

REFLECTION

Project Introduction

Nalasopara East, a representative case of chaotic urban fabric in Mumbai, India, is comprised of people engaged in diverse means of income generation in both the buildings and the streets. This context leads to immense spatial implications as well as design challenges. In order to improve the complex and unorganized network of informal economic activities, the existing vibrancy of the area became my core interest in the site selection.

My specific area of focus is the remaining pockets of Baithi chawls in the midst of the dense redeveloped mid-rise chawls along the Virar-Nalasopara Link Road. The intention is to put forth a new micro-scale development scheme in the area which not only increases the density of inhabitants, but also creates a flexible live-work typology dedicated to different groups of the informal sector prevalent in Mumbai. Throughout the course of time, the goal is to apply the design strategy to various communities and sites in Nalasopara.

Relationship between research and design

The research stage in Global Housing studio is structured into two main branches. In the beginning is a *context-led approach* through literature for a comprehensive background information of Mumbai and India at large. This involves organizing the quantitative hard data, qualitative soft data, spatial mapping and housing case studies. This phase is a collaborative group work which aims towards producing a comprehensive booklet as a final product. Second branch is a *methodology-led approach*, which is a qualitative research through site visits and analysis. In this visual ethnographical process we were to observe, conduct interviews and create visual representations of the patterns of daily lives of the inhabitants.

After the completion of the group research phase, each of us were to formulate a design hypothesis that is based on problem statement and research question. The transition into this phase also necessitated various research involving literature and case studies to formulate a particular area of interest within the realm of affordable housing in the context of Mumbai. From my personal experiences in Mumbai and the subsequent analysis of the situation through literature, I have been keen on improving the living quality of the informal workers who were so prevalent in not only Nalasopara East but also all over India. Hence creating housing that specifically cater for socioeconomic needs of the low-income informal sector became my overarching concept which I persistently pursued throughout my design development and building technology.

Relationship between graduation topic and studio topic

This year's global housing studio, Mixing Mumbai, affordable housing for inclusive development, aimed to create an alternative means of affordable housing which tackles the issue of unplanned development of the private developers that displaces the poor in a dense urban context. I found it helpful the way that the given brief of the studio was specific to start with, and it dealt with a global issue which shows a sense of urgency. To understand the complex issue in an unfamiliar place of Mumbai necessitated an in-depth research on the historical transformations as well as its current situation, which I have learned a lot through textual research. However, looking back, I believe I have had the most impact when visiting Mumbai during the field trip. The prevalence of the urban poor and their living conditions was a very striking experience for me. I was also amazed by the crowded streets full of people, vendors and shops that occupy every corner of the busy road. The unhealthy and precarious conditions of where the low-income people live was also simply unimaginable by physically visiting the spaces.

Within an extensive problem in a complex context, I have decided after the research and site visit phase to narrow down the topic to look through the lens of the informal workers, as predominant population of the urban poor is dependent on informal work. My personal observation was that low income people often incorporate living and working, and it was a natural decision to consider income generation as a key feature in the dwelling in Nalasopara. Overall the process of defining my graduation topic from the studio topic was rather

smooth, as the problems were evident and extensive. However, I was afraid that many of the students have overlapping themes, and consequently similar designs, so I have tried to distinguish to what I want to achieve throughout the design phases.

Research method

Architecture in the case of a dwelling, or *a place where people live in*, is to be understood as a production and consumption of social practices. This way architecture can be considered as an extension of one's life and reflect one's needs. The practices of certain group of people thus become the core of the investigation in a qualitative research to respond to specificities of context. My primary methodology of qualitative research which I have applied in my project is ethnography, which is "the process of inquiry that involves the description and interpretation of the cultural and social practices of people". While during the typical ethnographic approach, the researcher is engaged in a thorough observation of a particular setting for a long period of time, I have specifically conducted a micro-ethnography in Mumbai, which shares the same characteristics but focus on a site for a shorter time frame. Moreover, the documentation was done by visual representations of the buildings and activities, which further articulates the term into a visual ethnography, or architectural ethnography.

During the few days of the site visit in Nalasopara East, our studio have gathered extensive amount of information via sketching, mapping, conducting interviews and more. In the Patterns of Inhabitations, the daily livelihoods of the people living in Nalasopara East were organized into the research categories: income generation, social spaces, building techniques, borders and amenities. I was assigned to a team to analyze the topic of income generation, which have strongly inspired my project in the later design phase. The ethnographic findings in Nalasopara has been directly compared with the ethnographic documentation done for few weeks in the housing project in the Netherlands under the same topic to analyze the similarities and differences. The final output for each place was a book patterns which documents the observed activities in the streets and buildings, as well as a comprehensive drawing which summarizes the various themes within the topic of income generation in a one framework of the site. This way of ethnographic research have positively influenced me to become aware of the subtleties of various livelihoods and absorb the findings without prejudgments.

