HOW VERNACULAR ARCHITECTURE AFFECTS THE GLOBAL: LESSONS FROM BANGLADESH

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How Vernacular Architecture Affects the Global: Lessons from Bangladesh

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Abstract

Vernacular architecture is a very adaptable and reasonable way to address human needs, which seems to be largely forgotten in contemporary architecture.[1] For thousands of years, vernacular architecture has been experiencing limitations that are emotionally associated with its aesthetic variety, self-regulating construction, and invention and the adaptation to its surroundings. Moreover, vernacular's authenticity describes the shared culture of people in a specific geographic region, including their language, heritage, religion, and customs to show the importance of its identity and existence in historical context. Despite experiencing negative challenges, the adaptation of building forms obtained from vernacular architecture have gained interest among the contemporary designers as they have been proven to be energy efficient and highly sustainable. Furthermore, due to the increasing pressure of recent global environmental problems, this trend has shifted logically in another way.

Over the time, how many vernacular buildings have been lost from a community or a place? In addition, how does vernacular architecture respond to particular conditions in this contemporary era that affect people and places of all regions? To answer these questions, this paper explores the current conditions of vernacular buildings in Bangladesh and observes their existing role in the society and community. It studies the theories and practices of contemporary vernacular that are shaping and examining the community critically, which is also intensely related to its landscape. In the era of rapid technological advancement and massive construction, there is still much to learn from the cumulative knowledge embedded in traditional structures. Additionally, there is a need to expand and discover more about this neglected part of architecture and to the world about its creation and ethnicity. To understand the recognition across cultures worldwide of vernacular architecture and why the need for the contemporary building practices to learn from the vernacular is needed, this study surveys comprehensively Bangladeshi heritage studies and its regional vernacular practices. Working at multiple scale, the thesis will critically examine the low-tech methods of built forms used in vernacular architecture that can be used to create buildings and environments well-suited to local climate and culture and which need intervention. In this way, the project will put together different contemporary development strategies into the design, which will not only increase the quality of life for the community but also significantly enhance the cultural values in the global platform.

Keywords: Vernacular Architecture, Contemporary, Region, Tradition, Culture, Community

Introduction

"Awareness of the past is essential to the maintenance of purpose in life. Without it we would lack all sense of continuity, all apprehension of causality, all knowledge of our own identity. What previous groups identify and sanctify as their pasts become historical evidence about themselves." - D.W. Meinig[2]

The importance of local influences on the lifestyle of people of a region and its past historical culture significantly express the existence of that region's identity. The adaptation of cultural and natural arrangement is expressively distinct and directly relates to a region's environment, people, local context, and local technology. Living in a culture that has its own deeply rooted heritage, there is always a sense of belonging to the community and society from the past, present, and future; it gives the society values, meanings, customs, and beliefs, which shapes the thinking process of an individual. Preserving cultural identity supports individuals and communities in a balanced, unchanging, persistent frame of reference and meaning.

To cherish something old or venerable, the most common way of protecting and preserving culture is by discontinuing deterioration and extending the culture's life span as long as possible. However, cultural preservation does not always support cultural longevity and often coincides and conflicts with esthetic, environmental or practical values. Fundamentally, cultural preservation relates to history and societal values of a specific region, which is influenced by the physical appearance, ancestral origin in a society, and demonstrates shared identities among communities. Coming from Bangladesh, a country with a diverse cultural experience in its religion, tradition, heritage, and history, I have realized that most of the time the values are connected to not only a place but also the social development of that place. Diverse cultural experiences bring together multiple cultural identities among communities that integrate with a site context and natural landscape consistent with social changes. My cultural experience may be unique to my region and my country, however diverse cultural experiences reflect all communities within our world. These distinct cultural experiences correspond with regionalism, that strives to sustain and refine successful design strategies, that are culturally embedded within a region, that emanate from the landscape, and that speak to the values, customs, and needs of its inhabitants.[3] Additionally, the preservation of a community's cultural experiences is reflected in the architectural fabric of a region. If local regions are affected by specific traditional cultural building fabric that is considered vernacular to a place, in the contemporary era of globalization, can vernacular architecture inform and influence the particular changings of social and environmental conditions? As the prime case study, this paper discusses vernacular architecture in Bangladesh as a way to consider the importance of cultural and architectural heritage. Furthermore, in an increasingly interconnected, yet independent world, the focus on a vernacular building's life cycle that responds to environmental and cultural contexts concerns the ability for the preservation of the architectural fabric of a place, of a region.

Methodology

Through analyzing the current models of vernacular buildings in Bangladesh as a standard form, reviewing scholarly works of architects, theorists, and critics, and observing current building conditions and the architect's role in local communities, suggests that is why a vigorous respect for vernacular architecture is needed. Moreover, in rural/local regions the local level of particular vernacular conditions is being threatened. A consideration of critical regionalism through the work of Alexander Tzonis and Liane Lefaivre ("Why Critical Regionalism Today?")[4], Kingston Wm. Heath ("Vernacular Architecture and Regional Design: Cultural Process and Environmental Response")[5], and the architectural precedents such as the present crisis of identity in Indian architecture[6] is considered to best understand the experience of the current local building practices in Bangladesh. To consider contemporary ways of design and construction that learns from vernacular and honors the traditions of local communities, projects such as Umubanu primary school in Rwanda, Käpäcläjui Training Center in Costa Rica, and Library Kressbronn in Germany are discussed. It is important to state that the goal is not to carry out a thoroughly detailed survey of vernacular architecture but to develop a sense of the designers of these three examples drawn from the local material culture and the methodology of construction. To understand

the global phenomena of vernacular architecture and why the need for the contemporary architecture to learn from the vernacular is needed, this study surveys comprehensively Bangladeshi heritage studies and its regional vernacular practices. Critiques of this type of building design and construction by outside sources and examples from vernacular architecture helps and supports the insight necessary to understand the potential of an environmentally responsive vernacular building's ability to form a closer community by educating and integrating expertise and work as a hub for neighboring regions.

Vernacular and Critical Regionalism

The term "Vernacular" means native or unique to s specific place, produced without the need for imported components and processes.[7] According to Paul Oliver, traditional vernacular buildings are a rich cultural resource: highly complex objects that can express multiple meanings through form and decoration, enclose inhabitable space, and frame human ritual and the performances of daily life.[8] Vernacular results from the locality of a specific region with a distinct regional identity. This specific locality is the reflection of its history, culture, tradition, climate, geography, topography, and lifestyle. It is the simplest form of addressing human needs by embracing

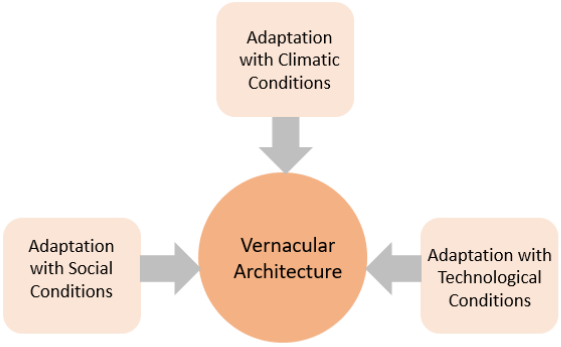


Diagram 1: Conceptual Diagrams of Vernacular Architecture from Paul Oliver's point of view, produced by author.

regionalism that engages its particular geographical and cultural circumstances in deliberate, subtle, and vaguely politicized ways.[9] Vernacular architecture addresses the issues of design and materials, at the same time it follows the common form of building in a given place and time. Therefore, it must encompass easily available materials both handmade and industrially produced, depending on the particular circumstances in this contemporary world. On the other hand, regionalism is concerned with differences between rural and urban settings, cosmopolitan progressivism, and sophistication versus rural tradition and conservatism. It also provides a method that attempts to understand buildings using the contextual forces which surround their production. According to Kingston Wm. Heath, critical regionalism designates a form of architectural practice that embraces modern/contemporary architecture critically for its universal unifying qualities while simultaneously responding to social, cultural, and climatic contexts of the region in which it is built.[10] In addition, critical regionalism is concerned with how a set of problems are dealt with, which tend to be more about design attitude rather than location; critical regionalism concerns fragmentation and alienation versus community; mobility versus stability; technology and industry over and against traditional approach, where new/ contemporary design is not necessarily a good idea to work with.[11] Professional architects may disregard local and vernacular ways of building. By doing so, the social structure, often constructed on traditional values based on local design attitudes and methods, as well

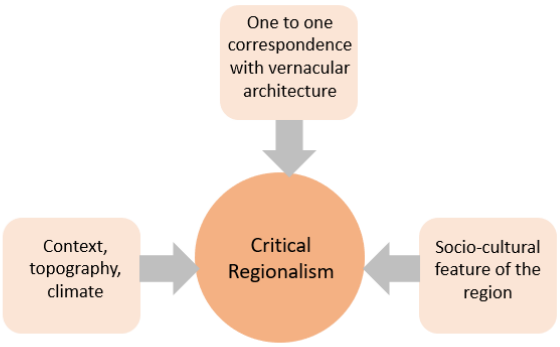


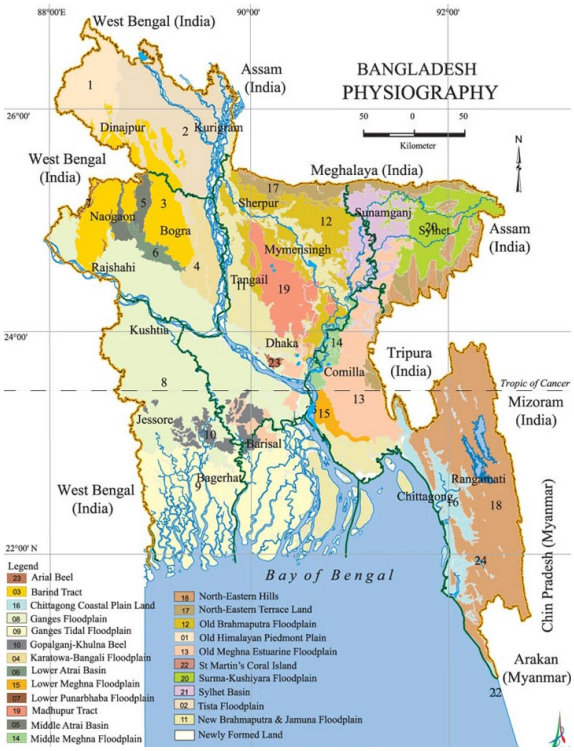
Diagram 2: Conceptual Diagrams of Critical Regionalism from scholar's point of view, produced by author.

as custom and sensibilities are ignored. Every country, every area has a unique culture and taste, and architecture cannot be separated from its context. Architects and professionals should be concerned about the vernacular, local culture, and their influence on

contemporary architecture instead of other countries' language to design projects.

The way critical regionalism formulates architecture within its universal integrated skills, at the same time responding to socio-cultural context of the region, there will be always a need to construct social settings differently without forgetting the effect of it. For example, participation of the local constellation of ideas could emphasize the construction processes that relate social activity to ecological conditions. Therefore, the approach could be to regenerate through integrated production and reproduction of independent and life enhancing practices. Finally, it is clear that vernacular architecture and its language speak about a set of objects that describes the common buildings of a given place and time, a collection of buildings or vernacular landscapes, which are the products of a particular community, and last but not the least, an approach to studying buildings as cultural manifestations.[12] These concepts significantly offer a useful way in the world of ordinary buildings and continuously reappear as analysis begins and interpretations evolve.

Topography and Climatic Context in Bangladesh



Bangladesh has a wide variety of vernacular architecture based on the topography and climatic conditions of the region. Here, vernacular buildings follow traditional practice and patterns in indigenous styles that is constructed from locally available materials related to the native context. Although Bangladesh is a small country, it has significant topographic diversity, which includes three distinctive features: (a) a broad muddy plain land that concern to frequent flooding, (b) a slightly elevated terrace land, and (c) a small hilly and upland area drained by flashy rivers.[13] Moreover, the topography in Bangladesh is roughly 80% flat land, 12% hilly areas, and 8% terrace land. The southern part has a highly irregular coastline of about 600km that is ruptured by rivers and canals flowing into the Bay of Bengal. The hilly areas of the southeastern region of Chittagong, the northeastern hills of Sylhet and highlands in north and northwest are of low elevations. The settlement pattern near the river side is linear, which are also found in the spring lines of the Chittagong hill tracts. On the other hand, clustered or scattered settlements are found in

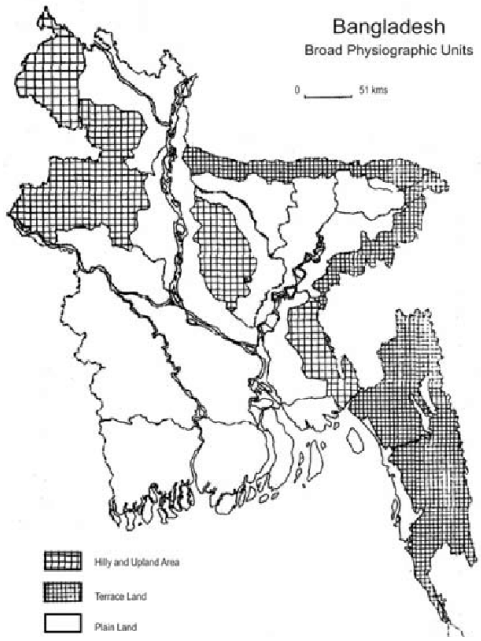


Fig 1: Bangladesh Broad Physiographic Unites, Source: Google.

the rest of the country. Climatic context in Bangladesh is different throughout the year. It has a subtropical monsoon climate featured by wide seasonal variations in rainfall, moderately warm temperatures, and high humidity. Due to the warm humid climate, it is important to have thermal comfort in built environment and protection from rain in the design. In terms of eco-adaptability and sustainability, this paper tries to explore traditional vernacular housing technology, local's interpretation regarding environmental behavior, and economic factors of building construction in Bangladesh.[14]

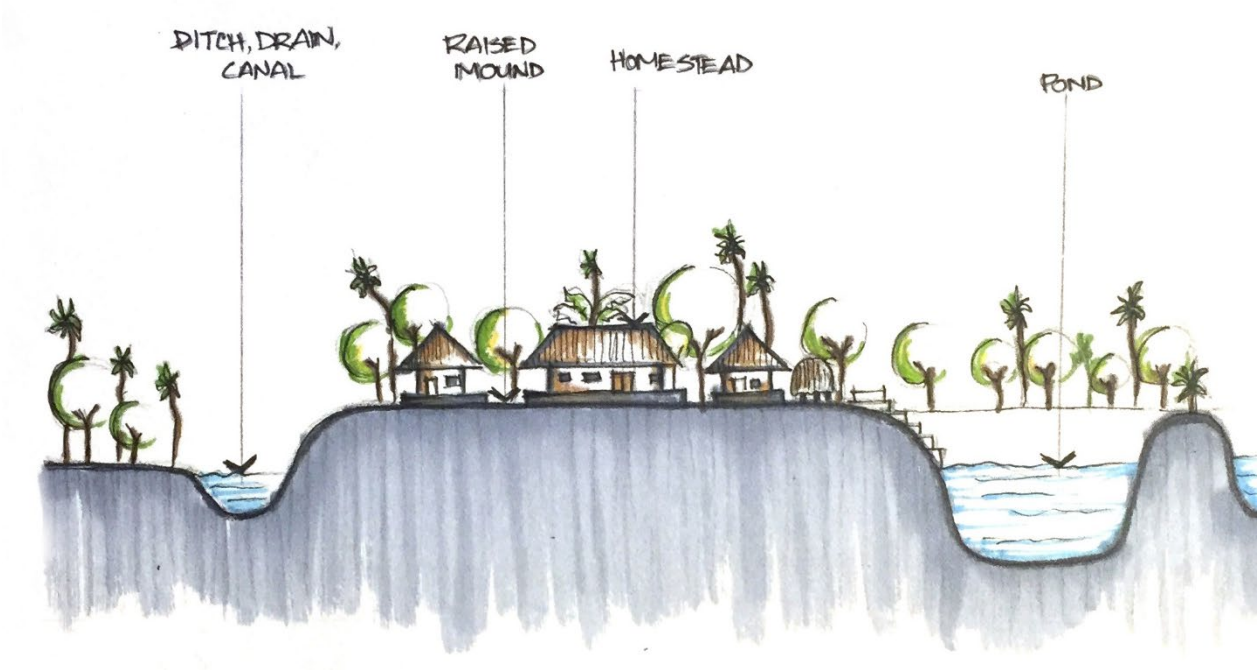


Fig 2: Rural settlement and built form in Bangladesh, Source: Drawn by author.

About 76% of the rural settlement in Bangladesh are lying on the floodplains area; these settlements are two types: elongated-linear and amorphous; both of these settlements are built on raised or high platform/land above the annual flood level. Moreover, the elongated linear settlement is usually constructed on high land alongside river or water channels. Furthermore, the amorphous settlement has clustered or scattered structures on the raised platform that are spread throughout the parcel. To battle against the annual flooding, the settlements are built on elevated platform. Where high land is not available, earth obtained from excavating ponds or channels is raised into a mound about 2 to 3 meters higher than the surrounding water level, on which a homestead or BARI is established.[15] This kind of homestead or BARI begins as an individual household and eventually develops into a settlement of several dwelling units and additional structures of inter-generational households, which is known as GHORS. As the settlement gradually expands, more and more earth is added to extend the mound and therefore, the settlements established on raising mounds that works as an island during rainy season.

Typologies in House Form: Bangladesh

There are different types of house forms that have seen in the different physiographic divisions of the country, which are houses in the plain land categorized by floodplain, houses on the terrace land, and houses in the hilly and upland areas.

Plain Land: Houses that are located in plain land are more affected to flood. Moreover, the floodplain means comparatively flat lands adjacent to that formed by alleviating rivers which is subject to overflow. In this type of land, houses are built in an open planning pattern in response to the warm humid climate. This type of houses can be found at some parts

of Dhaka, Gazipur, Narayanganj, Tangail, Joydevpur, Sunamganj, Mymensingh, Kushtia, Jessore, and Cox's bazar.

The house has a separated rectangular form of living zones that extended to east-west direction and arranged around a square or

Fig 3: Housing unit at Plain Land; Source: Md. Nawrose Fatemi and Nabanita Islam.

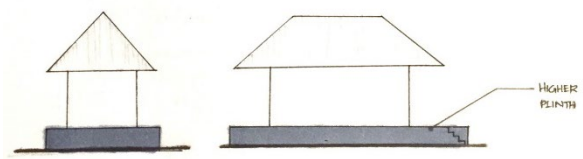


Fig 4: Settlement pattern & Topography showing higher plinth, Plain Land; Source: Drawn by author.

rectangular shaped courtyard. This type of houses has two types of roofs: Chouchala that means the roof has four roofs together and Dochala that means there are two roofs in total. Building is planned in a scattered way with large, free spaces between them to allow air circulation that also provides ventilation for cooling.

Analysis: The topography of this area shows that the landform is relatively at a lower elevation that is shallowly flooded. Most of the ridges and all the basins of this floodplain region are flooded more than 0.91m deep for about four months (mid-June to mid-October)

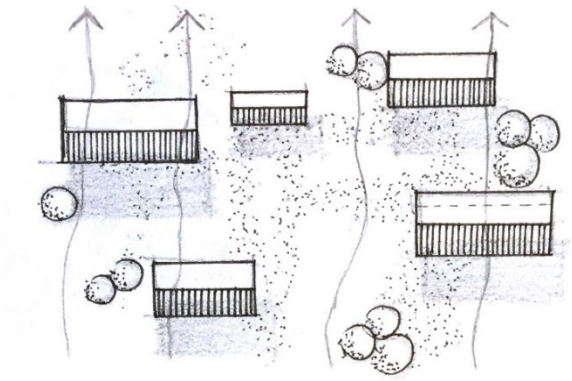


Fig 5: Climatic condition showing free movement of air through buildings, Plain Land; Source: Drawn by author.

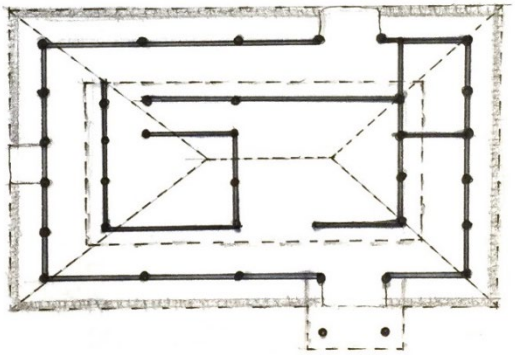


Fig 6: Pattern of house forms: building forms and shapes, Plain Land; Source: Drawn by author.

during the monsoon. The houses in this region are made of bamboo matting and mud, which are attached to plinth as the they have lower elevation and has the proximity to flood level. The houses are arranged in scattered way to allow free movement of air through buildings and through spaces between buildings. Moreover, the outdoor spaces are used for different activities that take place out-of-doors.

