[RE] CONNECTING MUMBAI

A response to the increasing spatial and social polarization within the city of Mumbai
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>EWS</td>
<td>Economically Weaker Section</td>
</tr>
<tr>
<td>LIG</td>
<td>Low Income Group</td>
</tr>
<tr>
<td>MIG</td>
<td>Middle Income Group</td>
</tr>
<tr>
<td>HIG</td>
<td>High Income Group</td>
</tr>
<tr>
<td>FSI</td>
<td>Floor Space Index</td>
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</table>
BACKGROUND
India

MMR

Background
Growing Economy

India is projected to be the second largest economy in the world by 2050.
Urban Growth

“The growth process in India since the 1990s has been associated with an increase in polarization”

By: Sripad Motiram and Nayantara Sarma

Polarization, Inequality and Growth: The Indian Experience

[Image of a map showing urban growth from 1909]
“The growth process in India since the 1990s has been associated with an increase in polarization”

By: Sripad Motiram and Nayantara Sarma

"Polarization, Inequality and Growth: The Indian Experience"
“The growth process in India since the 1990s has been associated with an increase in polarization”

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“Polarization, Inequality and Growth: The Indian Experience”
Almost half of the world's wealth is owned by 1% of the population, the spatial and physical effects of this inequality are becoming more pronounced. In Mumbai two thirds of the population live on 5% of the land.
Social Polarization Mumbai

Social and spatial polarization in Mumbai
Social Polarization is a world wide phenomena and growing problem.
If the current trend continues, these cities will only be a city of walls.
Problems Generated by Social Polarization

- Limited Upward Mobility
- Segmentation of Labour market
- Limitation of Political & Social participation
- Isolation of Public Space
- Education
- Water supply
- City Connections
- Security
Problems Generated by Social Polarization

Psychological disorders

Social Disparities

Health Disparities

Violence
Informal Settlements Nalasopara

2002
Housing in Nalasopara
Housing in Nalasopara
Housing in Nalasopara
The increasing social polarization and widening income gap leads to spatial and social inequality in Nalasopara and Mumbai.

This contributes to unfairness between the rich and poor, unfairness in upward mobility, harsh borders between high and low income groups, different accessibility to public place, ghettoization of lower income groups.

Which as a result in a disconnect between the City and its Inhabitants.
Design Goal

The project aims to design and create a framework where all income groups have access to accessible urban spaces & affordable housing.

While also soften the boundaries between the income groups but maintaining the qualities, individuality and opportunities for each income group.

Which in turn all encourage diversity within this framework to Re-connect the people with the city and each other.
Research Question

How can a mixed-use, mixed-income housing development in Nalasopara stimulate the development of socially depolarized sustainable urban settlements?

Sub-questions:
What are the needs and aspirations of each income group?

Which urban & housing configurations are suitable to create a sustainable social connection & interaction between different income groups.

How can a mixed-income housing project connect different income groups?
Needs|Aspirations per Income Group

- EWS: Alley of intimacy, Waiting Plinth
- LIG: Flexible open spaces, Social Corridor
- Lower MIG: private open spaces
- Upper MIG: Well defined amenities
- HIG:

(Re)Connecting Mumbai Research
Needs|Aspirations per Income Group

- **EWS**
  - Work/live units
  - Informal Street Corner

- **LIG**
  - Home Production

- **Lower MIG**
  - Domestic Servant for HIG

- **Upper MIG**
  - Office Job
  - Work from home

- **HIG**
**Needs|Aspirations per Income Group**

- **EWS**
  - Daytime working

- **LIG**
  - Preparing food outside together
  - Washing/Drying Clothing

- **Lower MIG**
  - Renting out extra spaces

- **Upper MIG**
  - Panoramic View
  - Hire Domestic Servants

- **HIG**
  - Large Balconies
Needs|Aspirations per Income Group

- **EWS**
  - Curtains in front of main entrance

- **LIG**
  - Window Grill
  - Plinth, objects, facade materials to identify unit

- **Lower MIG**

- **Upper MIG**
  - Walled compound for extra privacy

- **HIG**
  - Decorating entrances

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RESEARCH
Needs|Aspirations per Income Group