Relationship in a wider social, professional, scientific framework

Urbanization and globalization have resulted in more than half of the world's population living in the cities. In India, population will exceed 1.6 billion people by 2050, half of whom will be residing in urban centers. Mumbai, a commercial capital of India, especially experienced an exponential growth of population from rural-urban migrations of people in search of numerous aspirations from the city over the last decade. Unfortunately, its employment growth in the formal sector was unable to keep up with the overflowing workforce which was constantly filled by the informal sector. The informalization continues to expand as the restrictive labor regulations and increasing competition promotes subcontract hiring. Consequently, of the 68% of the total non-agricultural workforce in Mumbai is employed in the informal sector, and livelihoods of over 400 million workers and their families in the entire India is depend on it.

Without doubt, the informal sector is the backbone of the India's economy. Despite the myths that informal sector is temporary and marginally productive, informal economy is permanent and expanding in line with the formal economy – it produces with and trades with and provide services to the formal economy, producing up to two-thirds of its GDP. Despite its significant contribution, the dominant narratives continue to label the informal sector as illegal, and it is reflected in the city planning. The informal sector also excluded from the formal sector housing, resulting in 60% (18 million) of the city's population living in slums and informal settlements across the city. This leads to intensifying spatial divisions and inequalities of social classes. The current disadvantages of the informal workers go against the right to work, which Universal Declaration of Human Rights states that everyone have the free choice of employment, favorable conditions of work and protection against unemployment.

In order to tackle deep-rooted poverty in a fast-growing economy like India, improving the living and working conditions of the informal workers is pivotal for a resilient and sustainable growth. My core concept in housing

became providing a flexible typology that accommodate daily work routines of the informal workers, which can be broadly categorized into selling and producing. For self-employed workers such as shop owners and street vendors, one of the key aspects to income generation is street exposure in order to promote and sell the goods for the people. For regular wage earners who domestically produce goods such as textile and jewelry, enough space is needed to work and socialize with other workers. These examples show that home closely combines living and working in low-income families in India and incorporating diverse socio-economic needs in housing design is one of the key aspects.

Ethical issues potential applications of the results

Understanding the harsh realities of the urban poor in Mumbai was an eye-opening experience all the way from the contextual to design research. I have come to realize that the definition of the informal economy is far more extensive than it sounds, as it is deeply integrated into the economic cycle that we cannot sustain without, especially in India. The urgency of the housing shortage for these people also became clear to me as the displacement of the urban poor in Mumbai is evident in a place like Nalasopara where the density of the illegal private redevelopment is inhumane. Choosing the informal sector as the specific interest in affordable housing was not a difficult one as I grasped on to its scope of prominence. However, realizing the diverse makeup of the workers and different lifestyles, I faced challenges defining what are some spatial features I can implement into the design in a systematic manner.

When elaborating the design, one of the biggest challenges was understanding the sense of scale of space for the urban poor. For the majority of the low income groups in Mumbai, every inch of space is a precious living and working space. Our definition of a small room can easily become a dwelling for a family of five in Mumbai. Efficient use of space, and providing the flexibility to appropriate and expand was a key finding from the observations. The site which I have chosen in Nalasopara is remaining clusters of ground storey Baithi chawls surrounded by a dense redeveloped five-storey buildings. It was challenging for me to find the right scale of a unit module in this context which can be a better condition in both inside and outside the dwelling.

Second design challenge I have encountered was to implement an unconventional building material which is not yet extensively practiced in India. From the early phase, I have chosen to use glass fibre reinforced gypsum (GFRG) panels as both of my loadbearing and non-loadbearing structure due to its affordable, efficient and sustainable qualities. It was indeed an interesting journey to learn a construction system which I am not familiar of. Although it was difficult in the beginning to find enough design references of the GFRG panels due to the lack of research materials, yet it also provided freedom for me to explore different means to express the design architecturally with specific design intentions. The general feedback on this decision of the material has been positive, but one of the aspects which I tried to keep in mind all throughout the design process was to not allow the modular system to impose a rigid and sterile atmosphere that do not reflect on the fluid practices of the inhabitants. I tried to overcome this by incorporating different materials that bring warmth and allowing spaces meant for future appropriation, which I believe turned out to be successful.

Considering its practical construction and design value, I believe my design outcome has great potential in its actual application in practice in Mumbai. The design features a simple modular system which can not only meet the needs of the cost of affordable housing and provides a speedy solution to the housing shortage. Also more importantly, the design also caters for the specific needs of the masses of informal workers by integrating the street in income as well as generating spaces for a collaborative community. As a designer, I imagine the impact of the sense of collectivity will be able to trigger the sense of empowerment as they will work together in designated areas with sufficient space, light and ventilation, as well as acquire the rights to make adjustments to the provided frameworks in addition to the dwellings for their individual needs. The issue of the wealth disparity and profit-oriented low income housing in Mumbai is too vast to be solved with a single solution, yet I believe this design consideration will bring a step forward in raising awareness of the influence of the informal workers and a new outlook on what affordable housing can become with an emerging material.