The shape and form of the building is rectangular, which is elongated along east-west direction. The north-south orientation of the building creates an opportunity to get natural ventilation. Additionally, the shaded verandas and the shaded outdoor spaces are constructed for climatic reason. Steep roofs are planned to protect high rainfall, which a regular phenomenon of this region. The scattered house arrangements for different functions into different structures are because of the warm humid climate. Materials are also environment responsive, for example, bamboo matting walls are used for passive ventilation that are perforated and act as a breathing wall.

Terrace Land: Houses on terrace land are found in parts of greater Dinajpur, Bogra, Pabna, Joypurhat Rangpur, Rajshahi, and Naogaon Districts of Rajshahi Division. The

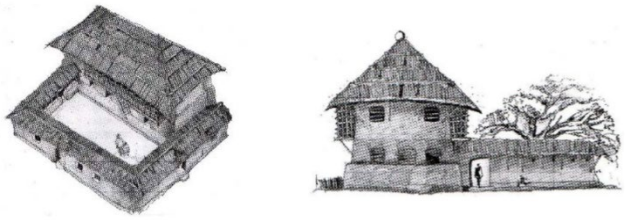


Fig 7: Housing unit at Terrace Land; Source: Doza, S.B. and Razzaque, M. Z. I., 2008.

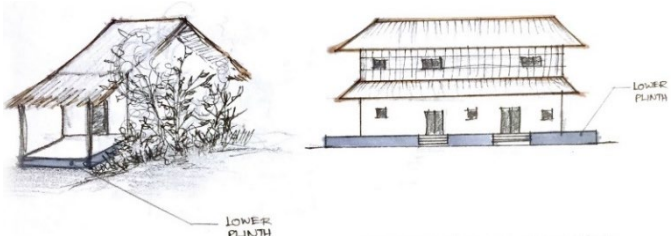


Fig 8: Settlement pattern: Topography showing lower plinth, Terrace Land; Source: Drawn by

planning pattern of buildings in this region is compact, which is appropriate for the hot dry climate of the region. The houses are rectangular in shape that is usually elongated along east-west direction and they orient in north-south direction. Additionally, these houses contain courtyards within their perimeter, which helps partially to protect them from the wind around them from the full impact of the outdoor air. Moreover, buildings are introverted in character and compacted with enclosed spaces between them. Furthermore, the arrangement of buildings and their orientation in space create a specific microclimate for each site.

Analysis: The topography in terrace land indicates that the landform is comparatively at a higher elevation than the adjoining floodplains. About 47% of this region is on high land and about 41% as medium highland. There are two terrace levels; one is at 4m and the other one is between 1.98 and 2.29m.

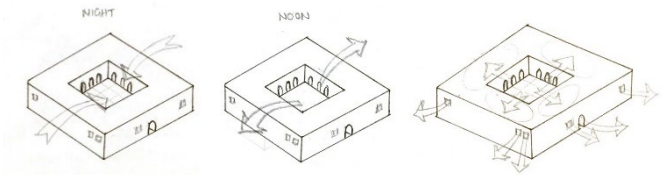


Fig 9: Climatic condition showing air flow pattern through compact buildings, Terrace Land; Source: Drawn by author.

Thus, when the floodplains go under water during the rainy season, the surrounding area stays free from flooding. The higher elevation is above the normal flood level and because of the lateritic content of the soil, mud is used for making houses and walls in this region. The houses are usually compact and joined together, which give them a certain character. Basically, the building layout is designed in such a way that there is a central courtyard surrounded by the walls, which partially isolated from the full impact of the outdoor air. The design of the buildings, their placement and orientation in the space make a specific microclimate for each site.

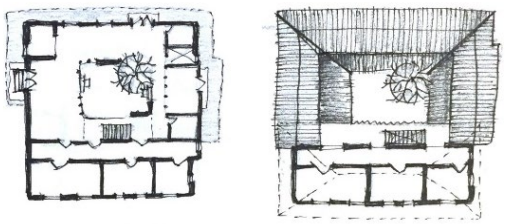


Fig 10: Pattern of house forms and shapes, Terrace Land; Source: Drawn by author.

The building form and shape in terrace land follows a regular geometry, which is mostly squarish. The house design is specially focused on a central courtyard, where all the functions are accommodated around the courtyard. Moreover, the houses are compact and introvert in nature because of the climatic reasons. As a result, the built form is separated from the impact of the outdoor hot air. During hot period of time, the walls act as a thermal mass.

Hilly Area: Houses on hilly area are found in Chittagong, Chittagong Hill Tracks, Mainamoti Hill Tracks and Parts of Sylhet division. Buildings in this area are far away from each other to allow free movement of air around the structures, which allows cross ventilation showing appropriate response to the climate and topography of the hilly area. Buildings are extrovert in character and basically elevated from the ground, created an elevated platform known as MACHANG to allow cross ventilation beneath the spaces. Sometimes the lower part of that spaces is used for storage or keeping their domestic animals.[16]

Analysis: The topography of hilly area signifies the mountain ranges that are almost hogback ridges and rise steeply. Usually, the hill ranges and the river valleys are longitudinally aligned, where the hill ranges have an average elevation of over three hundred meters. Houses in this area are built on stilts above the

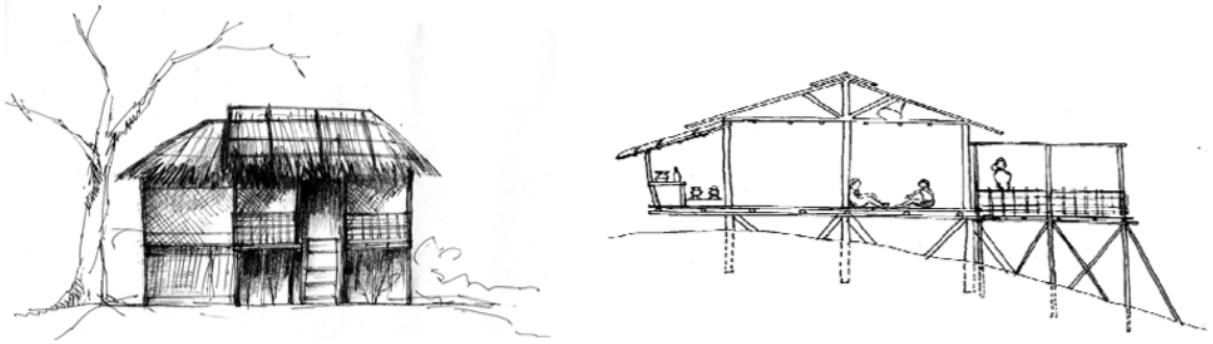


Fig 11: Housing unit at Hilly Area; Source: Md. Nawrose Fatemi and Nabanita Islam.

building. There is no courtyard in this housing that is in contrast a distinguishing character in rural housing in plain lands. The houses are in a compact planning pattern in elevated ground to protect from wild animals and be secured and to protect from the water flow during rainy season. The settlement in this region inspires from the nearby waterbody or

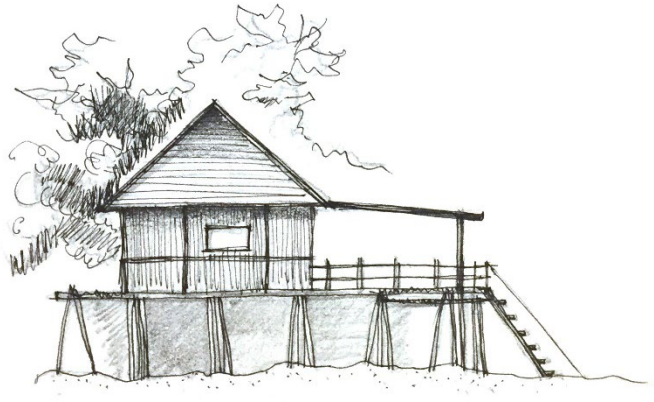


Fig 12: Topography showing house with bamboo slit in Hilly Area; Source: Drawn by author.

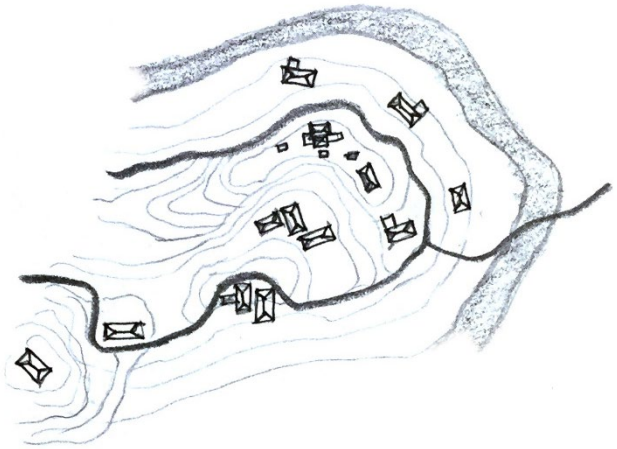


Fig 13: Climatic condition showing location of Jhiri determines the settlement pattern in Hilly Area; Source: Drawn by author.

JHIRI; basically, the location of JHIRI determines the settlement pattern as there is lack of drinking water. The houses are placed in an irregular pattern raised beside the JHIRI direction.[17]

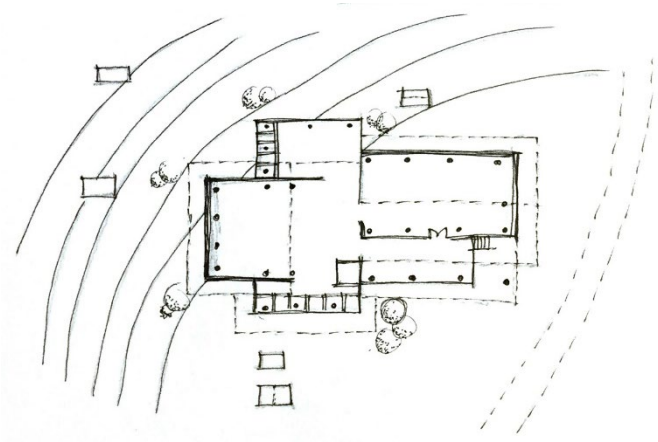


Fig 14: Pattern of house form and shape in Hilly Area; Source: Drawn by author.

The building forms in hilly area are generally in square shape. The extension part is also followed by the existing squares, whereas it is also noticed that the other spatial divisions that they made by dividing the main house or any part are not square. There is no courtyard in the housing of PAHARI or tribal communities, which is a contrast feature in rural housing in the plain lands. An elevated platform known as MACHANG is created at front part of the house with each built form and acts as courtyard, which are found in the houses of plain or terrace land. These houses are built on stilts, extrovert in nature, and living zones are too small because of the limited space.[18]

Materials and Transportation

In vernacular architecture, buildings are designed with local and available materials that are in direct response to the local climate, geology, and traditions. That is why this type of buildings are energy-efficient and protective of surrounding eco-systems. Additionally, local materials do not need any transportation cost and they have less energy intensive production process that consequently lower embodied energy and CO_2 emissions. Moreover, local materials are natural, organic, renewable, and biodegradable that have low environmental impact for maintenance.[19] In Bangladesh most of the local materials are mud, rammed earth, bamboo, thatch/straw, and wood as they are derived from locally available resources. In the plain area, people use mud as foundation and bamboo, bamboo matts for walls, which are then tied and connected to building frame. The roof is covered by bamboo and thatch and then processed by the locals. Local people use their

Fig 15: Marma House (Left), Tripura House (Middle), Chakma House (Right); Source: Google.

Fig 16: Mro House (Left), Lusai House (Middle), Bawm House (Right); Source: Google.

own local construction techniques and knowledge, derived from their ancestor, and passed on from time to time.

In contrast, industrially produced materials require a high energy-intensity and have considerable environmental impacts. These materials are also produced far from building sites that increase and add the transportation cost in building construction process. The transportation of the industrial materials also increases huge carbon footprint that is harmful for the environment. Different regions in Bangladesh are now using industrial materials for longevity and permanent settlement such as concrete, brick, steel, metal, glass etc. which definitely have environmental impact. In order to promote sustainable settlements, the industry of ecological construction must have their production units near the place of consumption, using local renewable resources, focusing on processes that require little energy and produce reduced pollution. Supporting sustainable local development means also preserving a cultural heritage of construction knowledge inherent to regions. Therefore, to achieve sustainability, architecture should find a path to integrate between traditional and contemporary approaches by using both strategies in technologies and materials for the improvement of the environment that would have a positive impact on local social and economic developments.[20]

This paper discusses three case studies that are Umubanu primary school in Rwanda, Käpäcläjui Training Center in Costa Rica, and Library Kressbronn in Germany. Each of these case studies is different from one another, yet each one of them emphasizes an important element that should be integrated into the contemporary building design and construction. Umubanu primary school includes participatory design processes by integrating community into the design. Käpäcläjui Training Center shows the importance of site and local materials in the design. Library Kressbronn has kept the historical significance of the building by restoring it without suppressing the building's history. Every aspect of the case studies can be incorporated in the design by bringing in the identity of the people of the community.

Case Study: 1 (Umubano Primary School, Rawanda)

Fig 17: View of the buildings on the sloped site; Photo: Iwan Baan.

Umubanu primary school, Kigali, Rwanda is designed by MASS design group (Construction: March 2009-July 2011); the firm's main goal is to create an architecture that requires the form to improve the lives among the school and community. The architects focused on the site-context with an aim of designing a school that fits in its context to inspire, merge, and integrate the neighborhood community called Kabeza.[21] They worked with local people, used local materials, and adapted their techniques. The school provides seven buildings and nine classrooms on the significantly sloped site; this school serves quality education for over 300 vulnerable children. The unique settings for education have been designed within a mix of interior rooms, exterior teaching areas, some of these spaces are covered by sloping roofs, and terraces are designed for the play area of the children. Local materials such as brick and

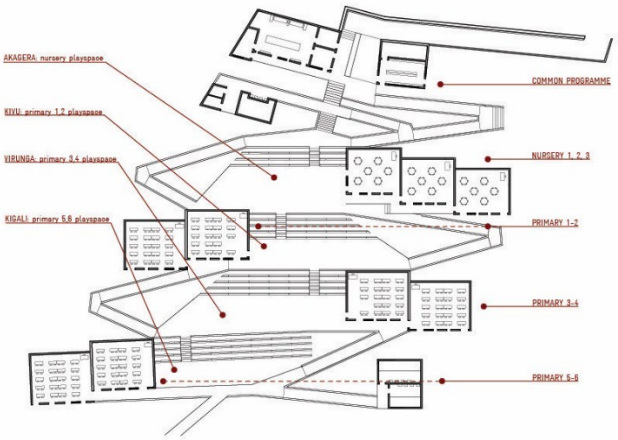


Fig 18: Umubano Primary School Building Diagram, Source: MASS Design Group.

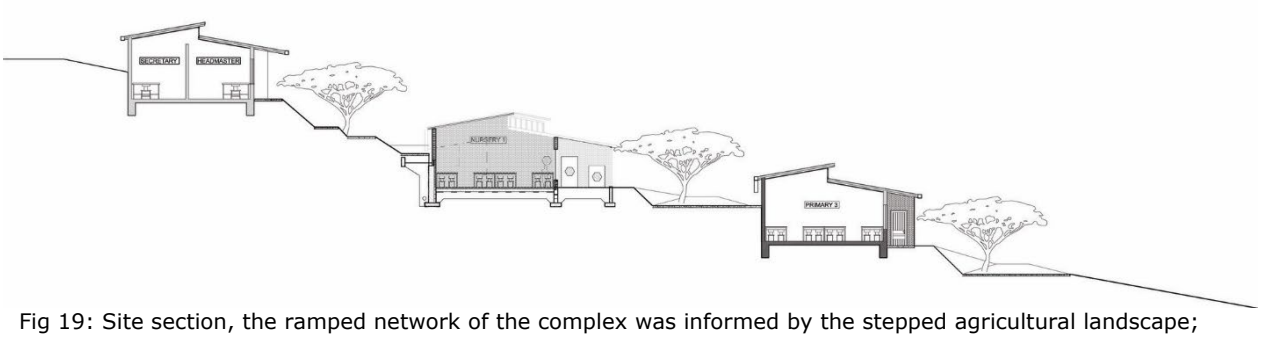


Fig 19: Site section, the ramped network of the complex was informed by the stepped agricultural landscape; Source: MASS Design Group.

bamboo is composed into walls wit`h built in shading screens. These local materials, shading and natural ventilation are relied upon to reduce energy consumption. Inside the classrooms, there are clerestory windows that help to bring light in the classroom.

Fig 20: The school placed on the terraced landscape; illustrated by author.

The design of Umubano Primary School merges with the hilly landscape in which it is gracefully falling and rising with the contours. In the hilly landscape of Kabeza neighborhood, people travel across terraced agricultural land to complete their journey. The school mirrors this kind of living, with outdoor classrooms providing the children a school that is embedded in their daily lives. The main concern of this design was to create a school that would totally relate to the community.[22]

The materials used in this project are brick and papyrus reeds that are found within the neighborhood and help to cut down the transportation cost. Moreover, the construction improved the regions' economy by encouraging construction professionals and residents to embrace the local market. Some local expertise is also included in this project that inspires natural ventilation strategies comprising thatched doors and brick jail, basically holes in the brick wall patterns across the structures. One of the interesting aspects of the project is the use of vierendeel trusses secured to the roof structure that slopes at a 10-degree angle makes clerestory lighting to reduce energy consumption.

Fig 21: View of the library, a papyrus-reed dropped ceiling provides natural ventilation and diffused light; Photo: Iwan Baan.

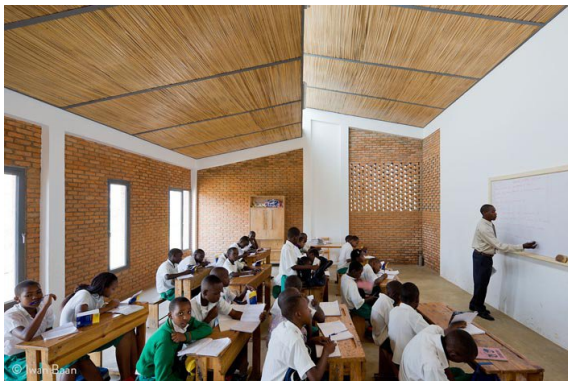


Fig 22: Classroom, handmade brick coursing also helps move air through the space; Photo: Iwan Baan.

Furthermore, the limestone blocks are used to design the terracing and retaining walls that gives the school a unique aesthetic as the school is a landmark in the Kabeza community.

The MASS Design group works with the community, understands them, and determines the needs and desires of their clients. They involve the local people in their design and construction phases, listen to the community's ideas and design accordingly, and build structures that are thoughtfully considered by addressing the site and use of material. Everyone in the community appreciates the level of commitment MASS Design group has to the community through their engagement. Moreover, the structures and materials implemented in this project has a unique integration of surroundings to reflect the cultural and vernacular context of the Kigali region.

Case Study: 2 (Käpäcläjui Training Center, Costa Rica)

Fig 23: Käpäcläjui Training Center; Photo: Ingrid Johanning.

Käpäcläjui Training Center is located on the Indian reservation of Tayutic, Turrialba, in the province of Cartago, Costa Rica and designed by Entre Nos Atelier in 2014.[23] The center includes a training center and hostel that gives the opportunity to interact between locals and visitors and creates a community in harmony with nature. The training center has been designed in such a way to perform as a part of a strategic system of rural integration and community strengthening including roads, caves, and trails. Moreover, the agreement between the parties has been operated by the community and incorporated the architects into the design process as well. The center is elevated from ground and has a network of pedestrian bridges that make some sections accessible at critical times of the year and serves as a temporary shelter to the community. The hostel consists of 470 m^2 that is allocated within a large linear layout along its longitudinal axis. The first floor consists of administrative areas (offices), multipurpose rooms, dining, kitchen, restrooms, computer room, library, and warehouses. The front part of the building has a double height space that features a mezzanine area to provide temporary shelter. The idea of the project develops from different participatory design workshops, where these workshops were essential to promote a sense of ownership in the community while viewing and making decisions. The full process of designing this center has experienced the surroundings to understand and co-create areas that are coherent with the environment and focusing on

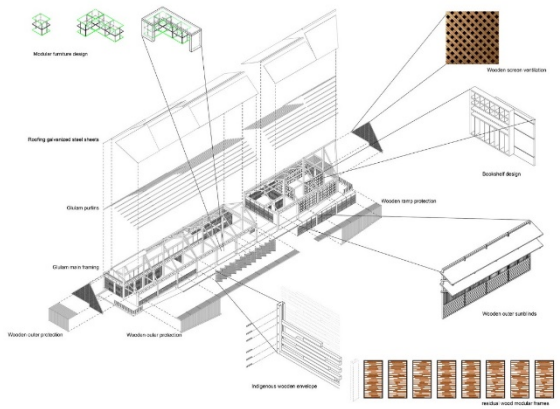


Fig 24: Extruded axonometric view showing the materials and detail building façade; Source: Entre Nos Atelier.

the needs of the user. Additionally, the architects with the community investigated

Fig 25: Overhanging roof on the west side; illustrated by author.

