GRADUATION PLAN

Master of Architecture, Urbanism & Building Sciences

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B - Studio

a) Name / theme of the studio:

Global Housing Graduation Studio:
Mixing Mumbai
Affordable Housing for Inclusive Development

b) Tutors:

Prof. Ir. Dick van Gameren (D.EvanGameren@tudelft.nl)
Dr. Ir. Nelson Mota (N.J.A.Mota@tudelft.nl)
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c) Argumentation of choice of the studio:

The main reason that made me choose the Global Housing Studio is the challenge involved in it. I believe that the topic of affordable housing deals with some of the most sensitive issues of architecture: it can cater for social mobility and integration, and give answers to migrants and newcomers, being rural-urban migration a global phenomenon. Moreover, being located in Mumbai, the Studio offers me the possibility to be in contact with a new reality, and learn how architecture and society are conceived in other parts of the world.

Even though I do not think I can provide a complete answer that would solve the housing shortage in India, I am positive that the discussion between people from different backgrounds, focused on creating proposals from a humble but critical approach can be a magnificent tool to find new solutions to the problem.
C.1 _Goal

As a student of the Global Housing Studio, I am faced with the task of designing a housing project in the context of the so-called ‘Urban Global South’. The course focuses on Nalasopara, an arrival city in the Vasai Virar area, in the northern fringe of Mumbai. This settlement experienced in the last 20 years a major population growth. This is caused by the considerably lower rent in relation to Mumbai, and the effective connection provided by the train, allowing the dwellers of Nalasopara to reach Central Mumbai in less than an hour. As an arrival city, Nalasopara became populated not only by rural-urban migrants from the impoverished villages of Maharashtra, Uttar Pradesh, Gujarat and Rajasthan. These newcomers arrived to the city looking for jobs and a new life, away from restrictions related to religion and caste. Nalasopara became also a magnet for families who dwelled in central Mumbai but, due to the disproportion between their income and the price of rent, were forced to seek for dwelling in the outskirts of the city.

The train created the possibility of a settlement in Nalasopara and boosted its growth by connecting it to central Mumbai. However, as a physical element, the railway constitutes a clear barrier between the two detached neighbourhoods of Nalasopara West and East. In Richard Sennett’s terms, the railway creates a non-porous boundary which does not allow mixture and exchange between its two edges. This phenomenon happens not only in Nalasopara, but also along the whole city of Mumbai. In Nalasopara, particularly, it generated two different realities: to the west, a series of developments for low and middle income groups, accompanied with proper infrastructure but lacking designed communal spaces. To the east, however, the scenario is more shocking: in the area of Rahmat Nagar, private contractors constructed a series of (illegal) 5-storey slab buildings lacking services and with extremely poor conditions of light and ventilation. These slabs, sometimes as close as one meter to each other, lack proper infrastructure, and there is a complete neglect of public, communal space.

The area of Rahmat Nagar, with its large housing stock and low rent prices, became a magnet for newcomers, urban-rural migrants that come from the impoverished provinces of northern India and inner Maharashtra. As Doug Sanders states, many of the rural-urban migrants arrive in the city alone, without a network of acquaintances to help them set up their new lives. Furthermore, they come from different backgrounds and have distinct dwelling practices. Therefore, open, communal spaces designed for the interaction of the inhabitants and variety in the housing alternatives are crucial to make a settlement more open for newcomers, and to encourage the formation of a community. As a result, the single answer of dwelling types in Rahmat Nagar, plus the inexistence of (designed) spaces for the gathering of the inhabitants are failing to meet the necessities of the newcomers.

The lack of variety in dwelling types and communal spaces constitute obstacles in the quest to achieve the formation of a community in Nalasopara. The idea of community, following Christopher Alexander’s ideas, consists of a group of people (its size can vary) that share a common good, resource or goal, which makes the members feel attached to the group. These communal elements should not be underestimated, because they can be tools for inhabitants to be connected with their place and their neighbours. For example, in the Barrio Alfredo Palacios, built in Buenos Aires in 1966, the outdoor green spaces were developed after the dwellers moved in, and the owners themselves were encouraged to get organised and design the greenery, the football field and the playgrounds. This led to a strong sense of
participation and belonging between the dwellers, and even today the outdoor spaces of the neighbourhood are very well maintained and used by the inhabitants.

In addition to the lack of communal spaces, in a market-driven economy where developers find it more profitable to build luxury and semi-luxury dwellings, the possibility of ownership becomes very difficult to achieve for the low income groups. As a matter of fact, due to the requirements from the banks and micro-financing institutes to provide loans and the disproportion between incomes and the value of land, only 5 to 6% of the households in Mumbai can afford a market purchased house. The difficulty of ownership, in addition to all the above mentioned circumstances, makes the ideas of community and sense of belonging a very tough challenge.

