsiveness**

Manipuri vernacular houses give due respect to passive and natural environment control measures. Construction techniques and material culture show a suitable response to the microclimate of the Sylhet region, which is classified as a tropical climatic zone with significant rainfall during most months. (Climate Data, 2020). A short dry season has little effect on micro-climate. In response to extensive rainfall, compact house plans and sloped roofs are very common in almost every prevailing vernacular architecture in this region. With no exception, Manipuri houses are featured with compact plans and large slopped roofs covering the entire form. The roofs are extended to cover most of the exposed mud wall surface. This extension protects the outer surface both from heat and rain.

Moreover, Sylhet is vulnerable to earthquakes. Construction techniques like bamboo framing, lightweight built materials, and post lintel structural systems have helped Manipuri houses to secure subsequent seismic resilience. The parallel thick walls in a Yumjao house provides excellent support to uphold a heavy elongated roof. For adequate ventilation, windows are set in a position such that they get sufficient wind flow. A triangular-shaped bamboo Jali is used for ventilation in the gable ends. This technique allows hot air to rise and escape from the top. . For natural lighting, most houses are oriented to receive enough sunlight.

The Manipuri Mangon (large verandah with extra depth) is an excellent example of vernacular climatic design in warm humid conditions. It provides enough room for grain storage and other activities. The roof height is extended in a way that allows enough sunlight to enter. The deep shaded verandah also gives enough barrier against driving rain. Furthermore, walls are good examples of passive thermal design. Walls are made of bamboo strips and Khakap (dried reed plant), with mud plastering on the surface (Saha, 2008). This trio works as a good insulator against heat. Old Yumjao houses have few climatic problems. Internal rooms do not have cross ventilation due to the linear layout. The thick mud walls prevent adequate natural light inside rooms. The authors have found several cases where untreated mud walls and floor have caused dampness due to lack of maintenance.

#### **4.7 Vegetation, Green Areas and Water Sources**

. In Bangladesh, majority of Manipuri population lives in rural or suburban areas (Ahmed & Singh, 2006). They tend to build a habitat near a source of natural water, preferably a lake or river. However, in case there is no source of water, the Manipuris usually dig large community ponds. Ponds are also a key element for ritual purposes. Vegetation is an important part of Manipuri settlements. Usually, low height green fencing helps to mark individual household boundaries inside community territory. A series of planted ? trees are used to define the demarcation of the community. These tree boundaries prevent soil erosion caused by excessive rainfall. Almost every family has a small piece of home garden to grow seasonal vegetables. For architectural construction, a dried reed plant is extensively used with bamboo to make walls. The Manipuris are very skilled in the use of various medicinal plants that they harvest from nearby forests. Besides, sacred groves or sacred woods have special religious importance in Manipuri culture (Khumbongmayum et al., 2005). They are one of the earliest champions of community conservation of nature. Most of the Manipuri Shiva temples have ancient trees, which are worshipped by the community.

### **5. Discussion: Interpretation of the Manipuri Vernacular Practice**

After documentation and careful investigation of survey results, the authors have identified several factors that give a unique identity to the Manipuri dwelling culture. Vernacular architecture of the Bangladeshi Manipuri community is a good example of how traditions continue to embrace modernity and social values which reflects through architecture, form, and space. At this point, the authors seek to further interpret the dwelling culture of Manipuri people by defining socio-cultural, socio-religious, environmental facets.



(A) SITTING AND CRAFTING INSIDE VERANDAH



(B) CRAFTING AND AGRICULTURAL ACTIVITIES INSIDE MANDAPA



(c) SHARED SPACE AND AGRICULTURAL ACTIVITIES IN THE COURTYARD

### **5.1 Social Aspects of Manipuri Dwelling Culture**

The formation of classical Manipuri settlement does not follow the mainstream courtyard type pattern of Bangladeshi houses. Rather than the individual square courtyard, individual courtyards are jointly shared and form a linear pattern of common outdoor space ( Fig.8). This community space gives a sense of territory and clan identity. Spatial organization, and? distribution of functional forms shows a logical character of an agrarian society. Linear courtyard for post-harvest crop processing, cattle houses, granaries, seed storage is common elements of every settlement. The large semi-outdoor pavilion-like space in Mandapa represents the social inclusion of a traditional ethnic community.



**Figure 9:** Religious & cultural uses of Mandapa (by authors)

The Manipuri household is a good example of how family structure and values can influence internal planning. The Yumjao house plan is inspired by the joint family concept where every family member has an equal allocation of space. A dedicated position for the elderly and woman is placed in the Mangon, semi-outdoor space. As a family sitting space, the Mangon also acts as a buffer between a private domain and a community domain.