Fig 26: Wooden construction showing interior and exterior spaces; Photo: Ingrid Johanning.

their qualitative perception of an ideal space and the relationship with functional elements. Furthermore, the collective information with the support of community leaders and translators of the local dialect helps the architects to establish guidelines for the project and programmatic bases. The project reflects multiple findings for example comfortable, permeable space, and ventilated in direct contact with the environment, that are significant for that community's tradition and culture. Furthermore, local materials such as wood and different combinations of wooden planks, slits, frames are used in this project to carry this light design and open shelter. There is a subtle transition between interconnected spaces by layers with a direct connection to the outside. The gradient of closeness and sense of partial shelter can be observed between rooms for example, the indoor-outdoor circulation through 'veils' on the envelope. These are represented by panels assembled as 'overlapping tissues' of multi-tonal woods, gradually anticipating the next room.

By incorporating local people and their local methods into both design phases and construction phases, gives a positive impact on the constant opportunity of awareness of the surroundings and the community as well. The Käpäcläjui Training Center emphasizes the importance of site and integrating the community into the design. Additionally, working closely with the community helps the project to understand the struggling community and create a language fitting to their current predicament. Therefore, the aspects of bringing the community together and give them a way to outwardly celebrate their identity strengthens the project's success in terms of architecture.

Case Study: 3 (Library Kressbronn, Germany)

Fig 27: Library Kressbronn in Germany; Photo: Brigida González.

Fig 28: Traditional overhanging protective roof with precise wooden work; illustrated by author.

Library Kressbronn is designed by steimle architekten in 2015 and located in the center of Kressbronn am Bodensee, in Germany.[24] The architects converted this former agricultural barn into a library building that is accessible to everyone. This building also reflects the region's tradition and culture by keeping a balance between past and present. The existing building has been transformed with some small, well-considered interferences, which helps to preserve the building's previous character. The principal design focuses kept the historical significance of a balanced architecture, where the emotional views would tie people through restoring the building, while creating few changes without suppressing the building's history. The old façade has been replaced with wood and concrete. The delicate wooden work has emphasized the structure itself, whereas a stone-like new base has been introduced. This homogenous base preserves the solid and massive impression of the original. The lattice wooden construction over the new base replaces the old façade and responds delicately to the existing structure. Additionally, the barn has been restored with simple and precisely conceived interventions, even though the traditional features such as the deep overhanging and protective roof of the building has been preserved with utmost care. The ground floor has a multipurpose room, exhibition space, 24-hour library and upper floor includes media and magazine gallery and reading spaces that create a tangibly unique spatial experience and offers surprisingly open views though the entire building. The traditional saddleback roof and historical timber trusses projecting outward the façade remain present in the building reminiscing the past. According to the German Architects, "*here in particular, the old and the new enter into an exciting dialogue, where the balance of past and present becomes the building's special quality, not only from the outside but especially from the inside."*[25]

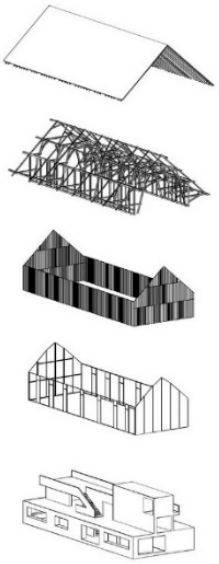


Fig 30: Exploded Axonometric View; Source: Steimle Architekten.

Fig. 29: Outside Perspective; Photo: Brigida González.

Fig 31: Traditional overhanging roof; Photo: Brigida González.

Fig 32: Inside staircase; Photo: Brigida González.

While the firm works to expose local artists and the region Kressbronn's strong cultural background, it seems to be a very elegant and contemporary construction, where the direct contact with local people, local materials, and local construction method may contradict the tenets of vernacular architecture. Therefore, the library showcases the region's strong historical background, art, and cultural vernacular nonetheless, it could be more significant if the locals would be involved through the process to emphasize the region's culture to the residents themselves.

Case Study: 4 (New Gourna Village, Luxor, Egypt)

Fig 33 : New Gourna Village Mosque; Photo: Marc Ryckaert.

New Gourna Village, Luxor in Egypt was a housing project designed by Architect Hassan Fathy, built between 1945 and 1948 with the aim of rehousing the seven thousand people of Gourna.[26] The project features traditional techniques, materials, and vernacular styles and solutions with the benefit of contemporary ideas, that generates an economically sustainable building culture among the community of the village. In order to create indigenous environments, the architect combines ancient vernacular materials and design methods by incorporating the current economic conditions and wiser design techniques that helps to support the Egyptian nation's heritage as well.

Moreover, Fathy trained the local residents to develop the materials from the locally available materials and to construct their own buildings out of mud bricks. The training of the residents was fruitful even after finishing the project because every one of those locals used their skills, they learnt at Gourna- a proof of the value of training local craftsmen and helps them to grow economically sufficient.[27] Furthermore, the climatic conditions and ancient craftsmanship techniques are considered in the design as well. An example of this consideration is the mud brick. Using this mud brick, the architect not only achieves the cost effectiveness boosting the economy of the construction but also establishes the village as a good example of vernacular architecture and sustainability. Inside the building, the temperature is cool during the summer despite the hot weather, whereas in winter the temperature is warm in the building. The rooms have good insulation and ventilation, which makes a healthy and clean environment. The buildings also can catch wind to bring the breeze inside because of the proper ventilation system, known locally as wind catchers. The architectural forms of this village have a sculptural beauty that features dome shaped roof, cozy inner courtyards, and delicate

Fig 34 : Different view of New Gourna Village ; Photo : Google.

Fig 35 : Perspective view of New Gourna Village ; Photo : Google.

sunscreens, which helps to control sunlight through openings. The simple and monochromatic color of mud unifies the entire village as a single unit, where public units such as markets and the mosque blends with residential units and evokes a feeling of coherence amongst the structural masses.[28]

However, the present condition of the village is really bad, ceilings are falling, foundations are weak to uphold the structures, and buildings are sinking because of the weather. The foundations are made of salt stones, which dissolve in water or humidity. If the foundation had been made of sandstone, it would have been worked. Local residents are suffering very much because of this condition of the buildings. Some of the critiques and locals say that it would be more reasonable to rebuild the village with Hassan Fathy's sprit not with Fathy's mud. Rebuilding with fired bricks would change the scenario perhaps and withstand the climate overall. The village endures a dynamic living settlement associated with housing and all public facilities, though nearly 40 percent of the original buildings have been lost. Consequently, the balance between vernacular architecture and contemporary practice perhaps do not work quite well in terms of vernacular materials and its own identity. The ideals of balancing tradition and culture have failed to confront the realities and failed to respond to the mass need for housing in terms of materials. [29]

The village of Gourna was built on the site of the Tombs of the Nobles in the old Cemetery of Thebes. There were many graves, some known, and some were still unknown to the department of Antiquities, therefore the site used to have full of objects of great archeological interest. Around seven thousand peasants used to live in Gourna with clusters of houses, built over and around these tombs. The community literally lived by mining those tombs, and their whole economy was dependent on tomb robbing. Department of Antiquities and the government took some positive action to overcome this problem by providing solution to rehouse them on a new site, which was away from the ancient remains.[30] However, after settling the housing for the Gournaians, people were still in some ways involved with the robbing and wrong doings for their economic conditions. By refocusing the community's identity, which was a great attempt to build housing for the poor, architect Hassan Fathy critiques that overall, it needed more organized infrastructure plan to work together with government and locals. According to his perspective the problem of rural housing in Gourna was concerned with more than technical or economic, it was primarily human embracing systems and people, professionals as well as community members. It was much greater than Gourna and the department of antiquities.[31]

After understanding and gaining some views through the lens of Hassan Fathy's housing project, the objective is to understand local material, local craftsmen, and regional construction method by using new technologies, and provide other amenities responding to the regions site-context and climate. Moreover, the design solution should create an intervention and integrate them into rural regions, which strengthens the community's identity as well.

Inclusive of Politics

Working with local government is the key to support local communities. The creation of community infrastructure depends upon the local government, who is in a way responsible for the society's growth and value. Moreover, working together with local people and local government will construct social settings in an integrated way. This also underscores the aspect of regenerative regionalism that helps to participate in local constellations of ideas, which describes the tectonic history of a place through the construction of integrated cultural and ecological processes. Basically, by definition regenerative system/ regionalism means to provide continuous replacement through its own functional processes of the

energy and materials used in its operation.[32] Moreover, regenerative regionalism brings the force of the idea of fostering, converging human agreement through cultural identity that prefers a creation of critical & historically instructive places. In addition, regenerative regionalism gives importance to local labors and their participation in the building process while relying upon technologies of everyday life through democratic means that reveal the manner of their making to magnify local labor knowledge and local ecological conditions.[33] The idea of participation emphasizes in the first case study- Umubano Primary School, Rawanda that is designed by Mass Design Group. In this project the architects not only worked with locals but also adapted their skills, knowledge and techniques and incorporated it into the design. Therefore, the whole design reflects Kaigali region's vernacular, their own identity, and cultural pattern that significantly justify their belongings of that place.

Anti-Thesis and Counter Argument

To understand the global phenomena of vernacular architecture and why the need for the contemporary architecture to learn from the vernacular is needed, this study surveys comprehensively Bangladeshi heritage studies and its regional vernacular practices. Current practices in Bangladesh are more focused on contemporary architecture and because of that most rural/ local regions lost their local unique identity for global similarity. Moreover, the identity constructions that are carried out under the regionalist banner in contemporary Indian as well as Bangladeshi architecture have gone under increasing scrutiny. The theory of Critical Regionalism, proposed by Alexander Tzonis and Liane Lefaivre[34], shows an appropriate way to respond to the present crisis of identity in Bangladeshi architecture. Moreover, critical regionalism takes account of globalization, giving the theory a quality of universal applicability.[35]

In current global architectural practice, contemporary housing is often based on modernist principles. The argument by global professional architects may be that vernacular ways of building are no longer sufficient for a globalized economy and social networks. However, the case studies discussed above reflect vernacular architecture, which do not deny contemporary influences and support the importance of cultural identity in communities. Without an understanding of history, we cannot forge a sustainable future.

Conclusion

Each of these case studies are very different from one another, yet each of them emphasizes an important element that should be considered not only in vernacular architecture but also those elements needed to learn from the vernacular itself. Some of these case studies highlight the site-context and brings the community into the design, some work with the community to create a language of their own, and some of them gives the community a chance, to celebrate their identity. Furthermore, each of these aspects can be integrated into design that not only helps to create cultural identity of a region but also learn from it. In Bangladesh, different regions have their own cultural identity, although they are all together Bangladeshi culture. To understand this culture, tradition, their effect, and the result of globalization over the regional vernacular practices, a structure or design, specific to Bangladeshi region's community should be introduced. Perhaps, the introduction should focus on overcoming generalizations about the region, its vernacular building, and most importantly the need for the contemporary to learn from vernacular itself and work with each other. Moreover, a language should be developed through the professionals and architects firsthand experience with the community by recognizing their wants and needs. Based on the community's need, a design solution could be proposed to help the struggling community to create an identity fitting to their existing predicament.

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ADDENDUM

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Miami University

Written Thesis to Design Approach

In the design process, the focus was to evaluate the thesis question through the design while respecting the cultural values in the contemporary era. One of the main goals of this thesis is to bring in the essence of the culture of a specific region in Bangladesh without mimicking it. Additionally, this research puts together different traditional & modern strategies into the design, which will not only increase the quality of life in the community but also significantly enhance the cultural values in the global platform. Hence, the thesis question is *"If local regions are affected by specific traditional cultural building fabric that is considered vernacular to a place, in the contemporary era of globalization, can vernacular architecture inform and influence the particular changing of social and environmental conditions?"*

The site is situated in Remakri area, inside Thanchi Upazilla, which is at Bandarban District, Chittagong Division, in Bangladesh. It is also near to Myanmar boarder at east and west side of the site. The boat is the only transportation that is being used to reach Remakri from Thanchi Upazilla, which takes approximately 2 Hours. Since the site is in a hilly area, the patterns of housing settlements have their own language that is usually inspired by the nearby water body or the contoured landscape. However, the recent needs of accumulating different functions (residential, educational, and healthcare) of the proposal for the community was challenging. Thus, many questions have been raised such as, what kind of functions are required for the existing context, how the programs and functions can flow through the community, how can the constructional exploration and the functional separation be achieved, which would be significant not only in this Remakri area but also play an important role in the global platform. Therefore, finding a strategy that can provide an in-between relationship among different programs and functions, the journey amongst them and between them, in a way that supports the context and contour landscape was the next step.

Design Methodology

How can we use the traditional and cultural connection that is embedded in a specific region by using local and sustainable materials and build forms while using modern building techniques, environmental engineering methods, and new technologies? At this point, understanding the essence of locale requires analyses of existing built-forms and extensive research of the patterns of life and culture of Remakri people. Some of the design strategies and the masterplan are focused on the localized clustered settlements, spread throughout the context as it moves through, connecting the fragments of the existing fabrics, and bringing the essence of the locale. The master plan connects different programs at different levels on the contour landscape, which are stitched together and focused on some specific programs such as housing and school. The design has explored the site-context and the local pattern of living to extract the criteria to develop cultural sustainability to the future development and provide a sustainable design solution to the community through built environment.

Design Review Reflection

The final thesis review brought up a number of important discussions regarding the project. The reviewer appreciates the thorough research about the existing vernacular build-forms in Remakri as the benefits of vernacular architecture include local knowledge and traditions, local materials, and its availability as they are relatively energy-efficient and sustainable. Since the focus was on some of the specific programs such as housing and school, the suggestions came along in the review process to integrate those programs or functions with the whole master plan with the vernacular landscape approach. In addition, due to the waterfalls in Remakri area, the existing condition of tourism sector should explore more in terms of further development. Furthermore, the materials and joints with

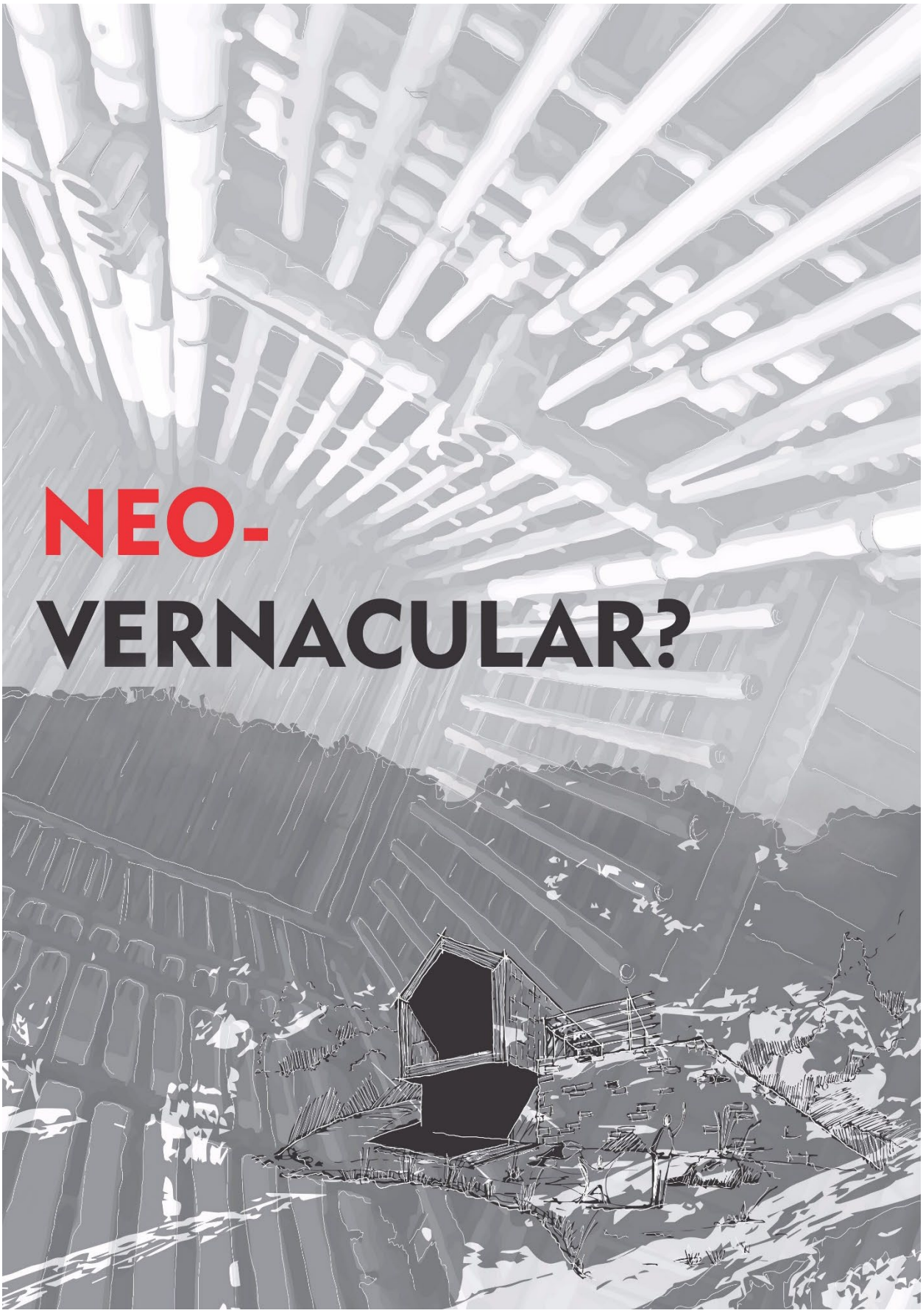
different structural details have been appreciated by the reviewers with a suggestion of exploring more about the patterns of joints.

Overall, the vision of using different new materials with local ones in the context, worked with local people, and adapted their techniques are some of the important features that have been properly explored in this project. Moreover, the way the contoured landscape has established a relationship with nature by placing the lightweight structure that could fluctuate with the natural changes of the environment has been appreciated by all the jurors.

Speculation

The thesis review helps to think and look at the project more critically. Thesis itself is a continuous project. It gives a chance to explore architecture at different scale and gain knowledge in every layer of the process. Additionally, it helps to deal with complex issues and how to develop possible solutions to critical issues. Going to the next level with a vision of exploring more would give this project a chance to revisit the thesis question and stitch together all those thoughts that have discussed in the review. Therefore, in the era of rapid technological advancement and massive construction, there is still much to learn from the cumulative knowledge embedded in traditional building structures. Additionally, there is a need to expand and discover more about this neglected part of architecture and address to the world about its creativity and ethnicity.

DESIGN PROCESS


NEO-
VERNACULAR?

Site

The site is situated in Remakri area, inside Thanchi Upazilla, which is at Bandarban District, Chittagong Division, in Bangladesh. It is also near to Myanmar boarder at east and west side of my site. From this Thanchi area to the site Remakri, the only transportation is boat. This red dotted line is showing the site entry. It takes approx. 2 hours by boat from Thanchi to Remakri.