The building density required to receive the growing number of newcomers to Nalasopara needs to be balanced between the two sides of the railway. Otherwise, the 5-storey slabs, almost adjacent one to another, that already occupy the area of Rahmat Nagar, will end up colonising the whole East of Nalasopara. This is a very threatening risk: this neighbourhood, inhabited by the economically weaker sector and low income groups, will be completely left out of open spaces and variety in dwelling types.

To summarize the problem statement, I argue that:

The disparity and disconnection between Nalasopara West and East, the 5-storey chawls as the single answer of dwelling typology in Rahmat Nagar, the lack of (designed) meeting places and the difficulty of ownership are obstacles to achieve community and sense of belonging.

To investigate and give an answer to the above mentioned problem, I propose the following research questions:

How can the introduction of punctual interventions in the public spaces, related to leisure and commercial activities, integrate the two detached and dissimilar neighbourhoods of Nalasopara West and East by encouraging the inhabitants of both areas to use those facilities?

How can the placement of high-dense mid-rise clusters of dwelling architecture on both sides of the railway embrace the formation of intimate communities?

How can the market-driven economy of contemporary India be used as a tool to pursue this quest?

In the mentioned research questions, five main elements arise: the architecture of dwelling, the idea of community, the aims of integration and adaptation, and the frame of action given by the market-driven economy. In the following paragraphs, I will explain how these concepts interact with one another in the formulation of the research question.

I aim to study the architecture of dwelling and the pursuit of a community in terms of scale. Charles Correa, in his book The New Landscape, explains that the sphere of dwelling not only relates to the house itself, but also includes all the spaces related to integration and participation of the inhabitants. Meanwhile, the idea of community can be also addressed in terms of its size. Christopher Alexander explains in A Pattern Language that a small-sized community is optimum for specific functions, and if this community is merged with another one, creating a bigger one, its size becomes optimum for other kinds of functions. For example, a cluster of 20 houses can be perfect to hold a children playground in its core. Meanwhile, a group of 50 households can be suitable to develop production activities for
income generation. As a result, the thorough study of the different scales of clustering becomes crucial in the quest to achieve senses of community and belonging within the inhabitants. Alexander also reflects on the urban hierarchy and the transition points between spaces: “The transition points that at first appeared as secondary joints between realms now emerge as important primary elements in their own right”.

The concepts of integration and adaptation—conned in the idea of ‘dissimilar neighbourhoods’—will be understood as principles. Charles Correa develops a “bill of rights for housing in the Third World”, a series of principles which includes ideas such as equity, pluralism and participation. I recognize integration and adaptation as goals, which can be achieved by combining the study of international projects with the analysis of the local patterns of inhabitation.

Finally, I am convinced that all the statements above mentioned are only valid when understood within the frame of the contemporary economic situation of India. I intend my project not to be an isolated intervention, but to discuss the possibility of a plan that can be reinterpreted in other development projects within Mumbai. Accordingly, I aim to give validity to my proposal by studying how it can be attractive for private developers. Therefore, my goal is to develop a scheme which has three main features: proposes a spatial design that encourages sense of belonging within the inhabitants; deals with the issue of ownership, trying to maximize the percentage of owners within the residents; and creates a profitable scheme for developers. I aim to investigate systems of cross-funding in order to achieve a combination of profitability for developers and affordability for inhabitants.

In this quest, density becomes a crucial issue: P. K. Das, in his book Chasing the Affordable Dream, states that densities beyond FSI 3.0 are not physically sustainable in Mumbai, since the infrastructure is not prepared to handle higher levels of density. Taking this into account, I want to achieve a high but sustainable level of density to make the proposal attractive to developers, and simultaneously reduce the impact of the land value in the final price of the dwellings, making them more affordable for the inhabitants.

To face this challenge, I intend to develop a design proposal that has a specific goal in each of the different scales of intervention: starting from the urban scale, along the hierarchy of public and collective spaces, until the intimacy of the dwelling. For the urban scale, I aim to integrate the two sides of Nalasopara by introducing a bridge over the railway and a series of communal amenities along the road that connects the two neighbourhoods. These amenities, such as market and sports centre, are in every case composed by a collective space and a marker indicating the presence of the amenity. Following the theory of Signals and markers operating spatially by Alison and Peter Smithson, my objective is to create a series of punctual interventions to activate the line that communicates the two sides of Nalasopara. Furthermore, if some of these interventions are related to commercial activities and the creation of jobs (on both sides of the railway), the possibility of integration would grow because employment would be the most powerful reason for people to cross the railway.