One of the major facets of the Manipuris is their history of struggle as a diasporic community, and their tendency to maintain their originality while adopting Bengal culture. This dual identity is also reflected in its architecture. The Bangladeshi Manipuri architecture displays signs of "creolization", incorporating new cultural elements into the mix of its practices, values, and meanings (Little, 2020). Alternative home plans, square courtyards, small houses, house orientation are examples of Bengal's influence on the traditional Manipuri habitat.

### **5.2 Cultural Aspects of Manipuri Dwellings**

The indigenous traditional knowledge system is a major cultural aspect that every ethnic community possesses. Over the years ethnic communities have preserved their understanding, rooted in their cultural practices through cultural expressions

(Bruchac, 2014). Vernacular architecture is a repository of traditional knowledge of certain ethnic communities, where cultural values are preserved in their vernacular technology, material culture and aesthetic expression. The Manipuris are preserving their housing culture through a written manuscript Yumsarol (yum = house, sha = construct, rol = method) (Devi, 2017). Few ethnic communities in the world have their design manuscript in a written form. The architectural manual has great importance in terms of literature as it contains several vernacular taxonomies of building construction in the Meitei language.

The Mandapa holds great significance as it gives a unique cultural identity to the Manipuri community. Throughout the year, the Mandapa is used as a learning and practice ground for various performing arts like dancing, singing, community theatre (fig .9), and for religious education and craft training. The Manipuri house forms are an excellent source of both tangible and intangible cultural values.

### **5.3 House Form as a Religious Symbol**

Manipuri vernacular architecture possesses significant importance from a socio-religious point of view. Here, the Vaishnavism faith of common Manipuris' has been manifested to architectural form and function. Simplicity in design, semi-outdoor spaces with plenty of light and air, absence of unnecessary details, humanitarian scale entails a transformation of Vaishnavism spirit into form and space. The functionality of form and spaces, the true expression of materials metaphorically symbolizes the life sketch of an ideal Manipuri Vaishnava.

Moreover, in Manipuri culture, household elements are deeply connected with spiritual beliefs and mythical stories. Based on the ancient sect, every Yumjao house is occupied by God Sanamahi (Singha, 2013). So a dedicated place, preferably a corner for worshipping the family God, is an unavoidable part of the house plan. There is a custom to place a small fireplace called Phunga in the middle of the house to create smoke and fire. It is believed that the fire should be preserved with husk and other material as Imoinu, The Goddess of wealth lives inside the burning Phunga. Thus, houses have become a direct expression of ritual practices and spiritual beliefs. However, modern house plans no longer include these features, but building culture is still an integral part of religious practice. For example, even now, a ritual ceremony called Sang-kaba is arranged after constructing a new house (Devi, 2017). Through this festival, the house owners usually throw betel nuts into the fireplace of a newly constructed house by chanting Mantras. Table 1 shows how social, cultural, religious aspects have influenced Manipuri architecture.

**Table 1:** Social, cultural, religious dimension of Manipuri habitat and their implication to architecture

Values /custom/beliefs		Spatial pattern & Architectural Morphology
Aspects		
Social aspects	Community identity	<ul style="list-style-type: none"> <li>• Compact formation of house forms inside community</li> <li>• Sense of territory defined by community spaces</li> <li>• Representation of the clan community</li> <li>• Compact planning represent joint family values</li> <li>• Dedicated sitting space for the elderly on the verandah</li> <li>• Dedicated Space for the woman on verandah</li> <li>• Hierarchy of outdoor, semi outdoor, indoor spaces</li> <li>• Linear and central spaces</li> </ul>
	Family values	
	Age & Gender	
	Social Identity	
	Social interaction	
	Order and discipline	
Cultural aspects	Traditional knowledge system	<ul style="list-style-type: none"> <li>• Traditional Yumjao house form as symbol of housing culture.</li> <li>• Emphasis on performing spaces.</li> <li>• Space for crafting</li> <li>• Agricultural components like cattle house, granaries</li> <li>• Mandapa space serves as a traditional school for dancing, crafting.</li> <li>• Yumsarol manuscript as an accident guide for housing</li> <li>• Vernacular taxonomy of construction techniques emphasizes the richness of language culture.</li> </ul>
	Cultural Practices	
	Cultural education	
	Crafts making	
Religious Symbol	Symbol	<ul style="list-style-type: none"> <li>• Simplicity &amp; spirituality of space and form</li> <li>• Building oriented on the east to respect Sun God.</li> <li>• Presence of Mandapa and temple in every settlement</li> <li>• Water-body as a sense of purification</li> <li>• Religious festival on the inauguration of a new building</li> <li>• A dedicated place for God Sanamahi iIn every house.</li> <li>• Religious festival after new house construction</li> <li>• Orientation toward East direction</li> </ul>
	Religious Philosophy	
	Rules & Customs	
	Myth	
	Social practice	

#### 5.4 Environmental Sustainability of Manipuri Settlement

Traditional architecture around the world is a significant source of knowledge of environmental sustainability. The concept of vernacular buildings is based upon climatic principles and sustainable use of resources. With no exception, Bangladesh's Manipuri vernacular architecture could be an excellent source of knowledge for architects of today. After migration, Manipuris, through their architectural design, adapted a range of place-based solutions to cope with the local context. For example, the compactness of settlement plans and house plans shows the intention towards efficient utilization of land and building ecology. Buildings demonstrate effective techniques for passive solar control by selecting sustainable materials, maintaining the orientation of the building, and applying shading devices. Jali typehigh window is used to ventilate the interior space. Bamboo post lintel framed construction gives protection against earthquakes.

