The project

The housing shortage in India is enormous; 27.000.000 housing units are needed to accommodate the Economical weaker sector. In Mumbai, 10.000.000 people are living in slums and 1.000.000 are homeless. Affordable housing is needed to house all these people. The question is how can we provide affordable housing for inclusive development?

In Mumbai, the chawl typology was introduced to house these masses. The chawl is a very common building type in Mumbai; Chawls house nearly 20 percent of Mumbai's population. It gained popularity in the 19th and 20th centuries, as the textile industry was booming and there was a high demand for affordable working-class housing. The chawl has a strong resemblance to barrack style units. Single room tenements with kitchenette are situated along a corridor. In some cases, toilet facilities are shared. The baithi chawl is one of the oldest forms of chawls. The baithi chawl is a ground storey building accessible through small alleys and leaving small 'shaft like' back alleys on the backsides. As demands increased this type of housing was transformed; the same layout was kept, but the height has increased to four or five stories.

In the Vasai-Virar area, and specifically in Nala Sopara, we can still find many 'baithi chawls'. Due to the increasing demand for housing in this area, the developers shifted their focus to building the four to five storey chawls. Here we can distinguish two forms of chawl development; the redevelopment and the new constructions. In the case of the redevelopment the original baithi chawl is demolished and replaced by a four or five story chawl using the exact same footprint; increasing the density four times. Newly built chawls are developed on vacant lots using about the same urban layout as the redeveloped baithi chawls; creating a density of about 1300 units per hectare.

The Rahmat Nagar area is one of these extremely dense (baithi)chawl areas in Nala Sopara. In this area, the redevelopment of baithi chawls into chawls is an on-going process. The Rahmat Nagar area is a relevant example of the trend of redevelopment In Nala Sopara. It shows the extreme living conditions of the chawl areas but at the same has a big amount of baithi chawls left. It is in these baithi chawls areas of the Rahmat Nagar that a different scheme for development can be proposed.

The aim set for the global housing studio is; affordable housing for inclusive development. The chawls of the Rahmat Nagar area give the perfect example of a non-inclusive development. And will be used as a comparison to the newly introduced scheme.

Method and approach

Global housing is part of the chair of architecture and dwelling. In this chair, the research methods have a strong tradition and The TU Delft method of 'Plan analysis' is strongly founded. By processing the drawing by means of reductions, additions and demontage the analysis focuses on the crucial points of the design such as composition, the relationship between design and context and design, construction and usefulness.

The main focus of the research in the global housing studio is understanding the existing built environment. Grasping the reality or context of a location is important if the location of research is in a foreign country. For me analysing the existing built environment is one of the main aspects of the research to achieve this. Following the tradition of the dwelling chair, the first step is the analysis from a typological point of view. Via a morphological analysis, a variety of different urban fabrics are identified. Each of these urban fabrics is further analysed in terms of building characteristics, dwelling units, stacking principles, circulation systems, and building principles. This part of the analysis follows the tradition of the 'plan analysis'. This is an important part of the research form an idea about the current housing standards. With this typological analysis, we build a frame of reference. Using this analysis, we were able to position ourselves; to define a problem statement and make a proposal to improve housing conditions and be aware of what it actually is that you want and need to improve.

Apart from the typological analysis, the analysis of social and spatial practices forms an important part of the research. The Field trip provides an excellent opportunity to learn more about the social and spatial patterns in each of these dwelling types. The following tools are used during the site survey: Interviewing, observing and photographing. The collected knowledge is translated into a book of patterns; a catalogue of social and spatial patterns expressed in drawings. The book of patterns can be used a benchmark during the entire project and in that way, the analysis of the social and spatial patterns will shape the project and the way it facilitates the everyday practices.

The typological analysis can provide a framework. Understanding the built form provides the knowledge of the structure in which the social and spatial practices take place. Apart from these two key elements of the research, a more general part was included to provide basic information about; religion, climate, history, politics, infrastructure, demography, and economy. A fourth research tool that was used is the 'case study'.

Relationship between research and design

In the first phase of the research, the typological analysis and the more general research helped to define the problem statement. I chose the Rahmat Nagar area in the east of Nala Sopara as the site for my project. During the site visit, I discovered that this area has many different circumstances and would, therefore, be a good site to test a different approach toward redeveloping. During our stay in Mumbai, we also visited a lot of 'case study project'. This part of the research, the actual visits of the sites and the further analysis afterward, made clear for me that the aspect of an 'inclusive community' was missing in the chawl redevelopments. By looking at the case studies and at the social and spatial practices I tried to define the elements that need to be incorporated to create inclusive communities.