In order to address the transition between public and private space, I aim to make a thorough analysis of the pedestrian precinct, studying the spatial sequence between the main road and the entrance to the house. The different scales of collective space and the grade of enclosure can provide hints to comprehend which communal activities are more suitable for each space. Finally, in the design of the dwellings, I aim to create variety in the types, as well as possibilities for households to modify the layout of their houses. The challenge is to achieve a fairly high density and a systematic construction method while favouring variety in dwelling types, and a strong connection between the house and the collective space.
To conclude, I can summarize my position in the following statement:

To balance the outbreak in density which is currently focused in Rahmat Nagar and encourage a city that is open for newcomers, the connection between Nalasopara West and East should be embraced. In order to achieve this connection and create a community linking both sides of the railway, issues such as urban markers, collective spaces, variety in dwelling types and the seek for ownership should be investigated. Finally, to transform this project into a possible action plan for other developments in Mumbai, density and profitability for developers should be of high importance. Considering all these aspects, I aim to investigate and make a solid contribution to the discussion about affordable housing in Mumbai.

C.2 Process

a) Method description

Since the task is to design a dwelling project in an area that is not familiar to us, the research methods applied become highly relevant. The Chair suggests a combined approach: a visual ethnographic method to understand the local patterns of inhabitation, plus a thorough study of the socioeconomic context and the investigation of building typologies. In my opinion, the success of the combination of these approaches lies in the complementarity between the observation of the intimate and social patterns of inhabitation, and the broad understanding of the context. The last one is possible through readings and discussions of articles and documentaries, and the analysis of local dwelling projects.

I intend to give meaning to this approach by building a theoretical framework that takes both international and local references. The local references are both from well-acknowledged writers and architects, and from the local patterns of inhabitation I was able to observe during the field trip. For example, I became very interested by the ways in which locals transform their houses in order to create more space for their families or to determine a place for income generation.

My objective is to build a theoretical framework that can accompany the process of designing, and that is flexible to accommodate new findings that I may have during the design phase. I think that, in order to achieve a solid design proposal, it should be able to answer to all the observations along the research in every matter. This is why the field trip plays a crucial role: by experiencing the reality, I became aware of how important the 'small-scaled' activities are, and in which way the space can influence them. For example, some steps in the shade can be the perfect place to share a conversation between neighbours while they wait for the school bus. In my opinion, these ‘minimum’ elements are as essential as the urban master plan and the outline of the development policy.

Finally, I am positive that in order to make a solid contribution to the discussion of affordable housing in India, I should make use of my own context and background. Therefore, I aim to introduce Latin American projects to the debate. For example, there are many affordable dwelling projects in Buenos Aires that can provide useful information to approach dwelling architecture in other parts of the world, regarding policies and the roles of the government and the private sector. I strongly believe that if all the students bring experiences from their own context, we can build a more complete and complex understanding of the matter of affordable housing, worldwide.
b) Literature and general practical preference

Elaboration of the theoretical framework:


Ardalan, Nader; Candilis, Georges; Doshi, B.V.; Safdie, Moshe; Sert, Jose Luis. *Habitat Bill of Rights* (Tehran: Hamdami Foundation, 1976)


Deleuze, Gilles & Guattari, Felix. *A thousand plateaus* (Berkeley, CA: Venus Pencils, 2009)


Harvey, David. *Rebel Cities: From the right to the city to the urban revolution* (London: Verso, 2013)

Saunders, Doug. *Arrival City: how the largest migration in history is reshaping our world* (New York: Pantheon Books, 2010)


Smithson, Alison. *Team 10 meetings* (Delft: Delft University of Technology, 1991)

Contemporary housing situation in India:


Das, P.K. *Chasing the affordable dream, A plan to house Mumbai’s millions* (Mumbai: Bombaykala Books, 2018)

Gandhi, Sahil. *Economics of Affordable Housing in Indian Cities: The Case of Mumbai.* (Environment and Urbanisation Asia, 2012)


Padora, Sameep. *In the name of housing: a study of 11 projects in Mumbai* (Mumbai: Urban Design Research Institute, 2016)


Rybczynski, Witold; Bhatt, Vikram; Alghamdi, Mohammad; Bahamman, Ali; Niskier, Marcia; Pathare, Bhushan; Pirani, Amirali; Puri, Rajinder; Raje, Nitin; Reid, Patrick. *How the other half builds* (Montreal: McGill University, 1984)