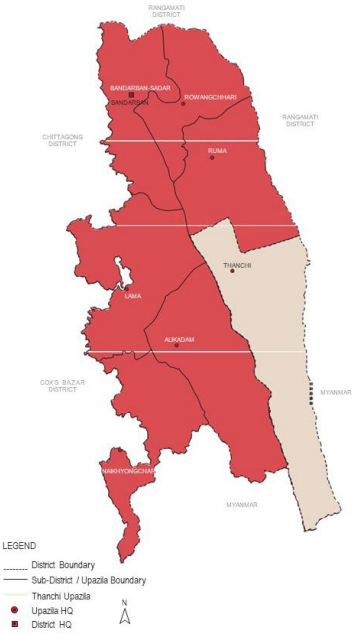
Site Location

Bangladesh is divided into eight major administrative divisions:

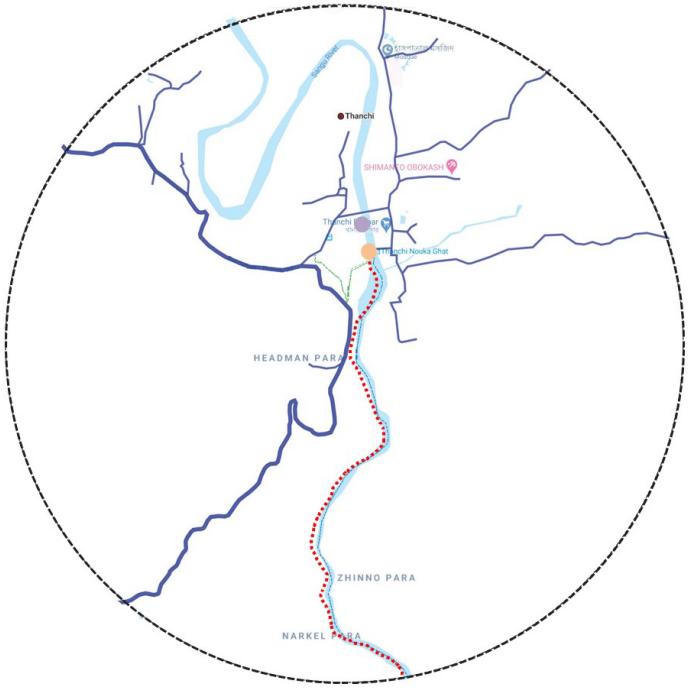
1. Barisal
2. Chittagong
3. Dhaka
4. Mymensing
5. Khulna
6. Rajshahi
7. Rangpur
8. Sylhet

The Map of Chittagong Division showing all the Districts

Bandarban District Map (Chittagong Division)



Site Issues and Forces



Thanchi Upazila: **Area 1020.82 sq km**, located in between 21°15' and 21°57' north latitudes and in between 92°20' and 92°41' east longitudes. It is **bounded by ruma upazila on the north**, **arakan state of Myanmar on the south**, **Chin state of Myanmar and belaichhari upazila on the east**, **alikadam and lama upazilas on the west**.

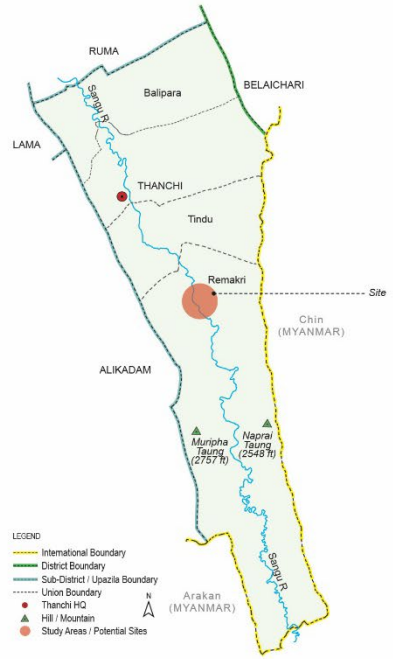
Site Access

Entry and Circulation: **Bandarban-Thanchi road** connects Thanchi to Bandarban district. This road also **connects with chittagong division**. In Thanchi area, there are many secondary roads, which connects with different services and programs. However, the **only way to go to Remakri from Thanchi is by boat**. There is a ghat for the boats in Thanchi area. Traditional boats take both people and goods in the boat and travel from Thanchi to Remakri and almost it takes **2 hours by boat.**

LEGEND
- Bandarban-Thanchi Road
- Secondary Road
- Sangu River
- Boat Road
- Pathway
- Site Entry
- Thanchi HQ
- Thanchi Bazar
- Thanchi Nouka Ghat

Site Location

THANCHI UPAZILA MAP



Thanchi to Remakri Bazar

Showing the Site near Remakri Waterfalls

THANCHI

Boundary

Bounded by ruma upazila on the north, arakan state of Myanmar on the south, Chin state of Myanmar and belaichhari upazila on the east, alikadam and lama upazilas on the west.

Population

Total 16992
(male 9438, female 7554; Muslim 1286, Hindu 351, Buddhist 4545, Christian 9292 and others 1518. Indigenous communities such as marma, Murong, tripura and khyang belong to this upazila.)

Area

Total Area 69210

Literacy Rate

16.81%

REMAKRI

Boundary

Bounded by ruma upazila on the north, arakan state of Myanmar on the south, Chin state of Myanmar and belaichhari upazila on the east, alikadam and lama upazilas on the west.

Population

Total 4069
(male 2188, female 1881; Indigenous communities such as marma, Murong, tripura and khyang belong to this upazila.)

Area

Total Area 24320

Literacy Rate

3.63%

Thanchi Area Photos

Site: Remakri, Thanchi, Bandarban

Location: Remakri, Thanchi, Bandarban District, Chittagong Division, Bangladesh (Geographical coordinates of latitude and longitude: 92.435696, 21.8210961)

Area: **96 Acre** (42,00000sft) ***Landowner:*** Government Land

Description: *Public transport:* Boat (Traditional Wooden Troller Boat)
Access to Site: The main road from Thanchi to Remakri is approximately 39.5 km (2 hrs)
Highway: The distance from Thanchi to Dhaka-Chittagong highway is approximately 132.6 km(4 hrs by car)

Landmarks: Thanchi Ghat (Boat Stoppage), The Shankha river (Sangu River).

Schools/Universities: Remakri Primary School, Remakri.

Current Scenario:

Remakri main bazar is basically on the uphill, however, they use the lower part near river as a local bazar for the community for day-toay selling and buying goods/ stuffs. The reason to bring down the local bazar near the river is perhaps for easy access for the people from the surrounding area through the boat and availability of goods as these lower part acts as a node/ community hub for Remakri area.

Nevertheless, during flood time this lower portion sinks into the water and the bazar goes under water, which makes a great loss to the people and also to the community.

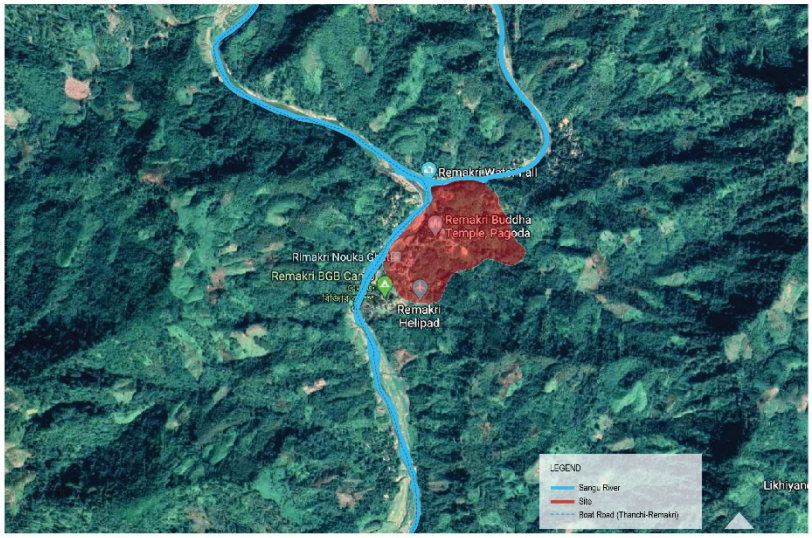



Fig 1: Remakri Bazar near to the river; source: google


Fig 2: Remakri Bazar near to the river; source: by author


Fig 3: Remakri Bazar on the uphill; source: flicker, Exploring Bangladesh

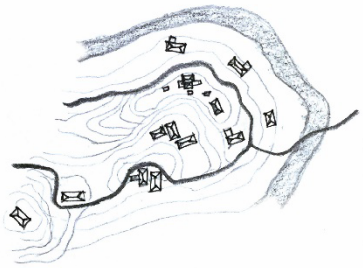
Site Photos

Site Photos

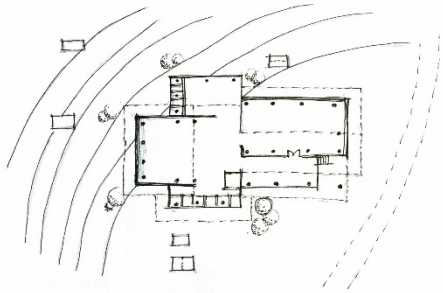
Existing Building Form Study

These are some of the studies that has been done for the existing building forms. So, in hilly area the waterways/ river or contour landscape determine the settlement which are square or rectangular in shape, and they build on elevated platform which called MACHANG. Some of the studies of building forms and materials for different types of housing. So, the materials they are using is bamboo, wood, concrete, steel, thatch. The MACHANG or elevated platform are used to get rid of wild animals, flood and use for storage or hangout space.

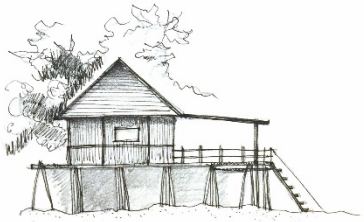
Existing Building Form Study



Location of Waterfalls determine the settlement pattern in Hilly Area



House form & shape in Hilly Area

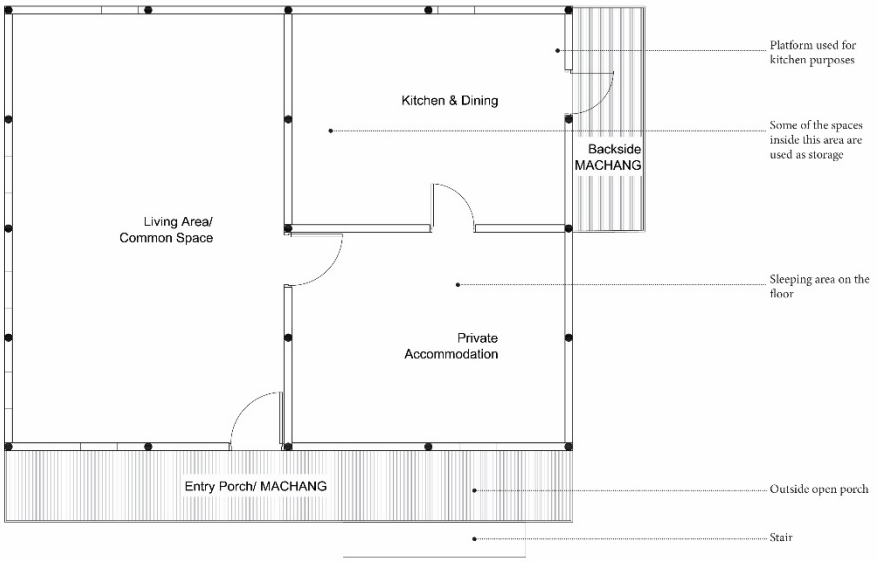


House on bamboo slits in Hilly Area

- The topography of hilly area signifies the mountain ranges that rises steeply, where the hill ranges and the river valleys are longitudinally aligned, where the hill ranges have an average elevation of over three hundred meters.
- Houses in this area are built on stilts above the ground to get rid of wild animals and be secured and to protect from the water flow during rainy season.
- The settlement in this region inspires from the nearby waterbody or JHIRI; basically, the location of JHIRI determines the settlement pattern as there is lack of drinking water. The houses are placed in an irregular pattern raised beside the JHIRI direction. The building forms in hilly area are generally in square shape.
- An elevated platform known as MACHANG is created at front part of the house with each built form and acts as courtyard.
- These houses are built on stilts, extrovert in nature, and living zones are too small because of the limited space.

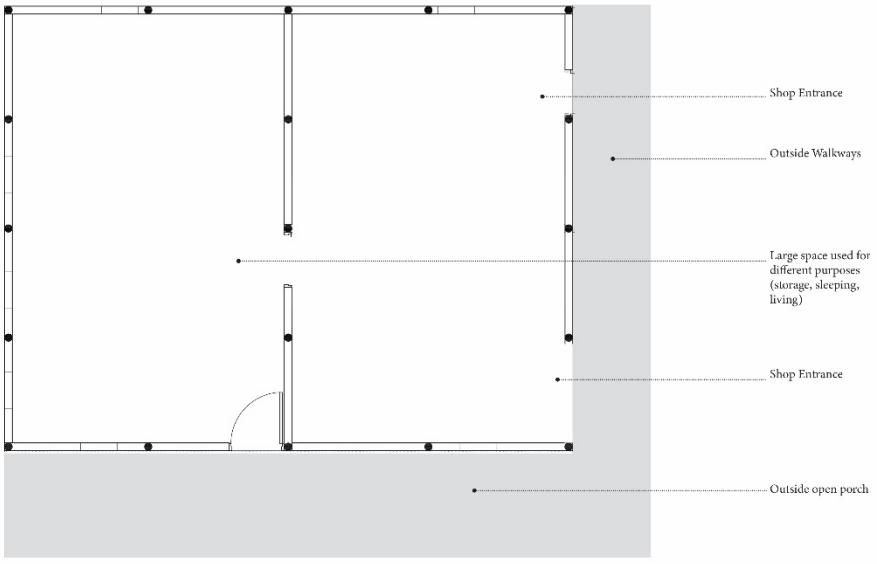
Existing Building Form Study

Existing House Plan, Type 1



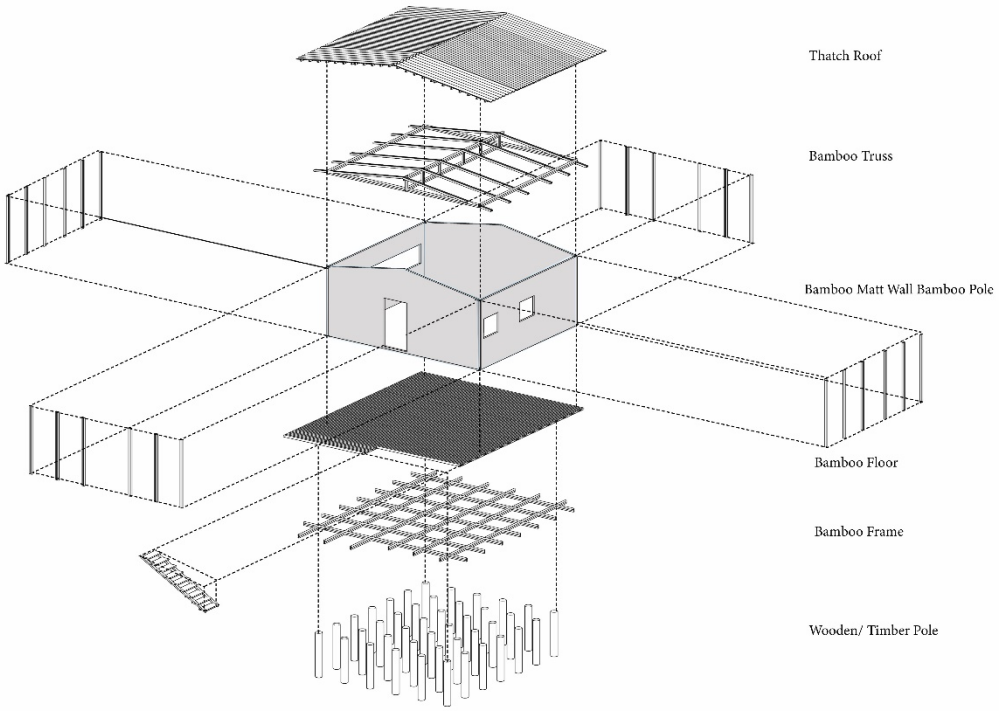
Scale: 1/4"=1'-0"

Existing House Plan, Type 2



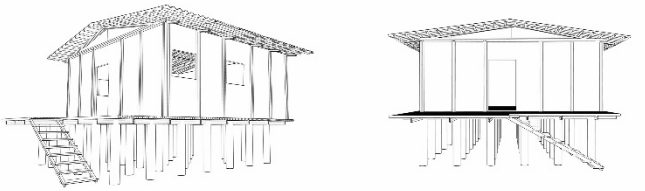
Scale: 1/4"=1'-0"

Exploded Axono: Existing Building Form & Materials (Type 1)



Existing Building Form & Materials: Type 1

Available local materials at Remakri are bamboo, wood, mud, straw, water reed etc. A combination of sustainably grown timber, bamboo, natural materials, and recycled materials were used to construct much of the house framework. A split-roof and operable shutters allow natural ventilation to flow through the home, while the angled and overhanging canopies mitigate solar heat gain.

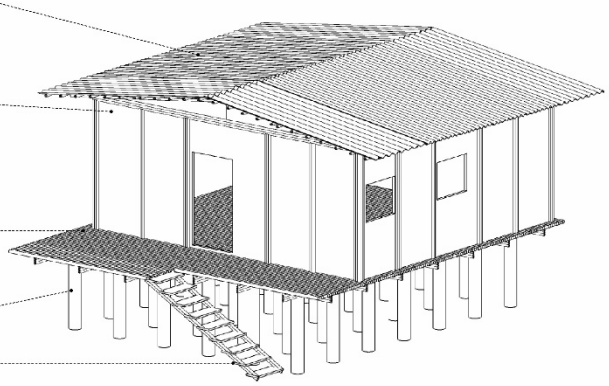


Roof: Straw/ Water Reed

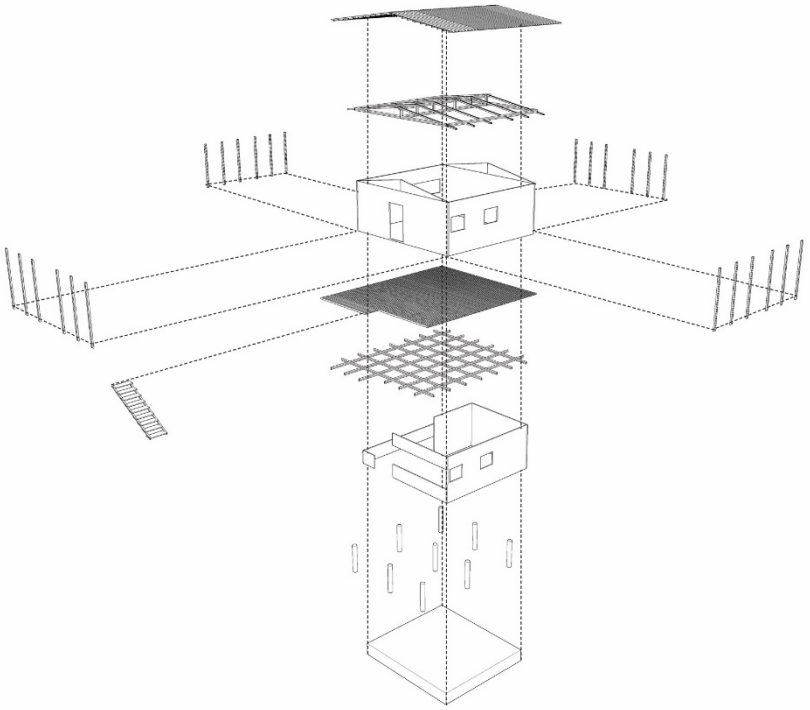
Wall: Bamboo Matting

Floor: Bamboo

Stair & Pole: Wood



Exploded Axono: Existing Building Form & Materials (Type 2)



Thatch Roof

Bamboo Truss

Bamboo Matt Wall

Bamboo Floor

Bamboo Frame

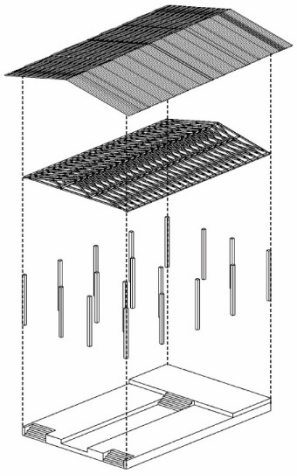
Bamboo Matt Wall

Wooden/ Timber Pole

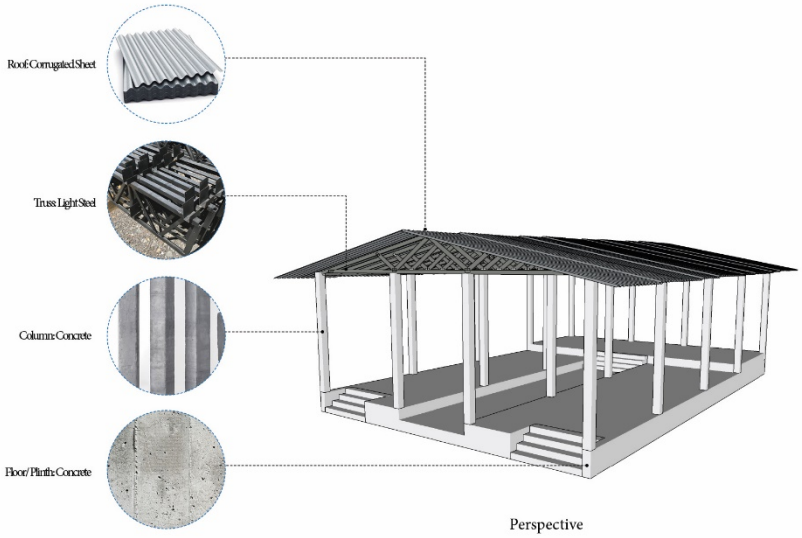
Concrete Base

Exploded Axono: Existing Building Form & Materials (Type 3)

This new structure is designed at the center of the community, which acts as a community space/ gathering space. The major programs or festivals take place in this space. New Materials/ permanent such as brick, concrete, steel, corrugated sheets are being used at this moment. Built for resiliency, the structure is elevated atop precast concrete pillars to protect against flood risk. This freestanding structure allow natural ventilation to flow through the structure while the angled and overhanging canopies/ roof mitigate solar heat gain.

