REFLECTION
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1. Introduction

This project is an elderly-friendly affordable housing project located in Lakkatura, Sylhet, Bangladesh. The original site is a tea garden community, with the plot area of 5.7 hectares. Workers from Lakkatura tea garden are living there with their families. The number of families goes to 124 in total, with additional 250 seasonal workers coming in monsoon time.

Due to the poverty and the geographical isolation, it is challenging for the residents to secure a comfortable standard of living. Current conditions of the building quality, infrastructure and facilities are not in order for their daily life. Same with the service for healthcare, education and commerce. It is observed that the elderly could mostly show the problems of living conditions in the tea garden communities.

Additionally, many young people are leaving to seek urban job opportunities due to industrialization and urbanization in Bangladesh. This trend suggests that as the middle-aged population ages in the coming decades, they may face challenges due to inadequate care and be at risk of community decline. To ensure the sustainability of the community in the future, implementing a new housing system with a focus on accommodating the needs of the elderly could be a valuable solution.

Therefore, the research question is drawn as "**How can we create an affordable housing that focuses on living conditions of the elderly and stay sustainable for potential changes in the tea garden community's demographics over time?**".

Based on the research question, this project has two main focus points: how to create an affordable housing and community system rooted in the Bangladesh village context, and how to provide a convenient and sustainable living condition for elderly.

This project finally goes to a community planning with 27 residential clusters, several commercial units, and public service space, located following the local topographical characteristics. For one typical residential cluster, it has 3 floors and 22 dwelling units, with semi-outdoor common areas in the middle of the cluster. The dwelling units contain 12 family units, 2 special unit for those single elderly or elderly who with special space needs, and 8 single rooms for seasonal workers who will come to work in the tea garden in monsoon season. One family unit have the capacity to house maximum 6-8 residents. These units are designed under the concept of autonomy for residents, in case of different demands in the future.

Figure 1 Perspective of the cluster design

2. What is the relation between your graduation project topic, your master track and your master programme?

My graduation project is to create an elderly-friendly affordable housing system for residents of the Lakkatura tea garden community in Sylhet, Bangladesh. This project is a specific application within the broader theme of global housing, particularly addressing the challenges faced by countries in the Global South.

The project addresses the issue that, during rapid urbanization, elders often prefer traditional living environments while younger people move to cities for better opportunities. This generational conflict could lead to a situation where, over the coming decades, elderly people are left in rural areas, who would be in need of housing systems that cater to their specific needs.

This problem is not unique to Lakkatura or Bangladesh, but a common problem in many Global South countries undergoing urbanization. As an architecture student and future architect, addressing this problem through architectural solutions is both meaningful and impactful. My project aims to improve the living conditions for the elderly by providing a housing system adaptable to their needs and for their future.

Considering the daily needs of the elderly, their role in family activities, and their sense of belonging in the community, the design starts from units and expands into a cluster that brings different groups together under one roof. The aim is to help the elderly feel truly part of a community, avoiding feelings of isolation or separation simply because they are older and may no longer contribute as much.

The repeatability of this housing system has also been considered, with the potential for application in similar contexts across other urbanizing areas.

Firstly, designing for spatial autonomy provides a foundation for a housing model that allows residents and the community to evolve according to their future needs. This means that even after decades, the system will have the flexibility to adapt and improve based on the changing needs of its residents. Moreover, considering the site conditions and characteristics of the tea garden community, this housing system can be seen as a model situated in the transition in between rural and urban contexts, offering a broader perspective and potential solutions for similar situations.

In summary, this design could offer a replicable housing model for areas between rural and urban contexts, presenting new possibilities for housing systems from a global perspective.

Figure 2 Elderly living in Lakkatura tea garden community

3. How did your research influence your design/recommendations and how did the design/recommendations influence your research?

The research and design phases complemented each other throughout the completion of this graduation project, each playing different roles during various stages.

In the early stages, research was at the first place and served as the foundation and inspiration for the design. Researches on the natural and social conditions of Bangladesh provided a comprehensive understanding of my "possible site" from a broad perspective, including labor conditions, colonial history with tea plantations, religion and women's segregation.

And the field research generated a more concrete understanding, offering insights into the real situation for local dwelling. By visiting homes and engaging with locals and volunteers, conditions such as tight living spaces per residents, lack of infrastructures, inefficiency of space using, and disorder of community areas were all observed. Among these existing problems, the most pressing issue I identified, which threatens the community's sustainability, is the lack of attention to the elderly and the growing divide between older and younger generations, along with the unbalanced development between urban and rural area.

These findings helped determine the project site and establish my problem statement focusing on the elderly's living conditions and future challenges in the Lakkatura tea garden community.

Figure 3 Photos taken during the field research in Lakkatura tea garden community

During the design process, research ensured the feasibility of my design ideas. My concepts of the design became the main point and the research played a role of data base for them. For example, when designing the facade, I aimed to achieve the following:

1. A facade that echoes traditional Bangladeshi village architecture.
2. A facade system that can be freely assembled to offer residents autonomy in space utilization.
3. A facade retaining architectural characteristics of the original community.