Reference projects in India:

Belapur Housing, Navi Mumbai, Charles Correa

LIC Colony, Borivali, Mumbai, Charles Correa

Sangharsh Nagar, Mumbai, P.K. Das

Swadeshi Market Chawl, Mumbai

Charkop Sites and Services, Mumbai

Aranya Low Cost Housing, Indore, B.V. Doshi

LIC Housing, Ahmedabad, B.V. Doshi

International reference projects:

Barrio Alfredo Palacios, Estanislao Kocourek, Buenos Aires

Barrio Parque Los Andes, Fermin Bereterbide, Buenos Aires

PREVI Housing, multiple architects, Lima

Gifu Kitagata, Gifu, SANAA

Linear City, Kenzo Tange, Tokyo

CESC Pompeia, Lina Bo Bardi, Sao Paulo
C.3 _ Relevance

The urban growth of Indian cities (particularly Mumbai) and the prevalence of the economic system led by private interests are two aspects that will not only remain, but will be strengthened in the upcoming years. As architects, we should be aware of the necessity of affordable housing in the growing megacities to give places to newcomers. The housing shortage in India is already massive, and rural-urban migration is a phenomenon that will continue to grow. Therefore, architecture will have to provide answers to the big masses of migrants settling in the cities every year.

As a result of this situation, the issues discussed in the Global Housing Studio are highly relevant. My objective is to work on a design proposal that deals with the mentioned aspects in order to make a solid contribution to the discussion about affordable housing in India.

To address these aspects, I aim to propose a project that has different missions in every scale. In the urban scale, it deals with the issues of density and integration. I intend to make an urban proposal that manages to distribute a high but sustainable density of FSI 3 in a balanced way, along the two sides of the railway that today divides Nalasopara West and East. I strongly believe that density is a key issue to plan cities for the future: newcomers will continue to arrive, and the issue of density has to be dealt with using a strategy that caters for sustainable and good-quality housing conditions, within a very dense urban scheme.

Regarding integration in the urban scale, my objective is to bring together the two detached neighbourhoods to the West and East of Nalasopara by introducing a system of interventions in the public space. These punctual interventions, holding leisure and commercial functions, are meant to attract inhabitants of both sides, by providing facilities such as sports centre, and especially job opportunities.

The objectives of the project, in the scale of the cluster and the dwelling, are also very significant. The system of clustering, combining a rigid frame with an inner flesh of blocks and courtyards, caters for the formation of communities of neighbours, understood in different sizes. While 20 households share one small-sized courtyard, a group of 60 can share an outer space suitable for urban farming or other productive activities. Furthermore, the cluster of 180 houses has a consolidated perimeter for commercial activities. In the design of the dwellings, systematic construction techniques, as well as the possibility for the inhabitants to transform their dwellings are embraced. Dwellings have heights of 4.50mts, in order to make it possible for inhabitants to build lofts and transform them, enlarging the square meters.

With these ideas in mind, I believe that, due to the magnitude of the housing shortage, the relevance of my project relies on the possibility of it being reinterpreted for other developments within Mumbai. If the barrier of the railway is broken, and the dense housing scheme provides a good business opportunity for developers as well as sustainable and affordable housing for newcomers, then the system can be reinterpreted to other areas in Mumbai that are facing similar conditions.
C.4 _ Time planning

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<td>Construction of a narrative: research + design proposal in the different scales. Study of how the design relates to the research question</td>
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references

- research
- urban strategy
- dwelling design
- technology
- reflection
- production
2 Interviews conducted in-place. 03/11/2018
4 Doug Saunders, Arrival City: how the largest migration in history is reshaping our world (New York: Pantheon Books, 2010).
5 Christopher Alexander, Community and Privacy (United States of America: Anchor Books, 1965).
6 Sahil Gandhi, Economics of Affordable Housing in Indian Cities: The Case of Mumbai. (Environment and Urbanisation Asia, 2012)
11 Interview conducted in-place: the collected information shows that a big percentage of the population of Nalasopara are permanent residents, who have dwelled in the area for more than ten years and are planning to stay. 03/10/2018
15 Ardashir, Nader; Candilis, Georges; Doshi, B.V.; Saldi, Moshe; Sart., Juse Luis. Habitat Bill of Rights (Tehran: Hamdami Foundation, 1976)
17 27.000.000 housing units are needed to accommodate the Economically Weaker Sector in India.
18 10.000.000 people live in slums in Mumbai. 1.000.000 people in Mumbai are homeless. Nelson Mota, Mixing Mumbai: Affordable housing for inclusive development. (TU Delft presentation, 06/11/2018)