- **EWS**
  - Safe spaces for women and children
  - Open Spaces for social interaction
  - Space for income generation
  - Live near workspace
  - Work/live units
  - Flexible apartment Layout
  - Income generation options at home for women
  - Family / relatives / community nearby

- **LIG**
  - Safe private open spaces
  - More privacy
  - Apartment space to rent out
  - Large Balconies

- **Lower MIG**
  - Nearby Main Roads
  - Near amenities
  - Unit with a panoramic view

- **Upper MIG**

- **HIG**
Configurations | Urban

**Fully Segregated**
Clear Separation
No social Connections

**Fully Mixed**
Hard to attract MIG/HIG
Income groups rather live near people of the same group

**Clustered**
Clustering of groups.
Zones of exchange between groups
Configurations | Housing

**Low income**

- **Baithi Chawls**
  - Inward Facing
  - Communal Space
  - Unused leftover spaces

- **Handshake Chawls**

**Middle/High income**

- **Sri Prastha**
  - Outward Facing
  - Privacy

- **Mhada**
  - Security
Case Study | Aranya

Hierarchy of Open Spaces

Central Amenity spine

Zoning of income groups

Individuality in chosen parts of dwelling
Case Study | Belapur

Difference in Grid-size

Incrementality

Diversity within a system
Design Hypothesis

3.6 M 5.4 M
Design Hypothesis

Local Materials

Concrete
Fly ash Bricks
Corrugated sheets
Bamboo

Local Methods

Raised Plinth
Corrugated Roof
Concrete Frame/ Brick infill
Tiled Surfaces
Design Hypothesis

Low-rise

Mid-rise

High-rise
Key Takeaways

Flexibility  
Efficiency  
Community  
Social Mix  
Space for income generation  
Adaptability
Location: Nalasopara West
Location: Nalasopara West
Location: Nalasopara West
Location: Nalasopara West
Future Scenario 1
Future Scenario 1
Primary Roads
Secondary Roads

[Diagram of secondary roads with a shaded area]

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URBAN STRATEGY
Local Roads
Larger Amenities
Slab
Courtyard
Green/Open Spaces
BUILDING STRATEGY
Different Typologies

- Sites & Services
- Courtyard
- Slab
- Tower
Sites & Services
Courtyard
Courtyard | Section
Courtyard | Facade
Courtyard | Facade
Slab Tower

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BUILDING STRATEGY
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BUILDING STRATEGY
Tower | Typical Floor Lower
Connecting Mumbai Building Strategy

Tower | Facade

0 5m
Comparison

Sites & Services
- No elevator
- Flexible floor plan
- Extendible horizontal/vertical
- Shared courtyards per 6 units

Courtyard
- No elevator
- Shared courtyard on ground floor
- Flexible work-live units on ground floor.
- ‘Social hubs’ per 3 units to use as an extension of their home.

Slab
- Elevator
- Shared courtyard with tower typology
- Quiet entrance through courtyard
- Opportunities to rent out certain part of dwelling
- Amenities/ other functions on ground floor

Tower
- Elevator
- Own private entrance
- Large Balconies
- Panoramic views
- Shared courtyard with slab typology
- Amenities on ground floor
- Private communal amenities on first floor
Comparison

**Sites & Services**
- Unit sizes: 20 - 52m²
- FSI: 0.7 - 1.4
- Stories: 1-2
- Target Groups: EWS/LIG/Lower MIG

**Courtyard**
- Unit sizes: 22 - 54m²
- FSI: 2.0 - 2.5
- Stories: 5
- Target Groups: EWS/LIG/Lower MIG

**Slab**
- Unit sizes: 65 - 97m²
- FSI: 3.3
- Stories: 6-9
- Target Groups: Middle/Upper MIG

**Tower**
- Unit sizes: 100 - 135m²
- FSI: 3.9
- Stories: 10-15
- Target Groups: Upper MIG/HIG
Construction & Materiality

- Bamboo-reinforced concrete
- Bamboo roof
- Fly ash bricks
- AAC Blocks
- Recycled Plastic sheets
## Construction & Materiality

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<th>Dry Density</th>
<th>Thermal Conductivity</th>
<th>Mortar Consumption</th>
<th>Environmental Impact</th>
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Construction & Materiality

Brick infill
Stabilizing element in the facade
Rat trap bond
Requires 25% less bricks and 40% less mortar than normal bond.