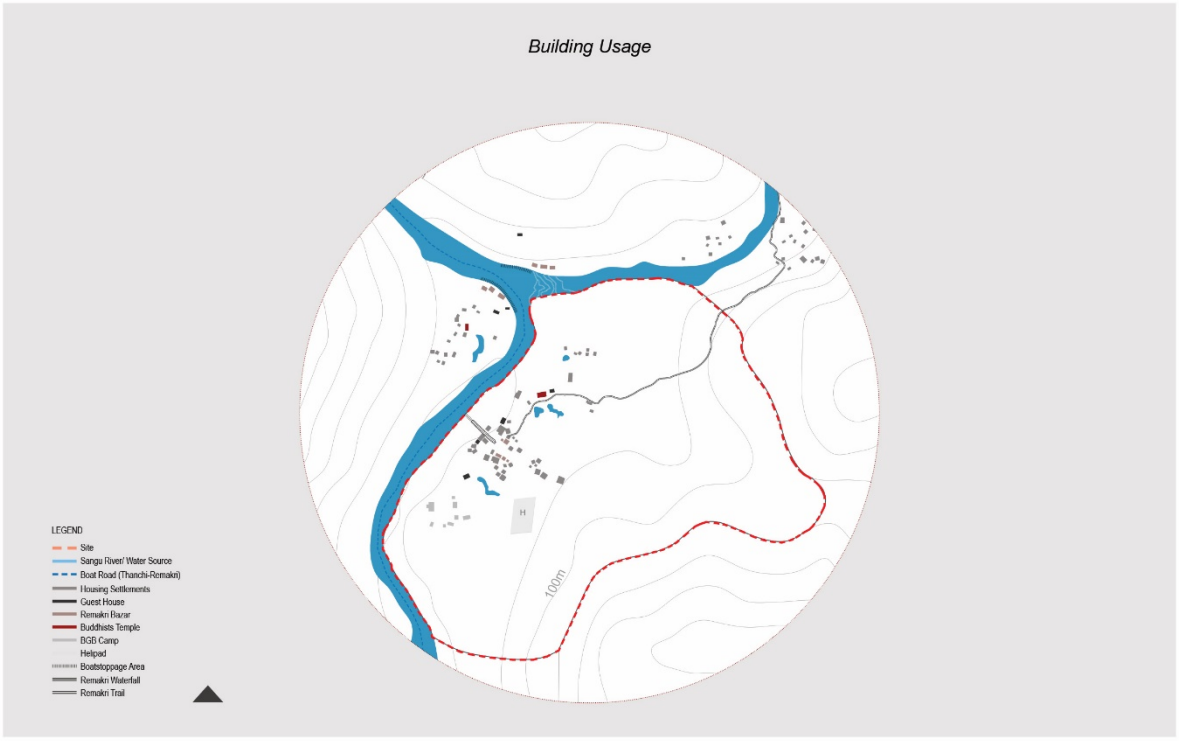


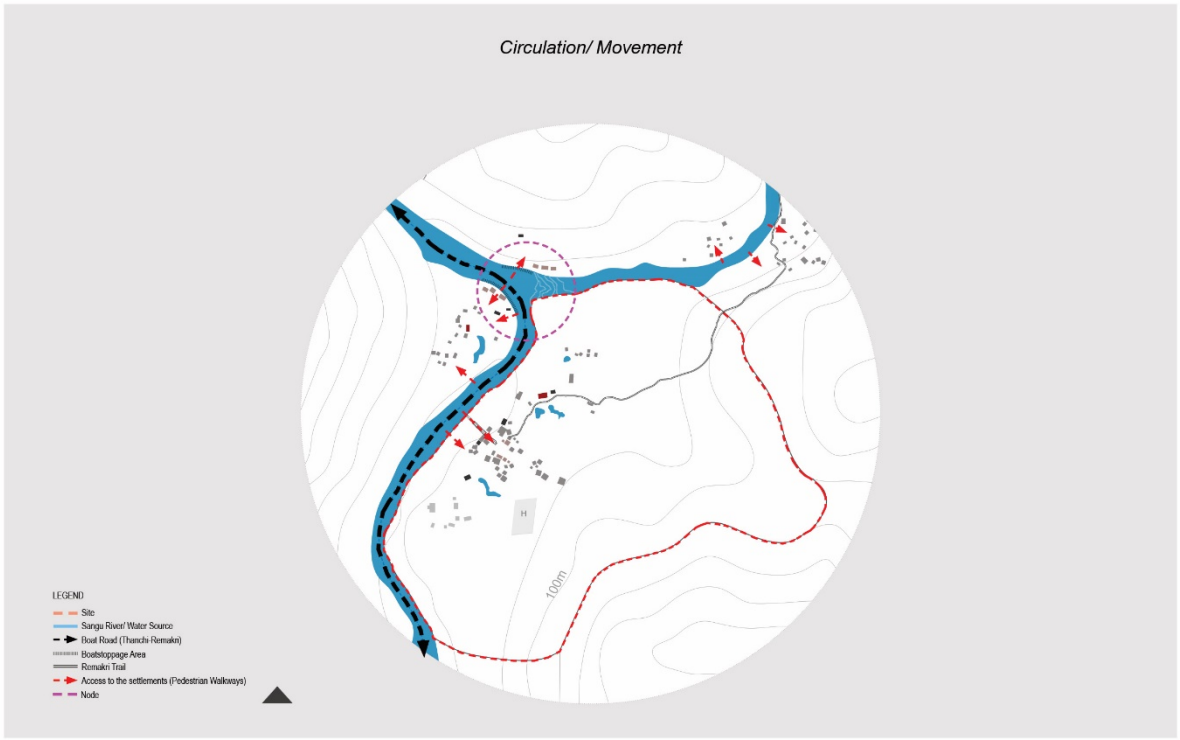
Exploded Axono



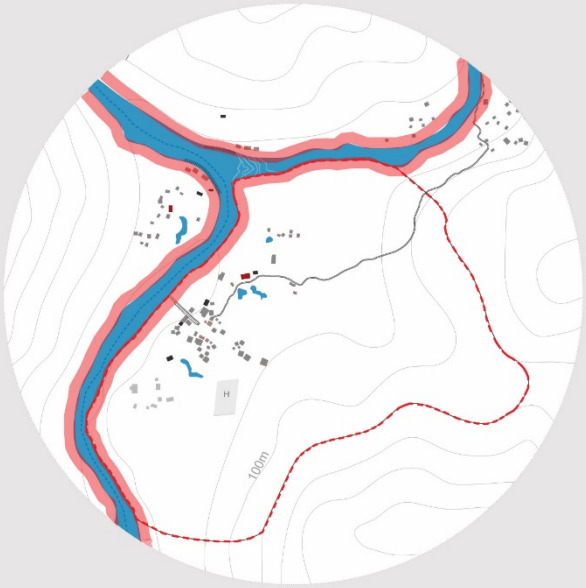
Perspective

Site Analysis



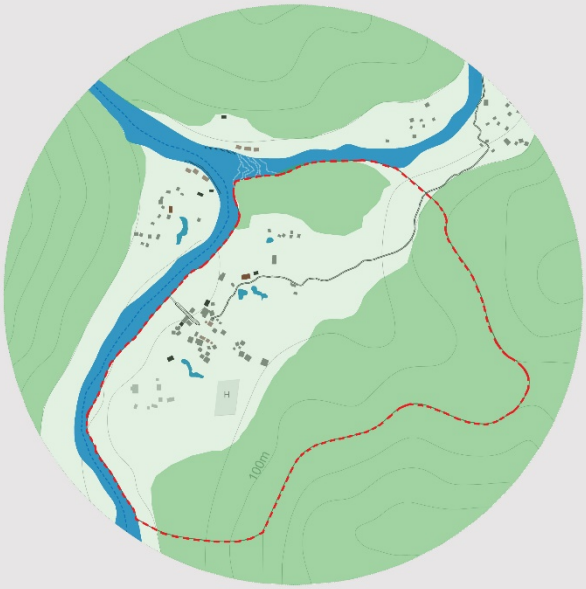


Flood Plains

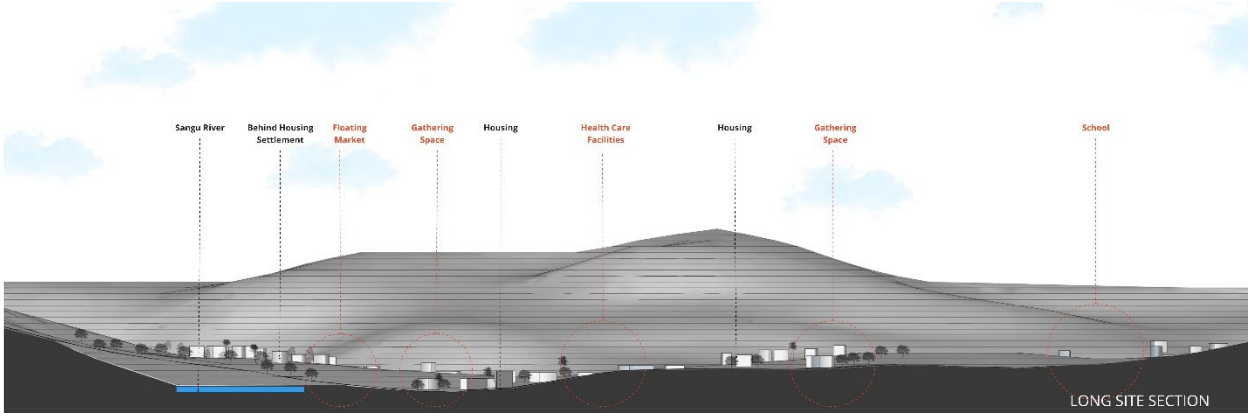


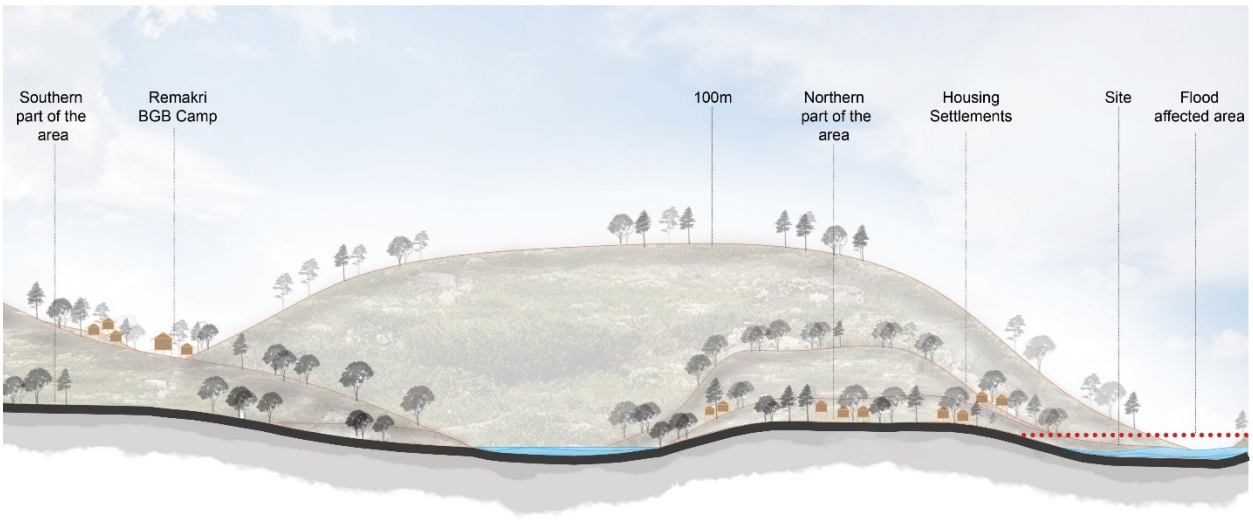
LEGEND
- Site
- Sangu River/ Water Source
- Flood Affeted Zone
- Boat Road (Thanchi-Remakri)

Vegetation

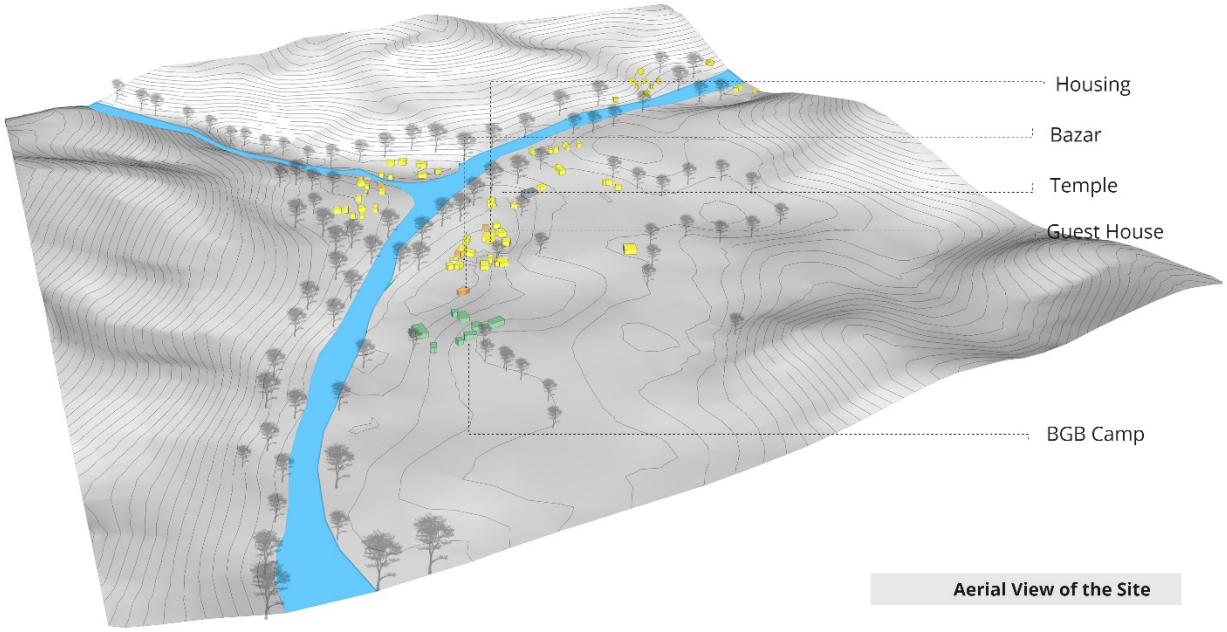


LEGEND
- Site
- Sangu River/ Water Source
- Boat Road (Thanchi-Remakri)
- Dense Vegetation (Forest Land/ Cultivated Land)
- Less Dense Vegetation





Section (Closeup)
Scale: 1/128"-1'-0"



Aerial View of the Site

Design Principles | Design Strategies

Permanence

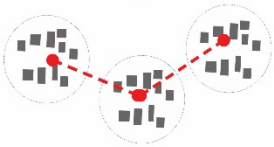
Housing (Existing & New Infrastucture)

Movement

Provision of socio-ecological infrastuctural systems (River Edge Development)

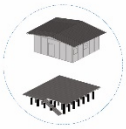
Connection

Empowerment opportunities for the local population (School, Healthcare Facilities, Bazar/ Market)



Affect

Harmony with its users (Sustainable Buildings)



Localized Focus

Clustered Rural Settlements: It is an agricultural-based community in which a number of families live in close proximity to each other, with fields surrounding the collection of houses and farm buildings. This type of settlement typically includes homes, barns, tool sheds, and other farm structures, plus consumer services such as religious structures, schools, and shops. They also have a common area that presents different public and business services.

Permeate

Spread throughout: Clustered rural settlements are sometimes arranged in a geometric pattern. Linear rural settlements feature buildings clustered along a road or waterbody to facilitate transportation and communications.

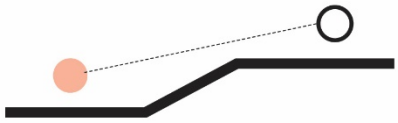
Aggregate

To collect or gather: The layout of this type of settlement reflects historicalcircumstances, the nature of the land, economic conditions, and local cultural characteristics. The rural settlement patterns range from compact to linear, to circular, and grid.

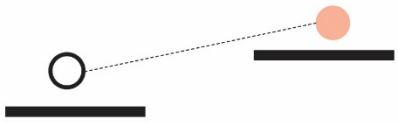
Signs/ Reference to Culture

Essence: Through the study of the patterns of life and culture of Remakri people, it would be possible to bring the essence of the locale. The interpretation of this cultural essence is inspired by the local building methods while using modern building techniques, environmental engineering methods, and new material technologies.

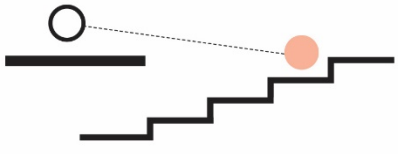
Concept Spatial Diagrams



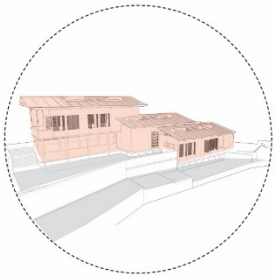
above & ahead on circulation

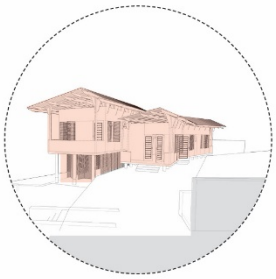


on staggered floor plate



diagonally accross in section





The connection among the build froms are visible and they sit on the land by respecting the landscape. In hilly area the diagonal views are the most imortant ones.

Master Plan | Programatic Diagram

Total Population in Remakri : 4,069 people
Area: 24,320
Literacy rate: 3.63%

Population of my site : 700-800

each family 8-10 people
each family 4-5 children
total of 350-400 children

Existing Structure: Bazar, Temple, Housing settlements, Boat stoppage area, BGB camp, Helipad

Floating Market

Public + Private

Total: 700-800 people
Public open market
Shaded market
Private market

School (Size Approx.)

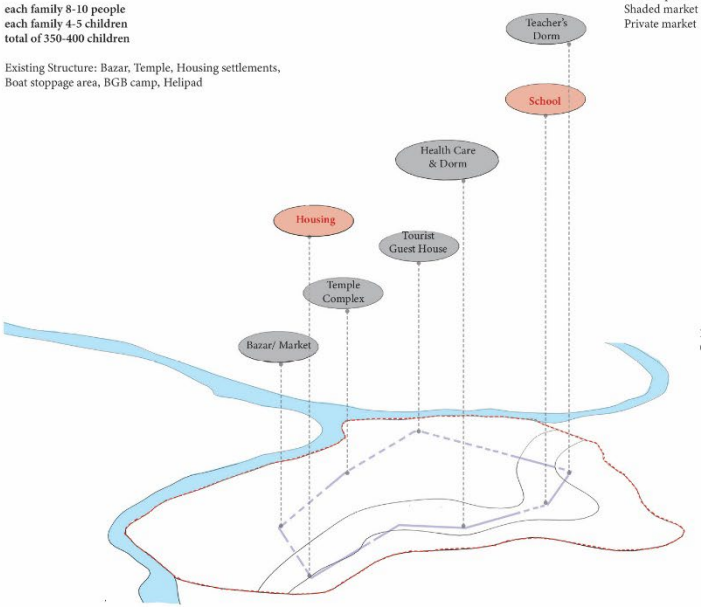
Primary + Secondary School

Total: 10,000 - 12,000 sft
10-15 class rooms
25-30 children in a class
Library
Outdoor Play Area
Indoor recreational space
Cafe

Health Care Facilities (Size Approx.)