Extended roof spaces, wide semi-outdoor areas provide protection against driving rain and allow light and air. Multifunctional, open spaces are one of the main strategies of climate adaptation. Mandapa, Mangon, and the outer court are multifunctional spaces that accommodate various social, cultural, spiritual activities ensuring minimum resource consumption. Culturally, Manipuris prefer to maintain a clean and hygiene lifestyle, so the waste management system is very well managed. Manipuris use few traditional techniques for house maintenance like using smoke to kill insects that can harm bamboo or wooden structures. This is also a good example of using traditional knowledge for preventive conservation. Table: 2 shows the environmental aspects of traditional Manipuri architecture.

**Table 2:** Environmental Consideration in Manipuri Settlement and Architecture

<b>Environmental Aspects</b>	<b>Spatial pattern &amp; Architectural Morphology</b>
Land utilization	<ul style="list-style-type: none"><li>• Compact planning of the settlement</li><li>• Compact planning of households</li></ul>
Passive Thermal solution	<ul style="list-style-type: none"><li>• Walls made out of insulating materials</li><li>• Higher room height</li><li>• Extended roof for better shading</li><li>• Mud floors</li></ul>
Ventilation & wind flow	<ul style="list-style-type: none"><li>• Plenty of semi-outdoor spaces</li><li>• High gable window on the gable end for ventilation</li><li>• Perforated bamboo fencing</li></ul>
Earthquake resilience	<ul style="list-style-type: none"><li>• Post lintel structural principle</li><li>• Walls of lightweight material</li><li>• Single storied construction</li><li>• Thick mud wall to carry lateral loads</li></ul>
Natural lighting	<ul style="list-style-type: none"><li>• Orientation for maximizing natural light</li><li>• Increased height of semi-outdoor for enough light from the East.</li></ul>
Water and green	<ul style="list-style-type: none"><li>• Large and extended slopped roof for precipitation control</li><li>• Spacious semi-outdoor for controlling driving rain.</li><li>• Peripheral green vegetation to prevent land erosion</li></ul>
Consumption of resources	<ul style="list-style-type: none"><li>• Multi functionalism of space</li><li>• Use of locally available materials</li><li>• Concept of shared spaces and resources.</li><li>• Good waste management system</li></ul>
Adaptation to Geography	<ul style="list-style-type: none"><li>• Adapted to flat land topography.</li></ul>
Sanitation Consideration	<ul style="list-style-type: none"><li>• Natural tendency for being clean</li><li>• Outside bath room and toilet</li><li>• Traditional waste collection and disposal system.</li></ul>

## **6. CONCLUSION**

Through this study, the authors attempted several interpretations of how the Bangladeshi Manipuri community's socio-cultural, socio-religious, socio-environmental values were translated into their architecture. This paper uses a systematic approach to examine the interrelationships between communities and buildings. After close analysis of study sites, this is very clear that Manipuri vernacular style in Bangladesh is a geo-cultural fusion of North East Bangladesh and India. As a diasporic vernacular style, the architectural styles have adapted many elements from the Bengal context but still retained their ethnic values. Clan identity and social kinship are major determinants of spatial organization and architectural morphology. From a religious viewpoint, Manipuri households represent remnants of both the Vaishnavite and the ancient religious belief in Apokpa. Spaces are distributed in family, community domains, and culturally functional ideologies. Multiple functional spaces, shared community spaces, austerity in a formal expression are major characteristics of the habitats. From environmental concern, sensible climatic innovations and minimum consumption of resources addsustainable value to this vernacular practice. The overall approach is to make a balance between human needs and environmental conservation. Sustainability as a way of life in Manipuri habitat has made it an important part of their socio-cultural identity. The authors also identify that, the Mandapashave immense significance in terms of practicing and preserving intangible cultural heritage. However, traditional buildings are becoming extremely scarce now.. So, adequate steps need to be taken to preserve this unique vernacular heritage. Many Manipuri rural communities live next to natural site-seeing spots such as lakes, tea estates, reserve forests which attract tourists all through the years. Sustainable tourism planning by including Manipuri heritage (both tangible and intangible) can improve the socio-economic condition of this population. It is a fundamental right for every ethnic community to be treated with sensibility by the state so that their cultural identity and traditional knowledge may be preserved for upcoming generations.

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