These two elements of the research, the case studies and the study of social and spatial practices have been very helpful in defining what specific spaces and places I wanted to create in the design. In my design, I created spaces for the specific social and spatial practices that I have seen in Nala Sopara. But I did not recreate the same spaces and places. One of the things I discovered during my research is the lack of privacy in the chawl scheme. A balance between the communal and the private was, therefore, one of the aims of the project. From the research, I discovered two important elements when aiming for inclusive communities: the amenities and the open space network. Further literature studies helped me specifying the numbers: dwelling sizes, amount of amenities and amount of recreational open space.

Concluding I could say that the research during the site visit on the actual location set a benchmark for the new design. The case study project gave a different perspective and inspiration of what could be. Together they led me to research the 'inclusive community' and how this can be achieved. Further literature study helped me to decide how to translate these elements into a new design.

The wider social context

The United Nations has set seventeen goals for sustainable development. Goal 11 aims for inclusive, safe, resilient and sustainable cities. The first target of this goal emphasized the importance of the accessibility of adequate, safe and affordable housing and basic services for all and the upgrading of the slums. But this goal does not only focuses on the living conditions. The targets take into account the accessibility of safe and inclusive green and public space for all; including women, children and elderly.

The widely applied baithi chawl redevelopment scheme in Nala Sopara is not a unique phenomenon. The aim for efficiency, do to the high demands, leads to an insufficient living environment in numerous of redevelopment schemes. The developments of monotonous buildings, placed extremely close together, leads to a lack of daylight access and ventilation, resolving in unhygienic living conditions.

Changing the focus of the redevelopment from solely providing shelter for the current inhabitants to creating 'inclusive communities' can contribute to achieving the United Nation sustainable

development goal eleven; Sustainable cities and communities. Plus at the same time create an environment that enables people to advance socially and economically and therefore even contribute in a way to the first goal: no poverty.

As the goal of the United Nations already shows: accessibility of adequate, safe and affordable housing and basic services for all. It is not merely about providing living units when (re-) developing housing for the economical weaker sector. In my project, I emphasize the importance of the services, mentioned by the United Nations. The main two elements to achieve an 'inclusive development' are the amenities and a network of open spaces. Amenities function as an element to bring together communities. The open spaces in the first place will fulfil the same function but at the same time; by creating more open spaces, more space can be created in-between buildings. Which will drastically improve daylight access, ventilation, and overall hygiene.

Ethical issues and potential application of the results

The social and spatial practices of the inhabitants are of great importance when designing housing. As the topic of the global housing studio is in a cultural context that greatly differs from my own, the social and special practices are inevitably different. Over the last few years, I have built a frame of knowledge by studying architecture. Working in a context that is so different, requires that you let go of assumptions and rethink everything. This applies not only to the daily life habits of people and the ways they use their houses but also to the building techniques they use. However, in my opinion, analysing the urban environment, the social and spatial patterns and the way they have changed and shaped the environment should not be seen as an ultimate solution. Social and spatial patterns are always a consequence of what is provided or accessible, in terms of built structures or in terms of material. People (re)-build and transform their environment, use it for practice is the most optimal way they can think of but that does not mean that this solution they provided for themselves is optimal. We should learn from the social and spatial practices we see in the current built environment, but always take into account how they came about. Was it out of necessity, out of a shortcoming of alternatives or is it really a positive aspect, a perfect solution that supports their daily activities in the best possible way. By analysing the (original) built form we can understand how the social and spatial practices came about. The Book of patterns has been a tool to precisely analyse these social and spatial practices and in that way forming a benchmark or guideline for the design.
As regarding the potential application of the results in practice, I would like to discuss the following; the principle scheme I introduce could provide a feasible alternative for the chawls. However, as they were designed as an academicals assignment I sometimes deliberately made the choice to not follow one of these local building regulations. In Mumbai, they have very strict building regulations, which aim to guarantee the development of inclusive living environments. In my opinion, substantiated with what I have seen in Mumbai and different case studies, these regulations don't always lead to the desired results. Therefore I allowed myself to make a different design decision if it, in my opinion, led to a better result.

I think above all, this project could serve to raise awareness of the importance of open space and amenities as a part of redevelopment schemes. This project shows the shortcomings of the current strategy and addresses the focus points when developing affordable housing for inclusive development.