32 bed healthcare facilities
Total: 35,000 sft

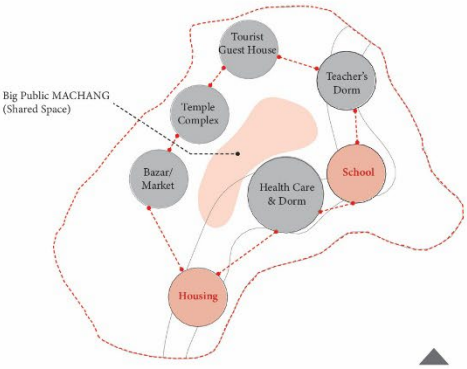
16 bed facility for men (800 sft per person)
16 bed facility for women (800 sft per person)
Admin, Office, Lab and other facilities

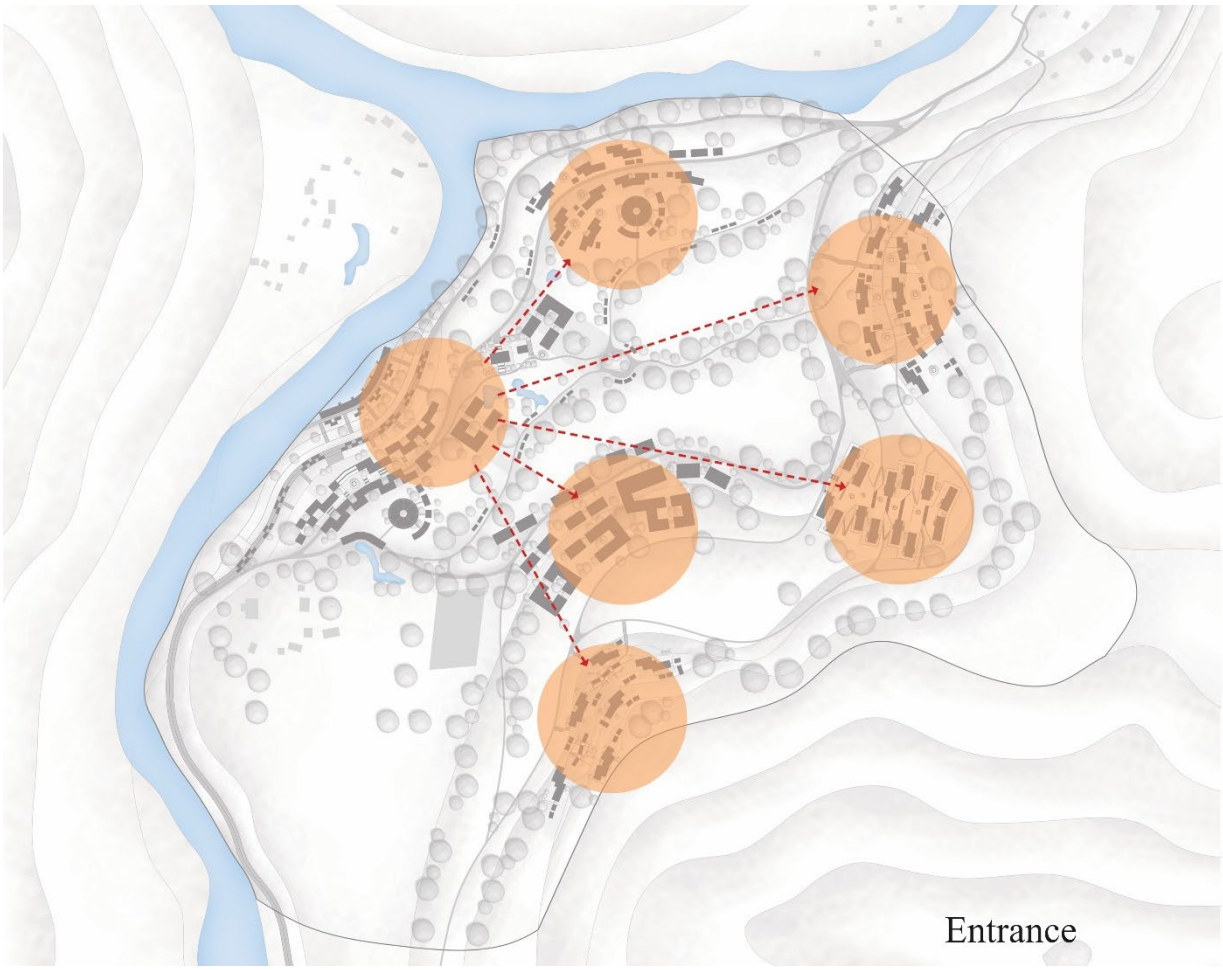


Movement & Connection (Larger Nodes)

Spread throughout the **Clustered Settlements** by gathering/ tieing the community as a whole

Provision of socio-ecological infrastuctural systems
Empowerment opportunities for the local population



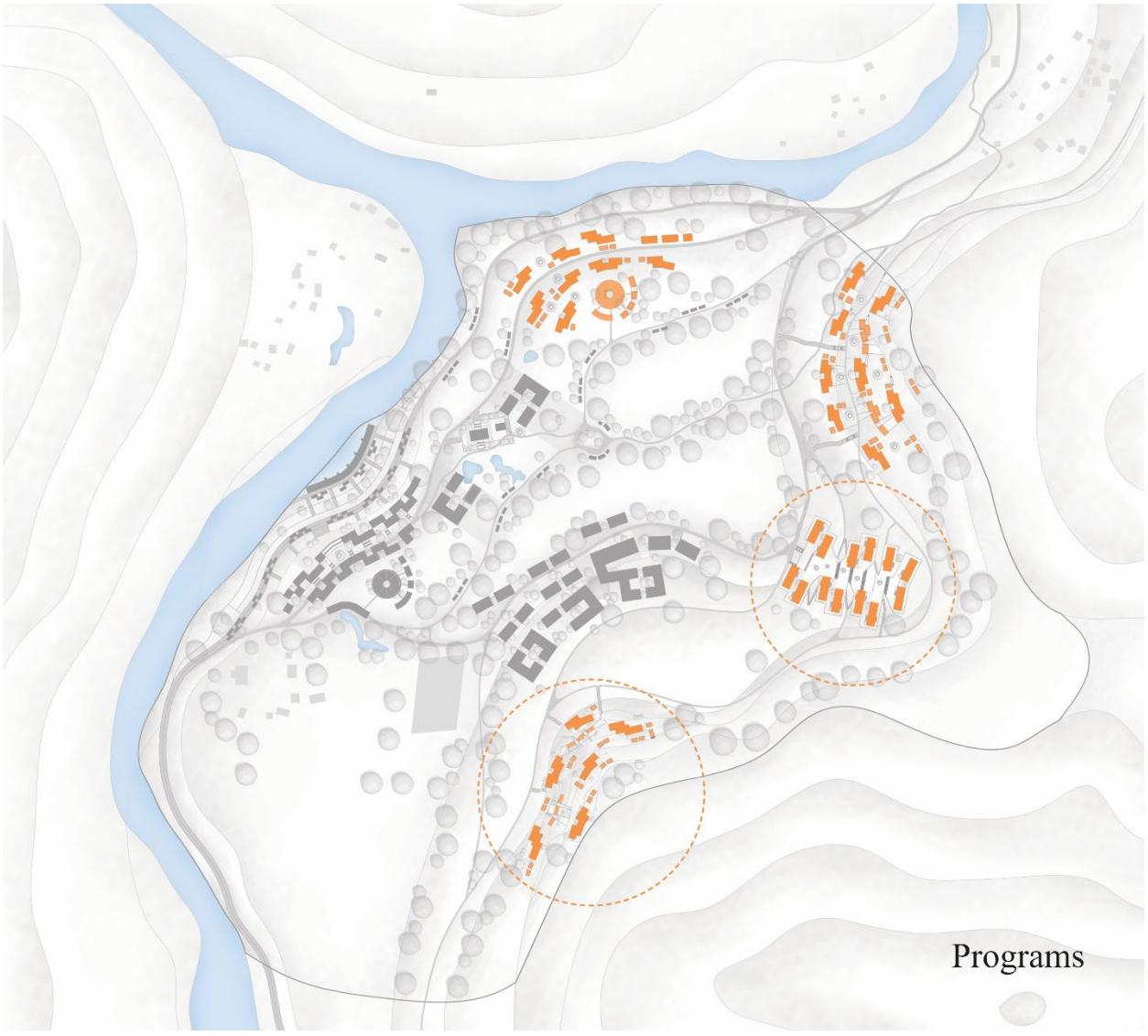


Proposed Master Plan

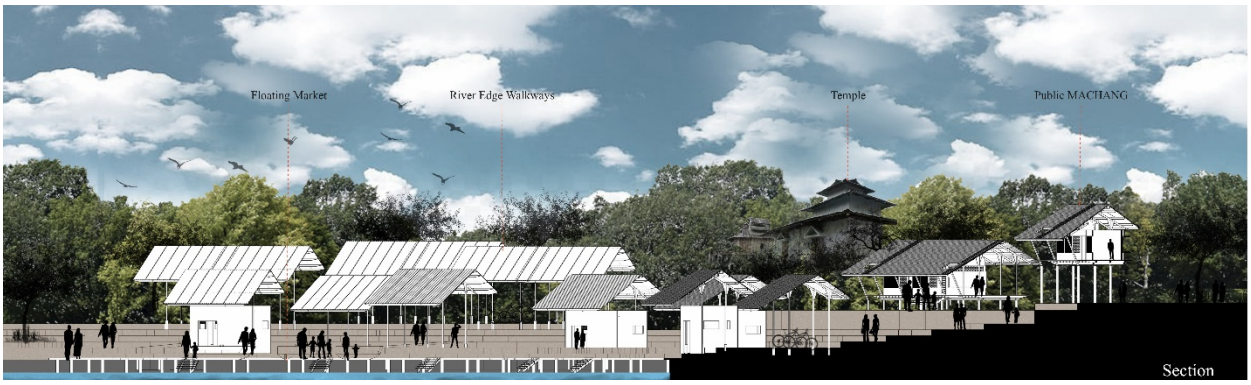
The idea is to design a master plan for the community and focusing on some specific program. This area has a population of 700-800 people. This area does not have school and heath care facilities, which is a big issue for the community. So, some of the events that I am proposing are river edge development, bazar/ market, floating market, school, healthcare facilities, and housing.

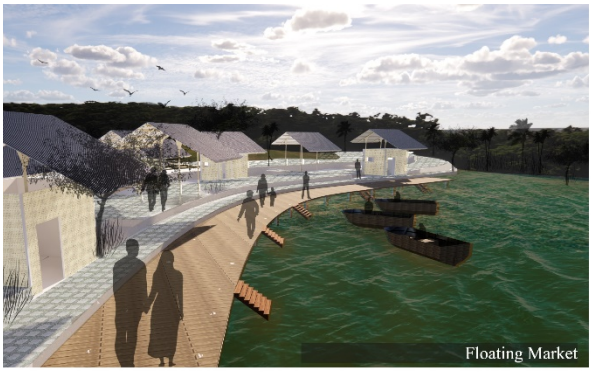

Floodplains


Pathways


Programs

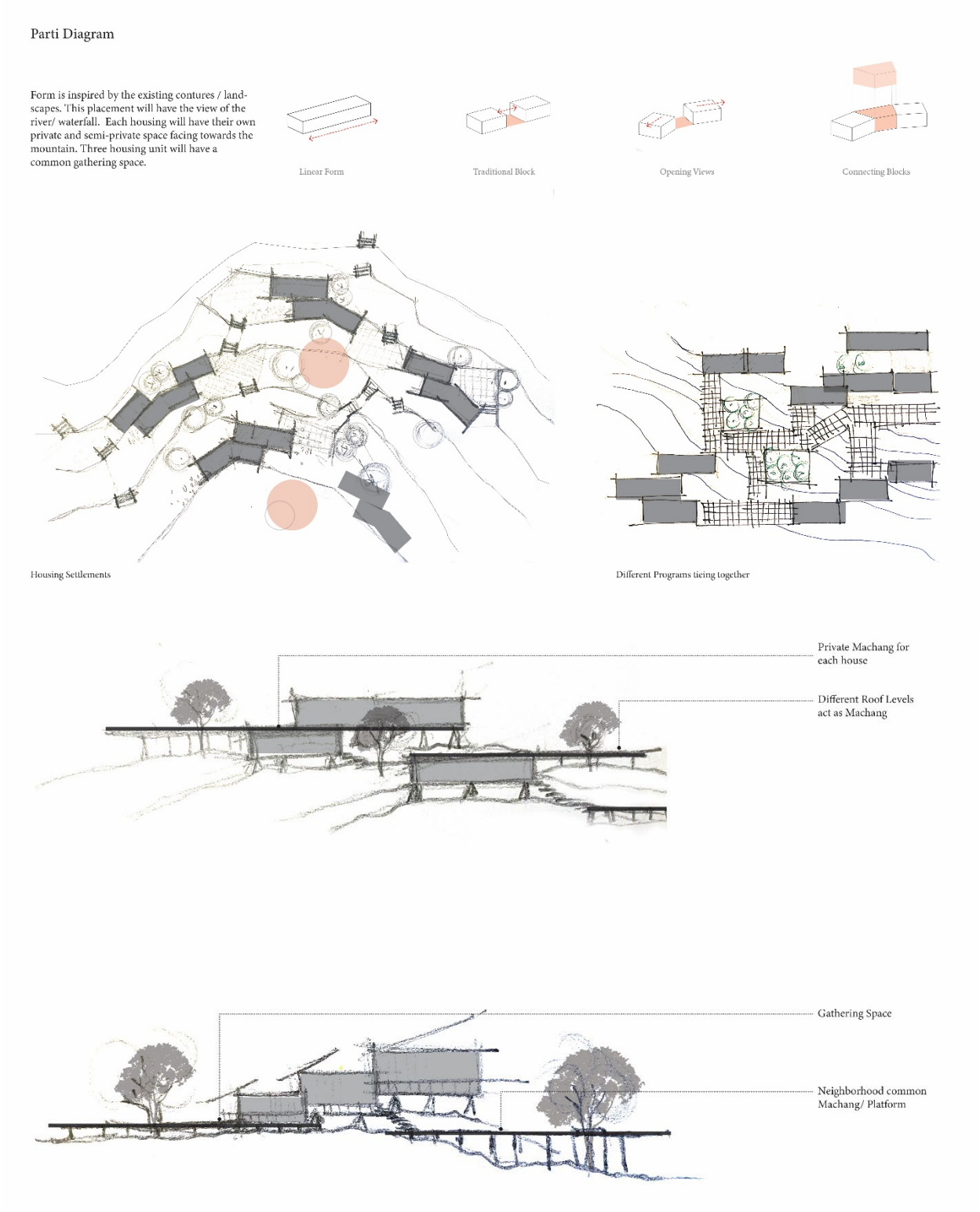
The section is showing the floating market at the entrance, then public retail space/ bazar/ Public Machang, then temple complex which is keeping the old sacred temple, and health care facilities, housing, and school are at the back of the site. The programs that this project has focused on are housing & school. Some of the 3D vignettes of the floating market have enclosed and open shaded space. Most of the people in this region worked here in shop and in agricultural land. The river edge walkways and Public Machang/ elevated space are the public spaces for this area.



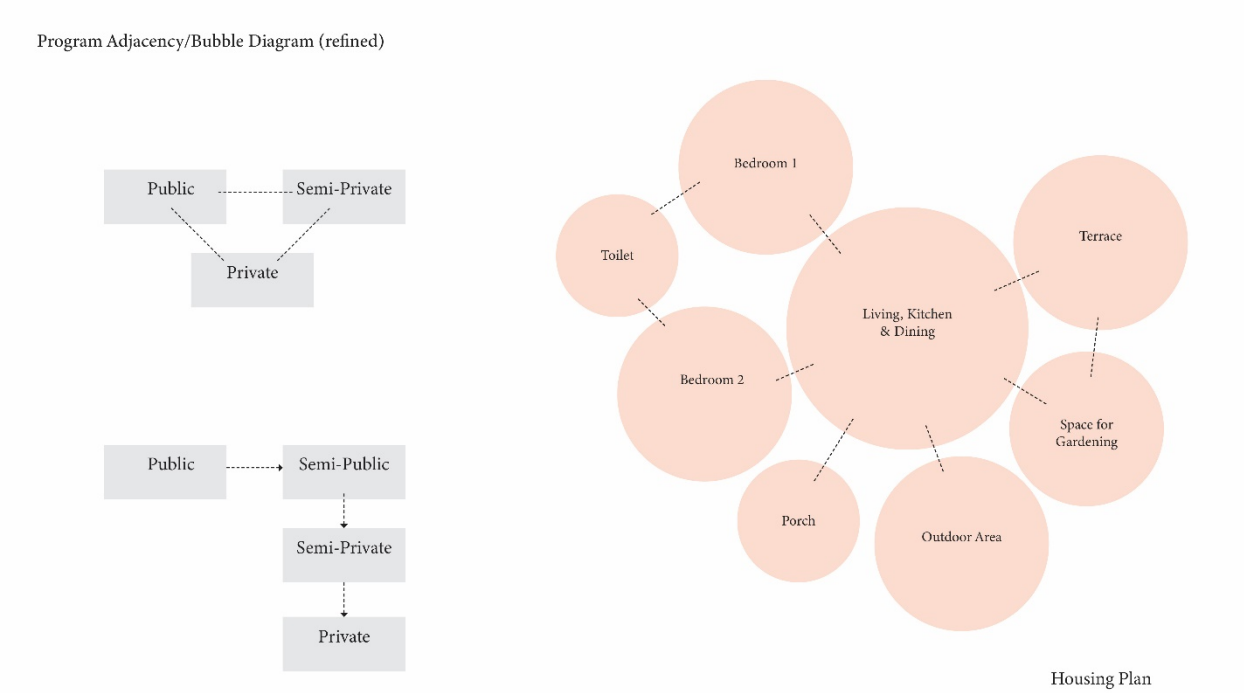


Housing Proposal

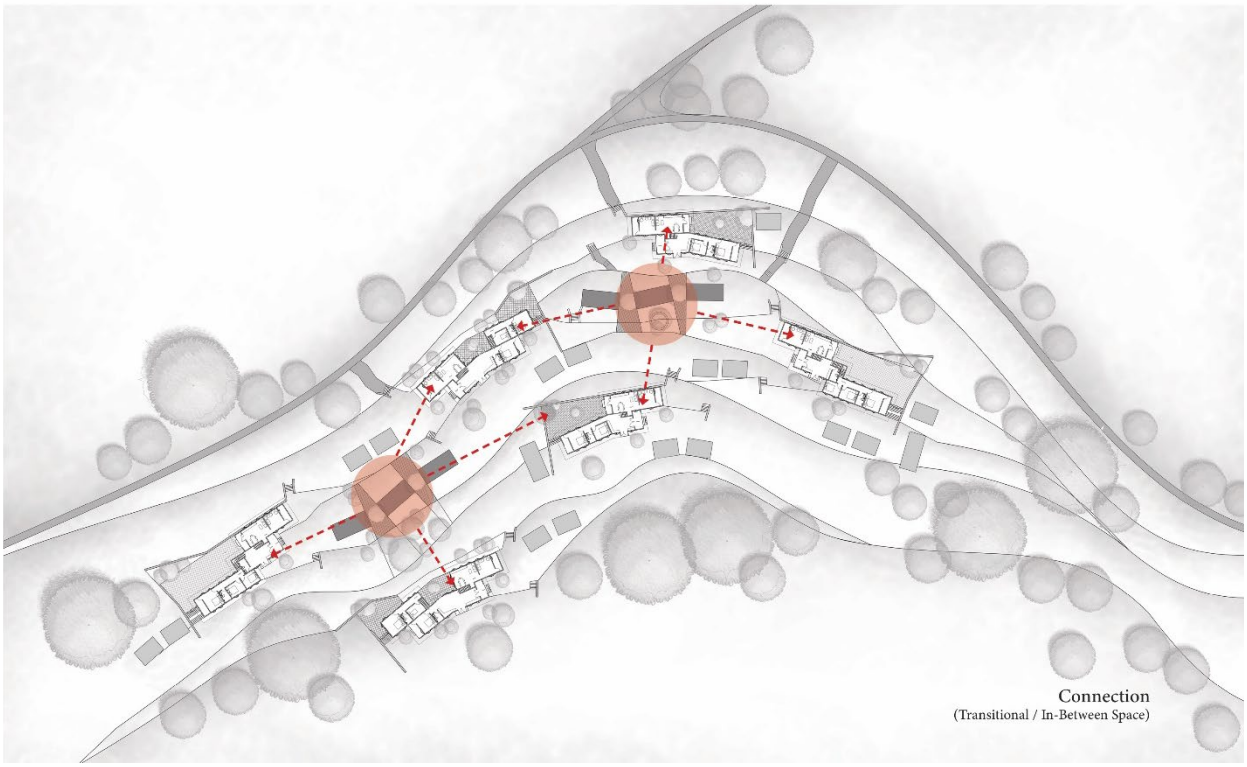
The housing is designed for the community, dorms for the doctors, and teacher's dorm. Since the existing condition for the community is very flexible for accepting the new members in this area, that is why this design did not separate them.