To realize these concepts, I researched traditional Bangladeshi architectural styles and cases about the assembled modular wall systems worldwide.

Finally I drew inspiration from Bangla Baton and Ikra House, which are traditional local housing styles, and decided on self-supporting framed walls for the facades, allowing easy connection to columns and beams. The walls are decided to be built with wattle and daub construction using local wood and bamboo. Additionally, the material of the roof would be CI sheets from the original community, which could helped maintain the local atmosphere for the housing.

4. How do you assess the value of your way of working (your approach, your used methods, used methodology)?

In my graduation project, I employed a research-driven design approach, integrating field research with iterative design processes. The value of this approach can be assessed based on its effectiveness, efficiency, and adaptability.

Effectiveness: Problem-Solving

The integration of research and design was instrumental in understanding the specific living space needs from the elderly of the Lakkatura tea garden community. And considering the influence of urbanization and youth migration, once this community become an aging community, the community itself could decline after generations. To ensure the sustainability of the community in the future, implementing a new housing system with a focus on accommodating the needs of the elderly could be a valuable solution. Also, this design could offer a replicable housing model for similar conditions in between rural and urban contexts, presenting new possibilities for housing systems from a global perspective.

Efficiency: Resource Utilization

The project is designed to be as self-built as possible by local residents. The materials are chosen to efficiently utilize local resources, ensuring that residents are familiar with them and already know how to work with them already.

The main structure is built from ironwood, which is a common construction material for the local residents. So it is both economical and suitable for the context by using it. For the walls, the project incorporates wattle and daub techniques, using local bamboo and mud from nearby farmlands, along with Karoi wood for the wall frames. Recycled CI sheets from the original houses are used for the roofing. Additionally, natural raw jute, which is cheap and widely available in Bangladesh, is used for insulation.

However, this project is not entirely self-built, which highlights some limitations in the structural and cluster design.

Adaptability: Flexibility

One of my main concepts for the housing unit design is the spatial autonomy for residents in order to meet the possible future needs.

The design of different housing units is not entirely fixed. Each cluster includes six service cores made of brick, which function as toilets and kitchens, managing water and requiring waterproofing; these service cores are fixed within the cluster model. In contrast, the wooden-framed walls are removable, allowing for flexible layout changes. As time goes on, if the residential units no longer meet the residents' living standards, the spaces can be reconfigured according to their preferences. This flexibility enables residents to easily locate and relocate elements within their living spaces, allowing them to shape their environments as they want.
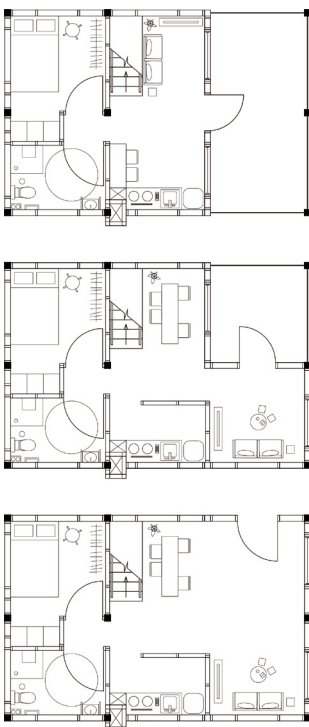

Figure 4 Flexibility of the unit layout and framed wall assembly

5. How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?

My housing project advances the field of architecture by introducing a research-driven design approach that integrates local cultural and environmental contexts. It could provide an academic attempt on sustainable and affordable housing solutions for aging populations in the Global South. Morover, the innovative use of local materials and community-involved construction methods could provide new models for architectural practice.

For the societal value, this project could meet the societal needs by creating a better living condition for the elderly, who would have the possibility to be left behind during the urbanization.

The design could be replicated in other similar communities, and even in other similar situation in Global South, to providing a feasible solution. Moreover, the design could also be extended to influence urban planning and housing policies, with the possiblity on promoting community resilience for the future decades.

6. How do you assess the value of the transferability of your project results?

My project is an elderly-friendly affordable housing system, which could be also adaptable to other communities across the Global South which faces the similar challenges under the context of rapid urbanization and youth migration. The repeatability of this housing system has been considered in the design, with the potential for application in similar contexts across other urbanizing areas.

Firstly, designing for spatial autonomy provides a foundation for a housing model that allows residents and the community to evolve according to their future needs. This means that even after decades, the system will have the flexibility to adapt and improve based on the changing needs of its residents.

For the consideration of material, the main structure is designed with timber, which is a common and sustainable construction material all over the world. If my housing project is applied to other context, there will not be problems with the particularity of construction materials, which also benefits for the adaptability and transferability to different environmental contexts.

Moreover, considering the site conditions and characteristics of the tea garden community, this housing system can be seen as a model situated in the transition in between rural and urban contexts, offering a broader perspective and potential solutions for similar situations.