The housing forms are basically inspired from the contour line of the landscape, which is giving an open view towards the river from the uphill. After researching the existing conditions of the planning of different spaces, it is clear that the most important space is the living/ gathering space, and all other spaces are linked towards it. Also 2/3 housing is connected with the community gathering space among themselves.

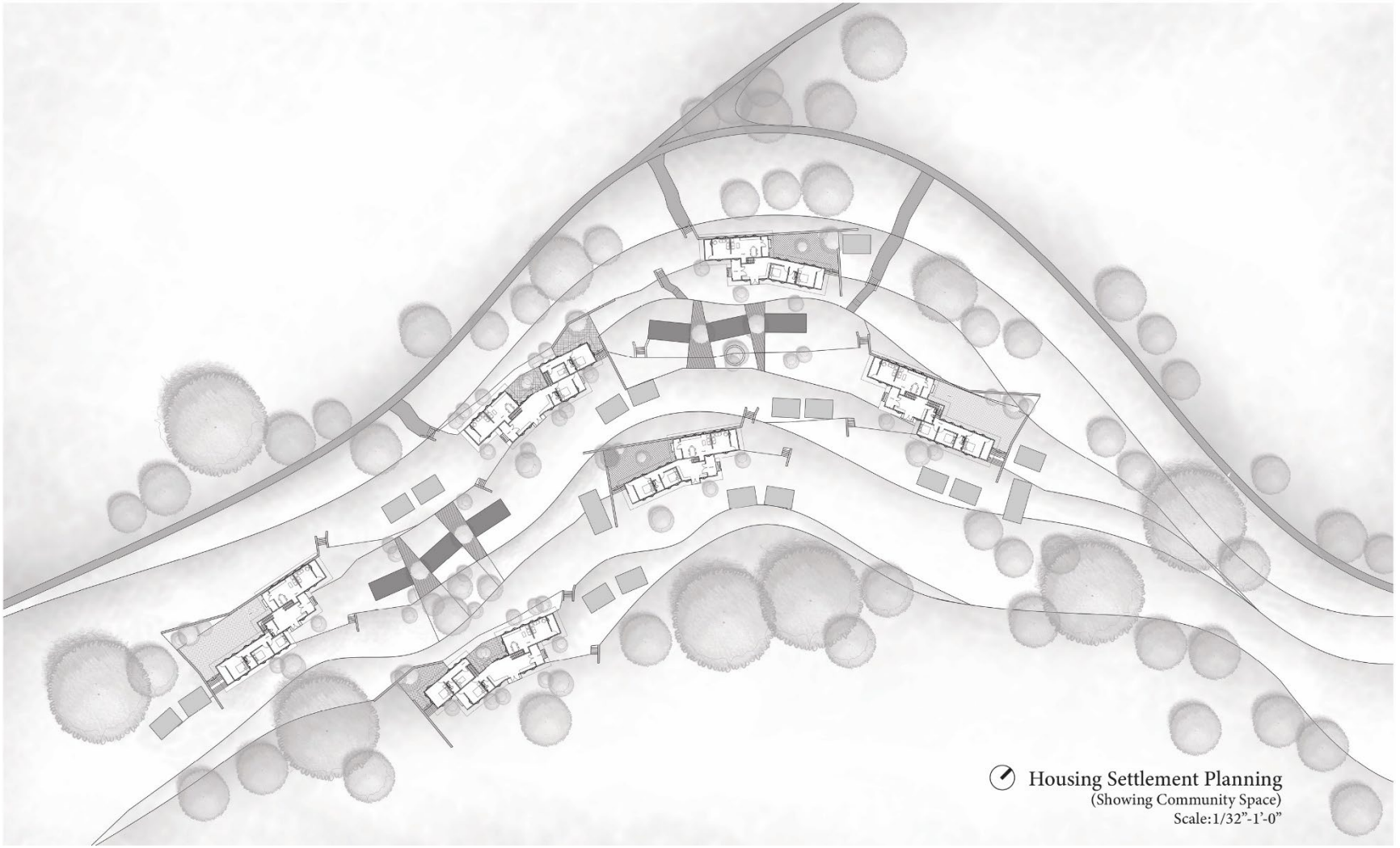


Housing Plan



Connection
(Transitional / In-Between Space)

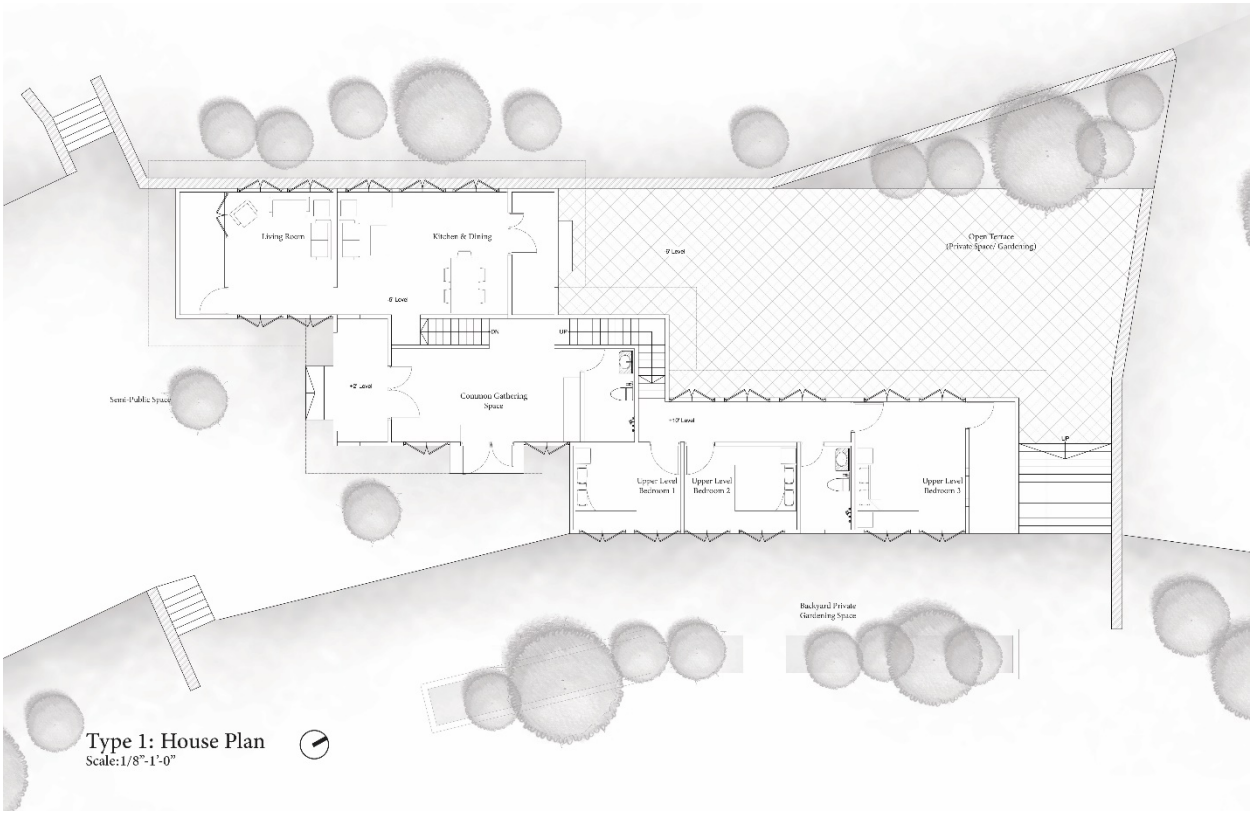
Housing Settlement Planning



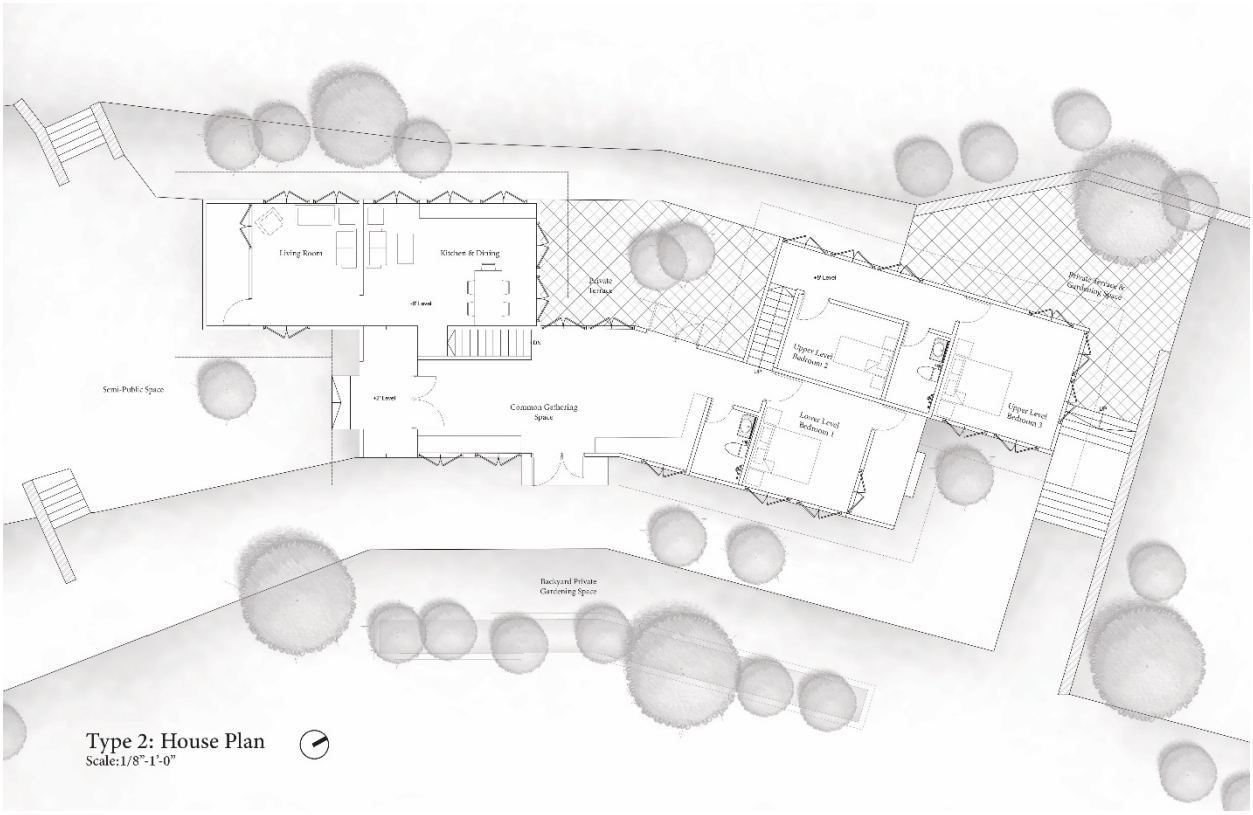
Long Section

(Showing different types of housing at different levels on the contour landscape)

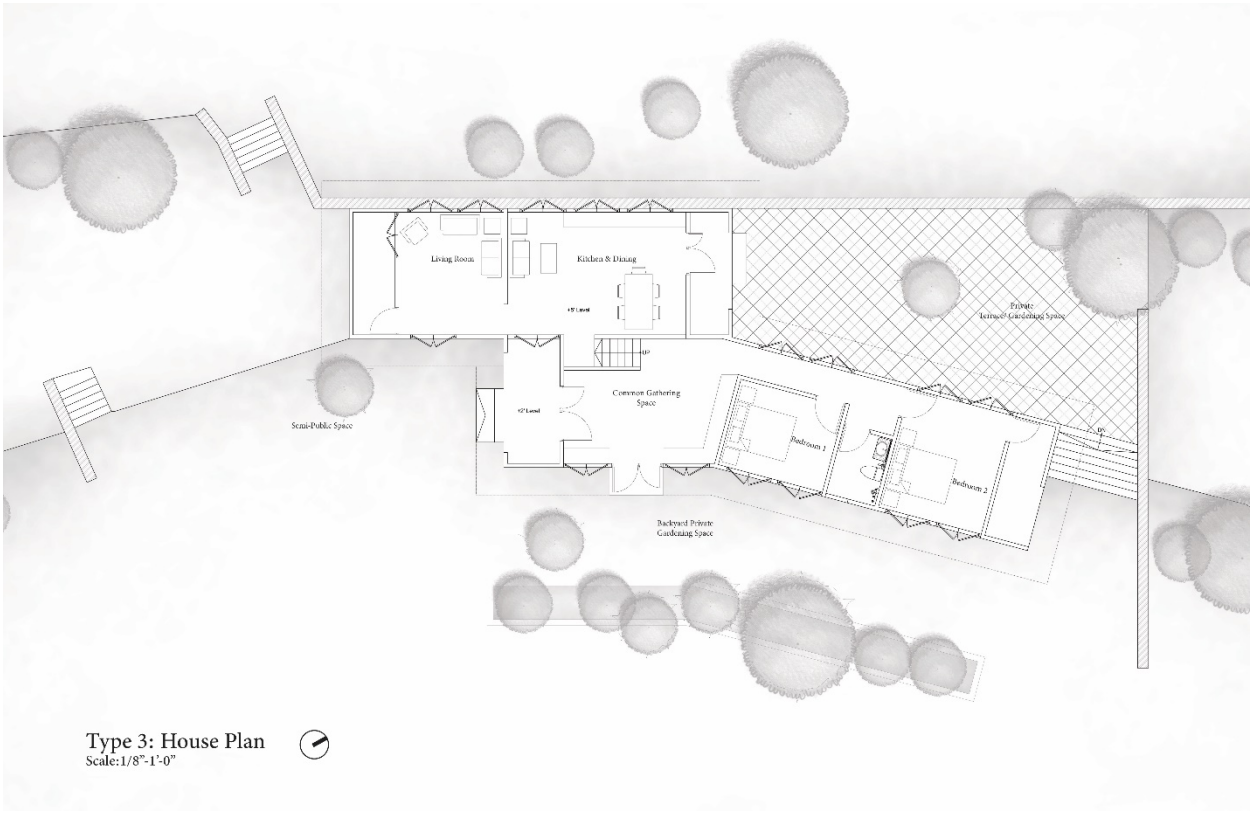
Proposed Type 1: House Plan (1770 sft)



Proposed Type 2: House Plan (1800 sft)



Proposed Type 3: House Plan (1450 sft)



In this Remakri Area, the design has proposed three types of housing in relation with the size of the family. Big and small, each type is having open terraces, gardening space, and also focusing on central point which is common gathering space.

Some 3d vignettes of social interactive space which is being used for different purposes/ festivals for each family. Since they are living here with 3/4 generations, these spaces are really important for them.

The Aerial View of the Housing with the Context

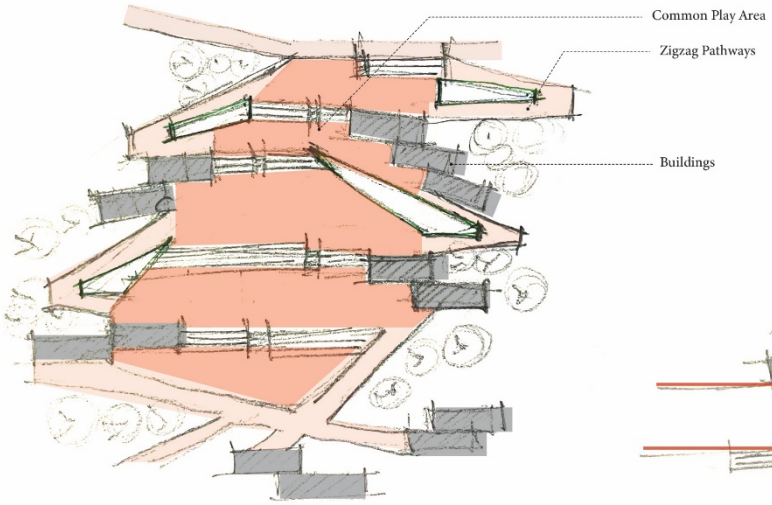
School Proposal

This project has proposed both primary and secondary schools as this site does not have school and the rising number of children being illiterate is very alarming.

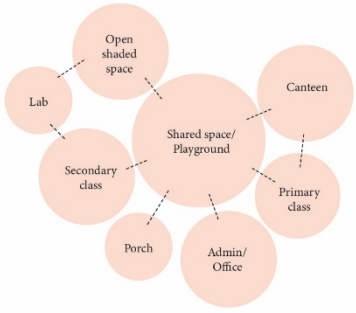
Sketches for School

Education System in Bangladesh

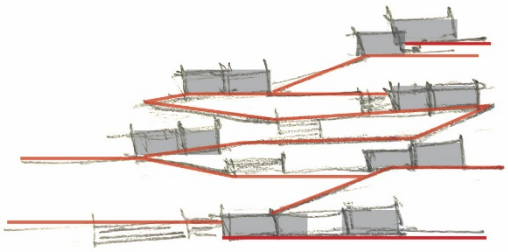
Education	School/Level	Grades	Age	Years	Notes
Primary	Primary Education	1–5	6–10	5	
Secondary	Junior Secondary Education	6–8	11–13	3	
Secondary	Secondary Education	9–10	14–15	2	Includes Trace Certificate/SSC Vocational
Secondary	Higher Secondary	11–12	16–17	2	Includes 2 years of 4 year Diploma in Engineering & Nursing, HSC Vocational



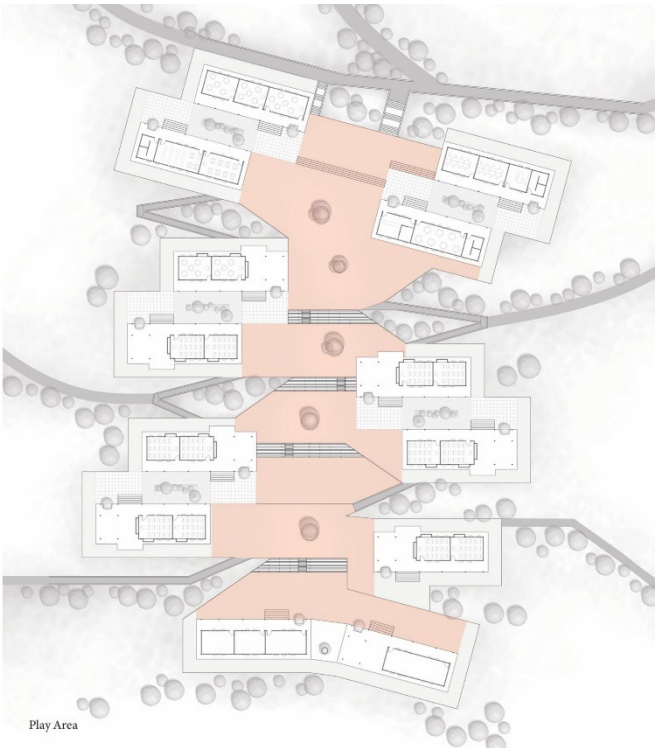
Plan showing connection between spaces



Spaces for the School



Zigzag pathways in elevation showing connection between spaces



Play Area

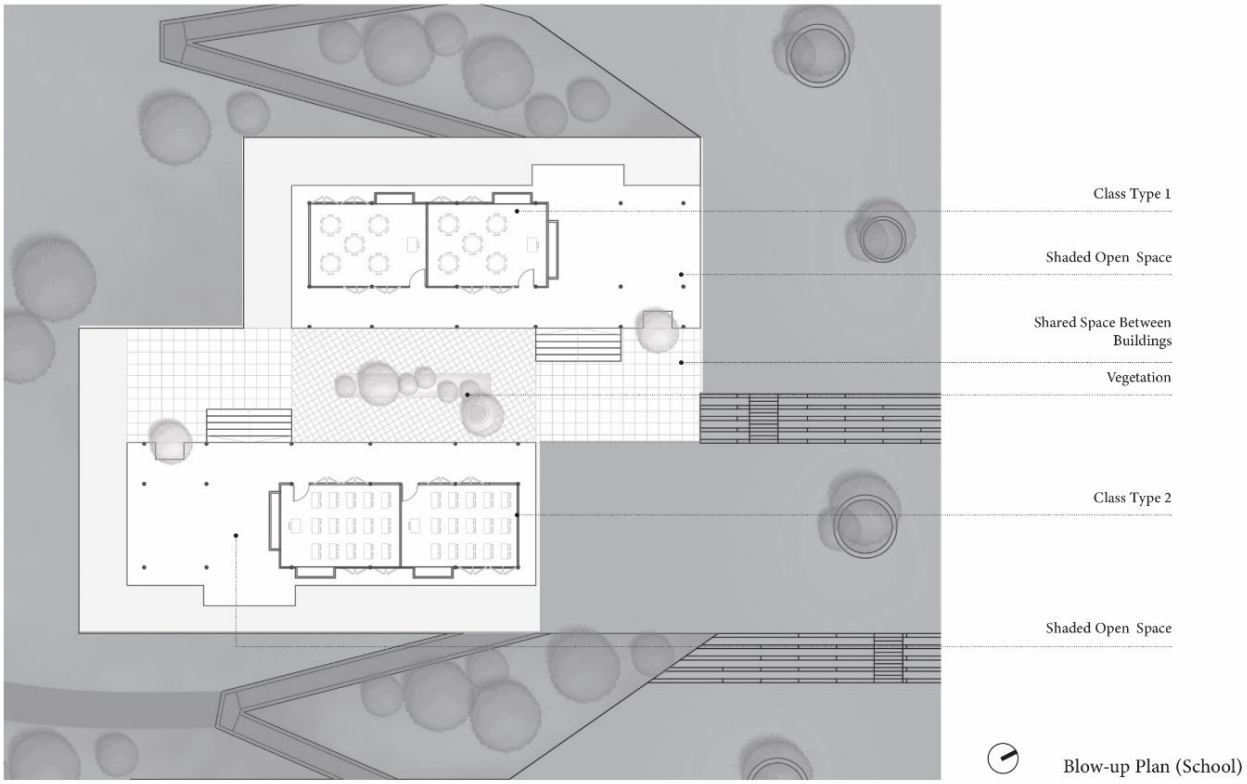
Vegetation

School Plan (Showing spaces at different levels)

The planning has inspired from the zigzagging pathways on the contour landscape that connects the classrooms at different levels. In terms of the movement of children, the design also planned the play area in between the classrooms. So, at the entry point it has placed all the common programs such as admin office, canteen, and Lab. And then primary and secondary classes. In addition, the design also puts the vegetation/ gardening for the children to help them grow the importance of nature.

School Plan (Showing Spaces at Different Levels)
Scale:1/32"-1'-0"

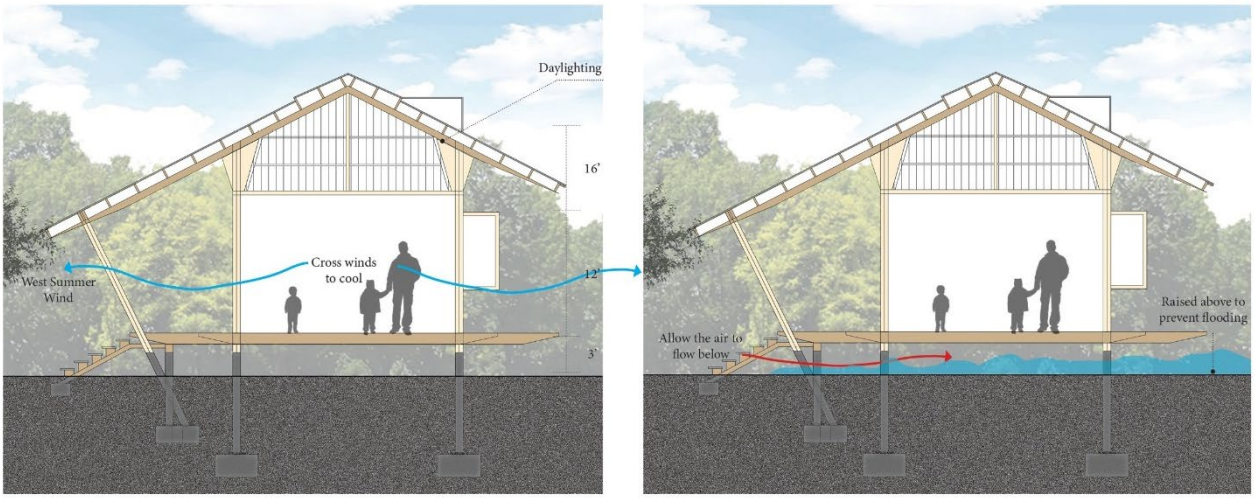
Two different classes are sharing an open space (In-between space), that has vegetation. Then outdoor shaded open space that can also be used for open classroom.



Blow-up Plan (School)

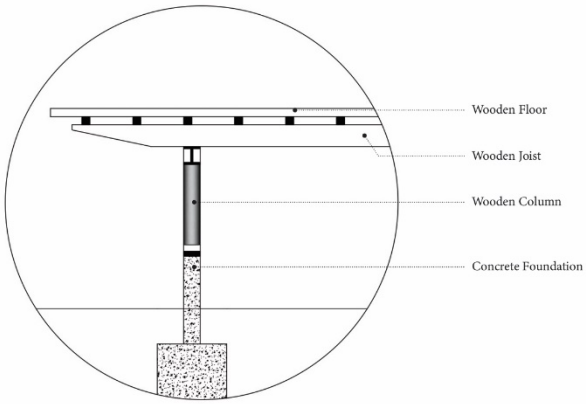
3D Materials & Tectonics Study

- During the day, the building can be opened up, revealing a lightweight structure that allows to flow the natural breezes without any interruption.
- The structure could fluctuate with the natural changes of the environment.
- Allow the air to flow below.
- Raised above (MACHANG) to prevent flooding during monsoon season.

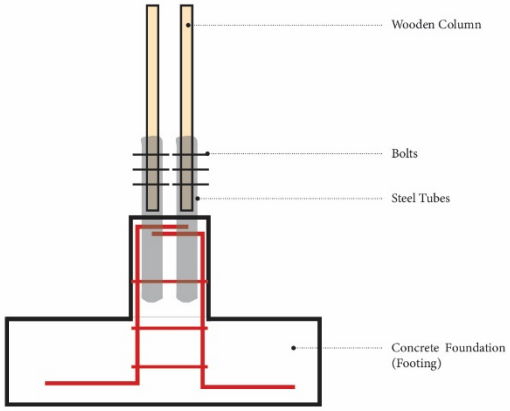


Section, Scale: 1/4"-1'-0"

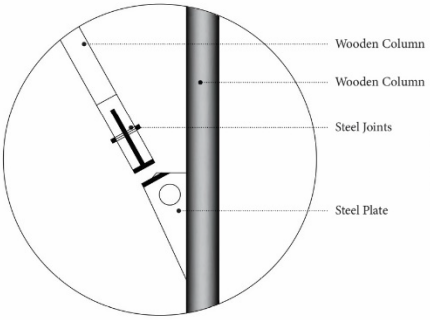
Detail Joints



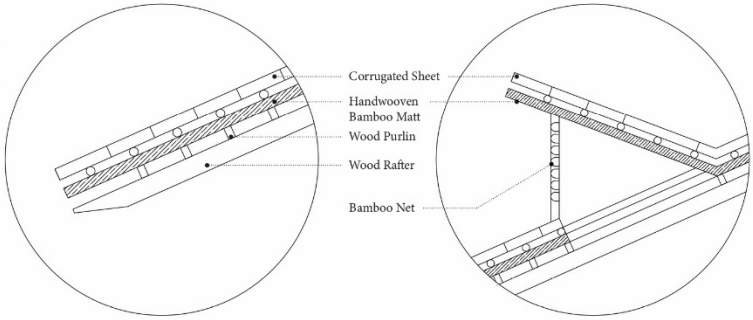
Foundation detail



Concrete foundation
and wood joints detail



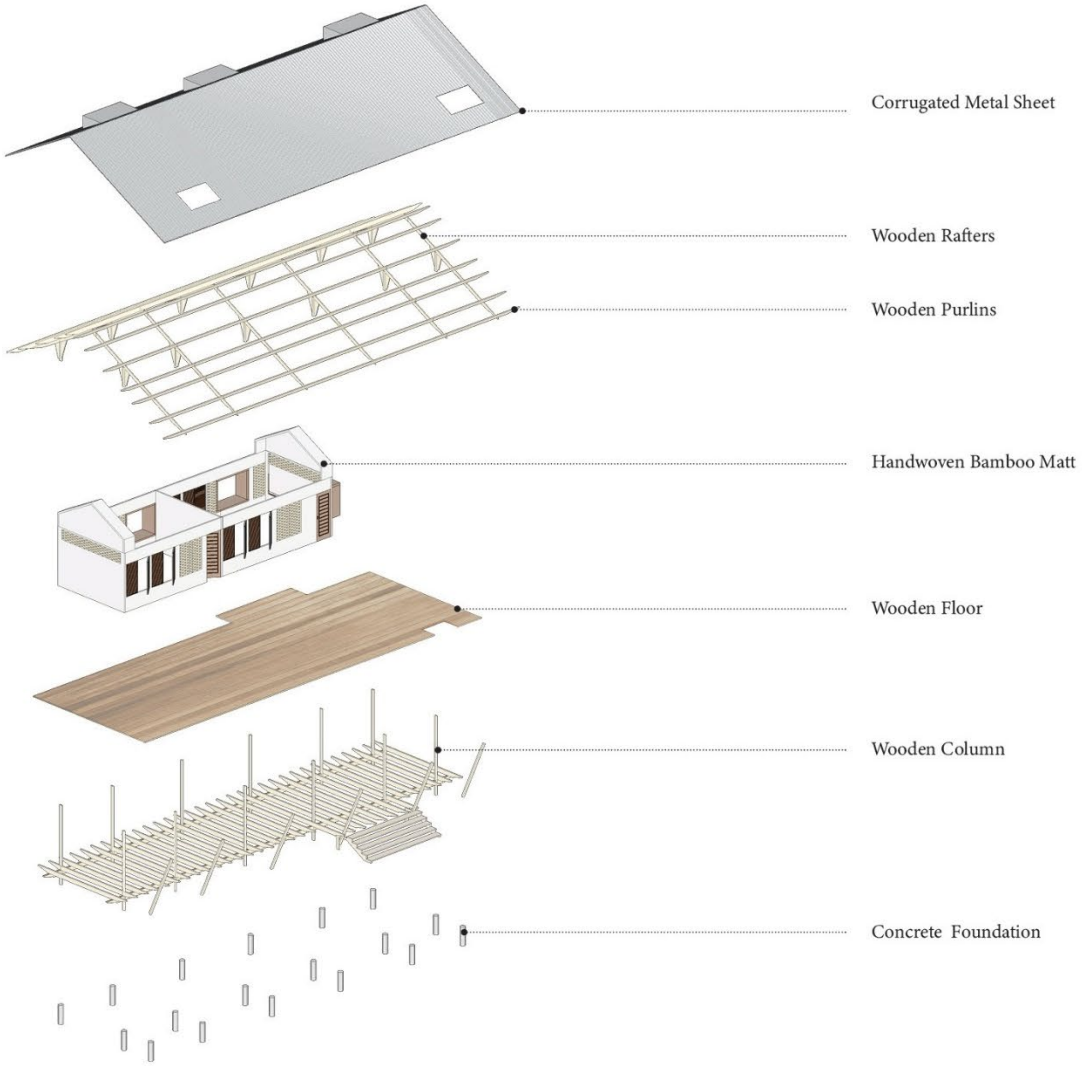
Wood Joint detail



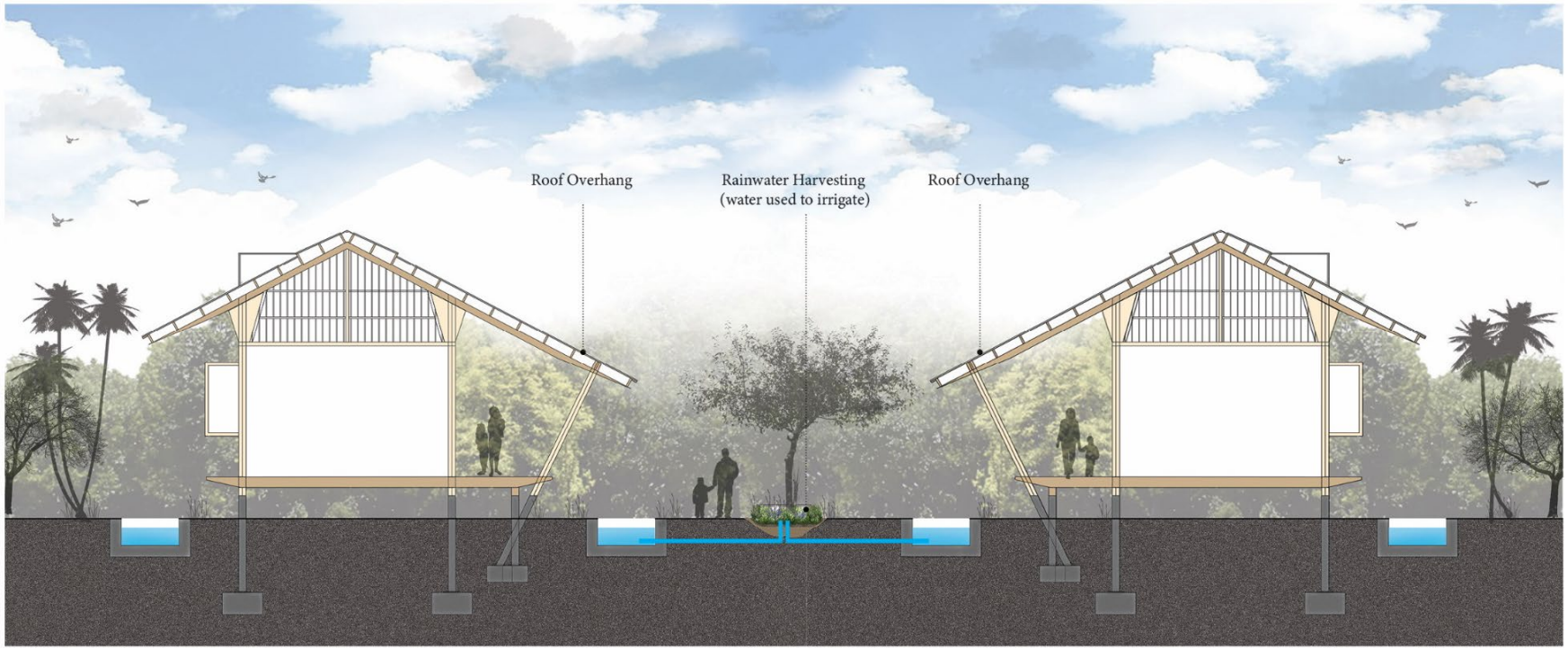
Roof detail

Roof Opening detail

3D Materials & Tectonic Study (Exploded Axon)

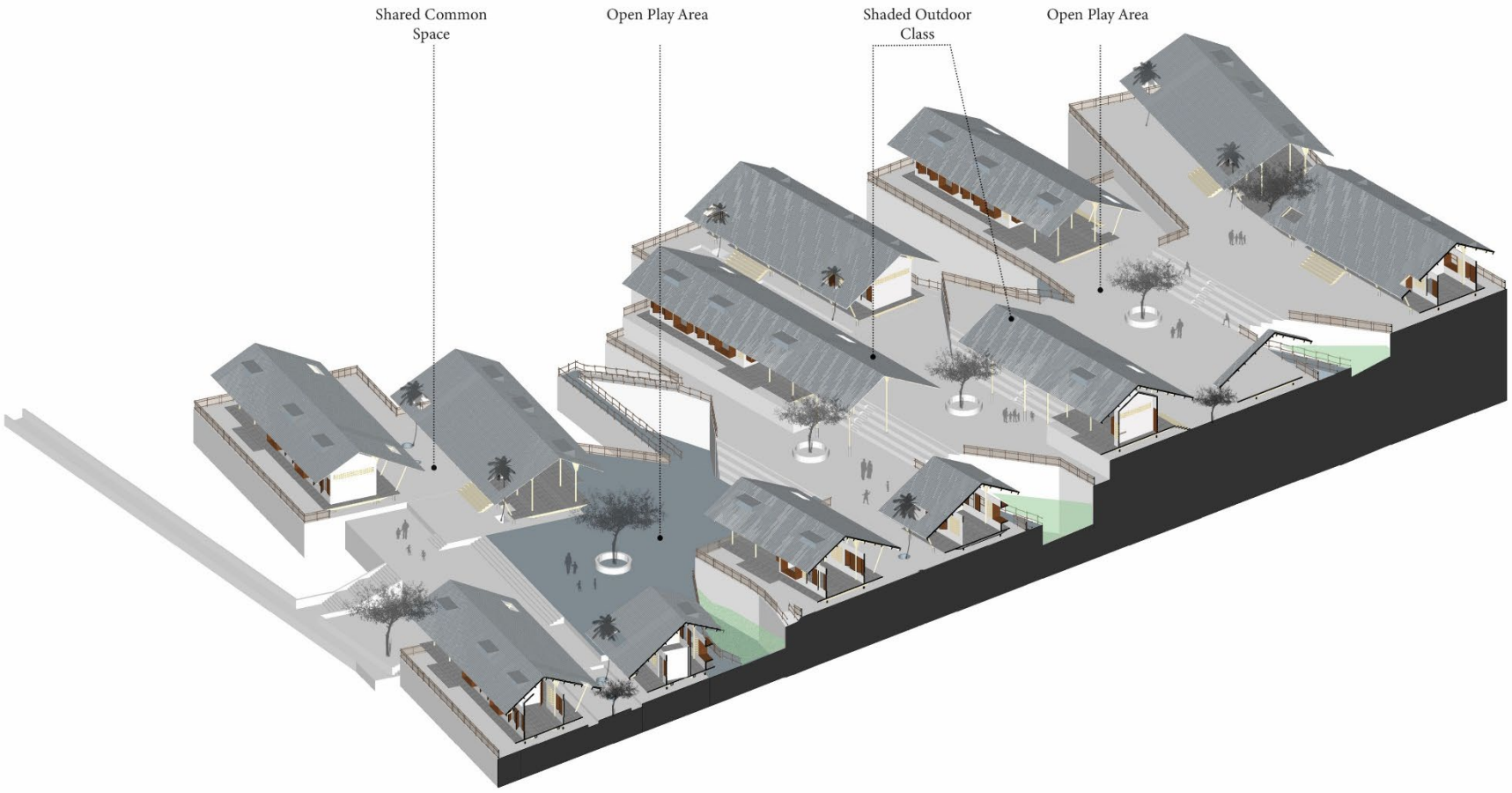


3D Diagrammatic Scenarios (Rainwater Collection)

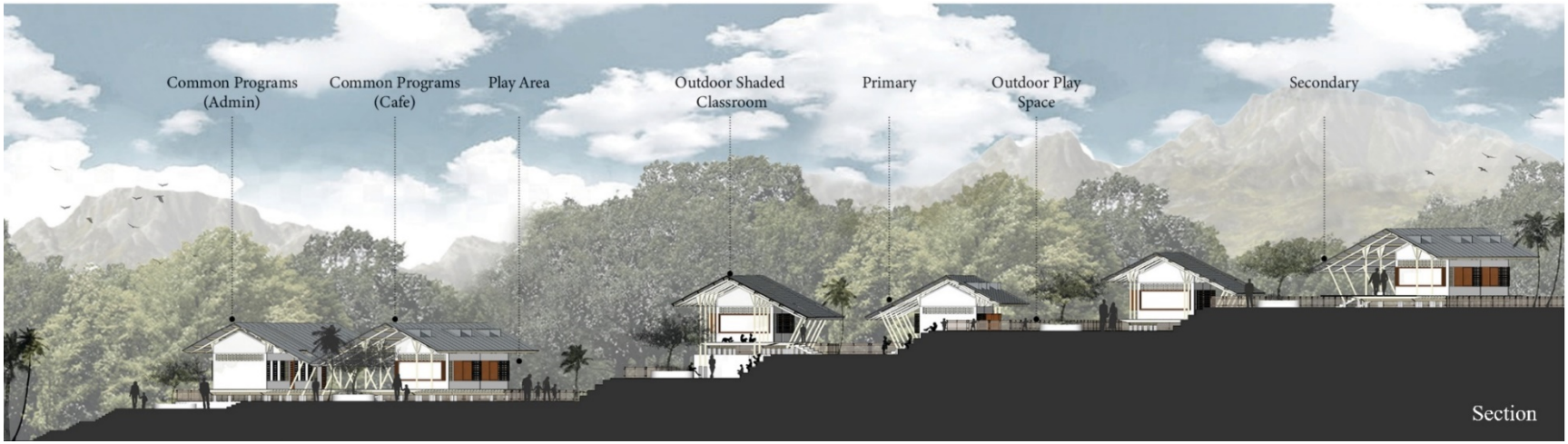


3D Diagrammatic Scenarios (Rainwater Collection)

3D Section (School)



School Section Showing Different Spaces



Shared Common Space

Outdoor Classroom

Connected Pathways

Play Area

The Aerial View of The School with The Context

Aerial View with the Context

School View from the Uphill Towards the River

So lastly, this thesis wants to address that we need to think strategically to connect the vernacular globally as these buildings provide great bioclimatic characteristics and prove to be real examples of architectural sustainability, which affects the buildings in Bangladesh as well.

View from the uphill towards the river