Internal stabilizing element between units
Construction & Materiality

Clay pot filler slab
With bamboo reinforcement
Uses less concrete than normal slab
Construction & Materiality

Bamboo truss
Galvanized steel connector
Waterproof coating
Steel anchor

ø15 bolt
Bamboo purlins
Galvanised steel support brackets
Corrugated recycled plastic sheet

Bamboo truss
Galvanised steel connector
Waterproof coating
Steel anchor

Drip edge
Bamboo reinforced concrete floor with embedded beam
Bamboo reinforcement
Fly ash bricks in rattrap bond (70x110x230)
Plaster

2% slope to drainage pipe
Concrete gutter
Embedded beam with bamboo reinforcement
Laminated bamboo skirtings
Bamboo ventilation louvres
Clay pot filler slab

Overflow
Gutter strainer
2% slope to drainage pipe
Water drainage pipe

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Construction & Materiality

- Ceramic Tiles
- Screed
- Clay pot filler slab
- Single Pane glass
- Laminated bamboo window frame
- Recycled plastic frame
- Laminated bamboo window frame
- Fly ash bricks (rattrap bond)
- Recycled plastic frame
- Paint
- Wooden door
- Bamboo laminated door frame
- Concrete Olla
- Wooden door
- Bamboo laminated door frame
- Ceramic Tiles
- Screed
- Clay pot filler slab
Construction & Materiality

- Paint
- Fly Ash Brick (rattrap bond)
- Plaster
- Ceramic Tiles
- Screed
- Bamboo Reinforced Floor slab

Modular Water Tank

Concrete Drain
- Grating
- Recycled Paving Stones
- Sand Layer
- Soil

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BUILDING STRATEGY
Use of Plastic & Bamboo
Water Management
Shading
OPERATIONAL MODEL
Who Provides vs. Who Decides

1. Sponsors decide and Sponsors provide

2. Sponsors decide and Users provide

3. Users decide and Sponsors provide

2. Users decide and Users provide
Who Provides vs. Who Decides

1. Sponsors decide and Sponsors provide

2. Sponsors decide and Users provide

3. Users decide and Sponsors provide

2. Users decide and Users provide
Phase 1
Phase 1
Phase 1

1. New dwellers start a Community Land trust.

- New dwellers
- Community Land Trust
- Set up
- EWS/LIG Communities
- MIG/HIG Families
- Secure Loan
- Design & Build
- Cross Subsidize
- Assigned to
- Sold according to market price
- Provide Land
- With conditions set according to the AHP
Phase 1

1. New dwellers start a Community Land trust.
2. The CLT gets land gifted or buys the land.

- New dwellers start a Community Land trust.
- The CLT gets land gifted or buys the land.
- Architect designs according to wishes and needs of CLT and according to conditions set by the Authority.
- Local contractor builds the different typologies which are cross subsidized.
- Dwellings are given and sold to the chawl communities and MIG/HIG families.
- Individual owners can adapt their dwelling (if necessary a loan can be provided by a bank.)
1. New dwellers start a Community Land Trust.

2. The CLT gets land gifted or buys the land.

3. Architect designs according to wishes and needs of CLT and according to conditions set by the Authority.

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Phase 2
Phase 2


Set up

Community Land Trust

Convey

Community fund

Design & Build

Extra Units

Sold to

Profit Used to Repay

Current Dwellers

Architect

Local Contractor

New Building(s)

New families

Courtyard Typology

Tower Typology

Slab Typology

Sites & Services

Community Land Trust

Loans

Current Dwellers
Phase 2


2. With a community fund and loans they can start the redevelopment.

Architect
Local Contractor
New Building(s)
New families
Tower Typology
Slab Typology
Sites & Services
Courtyard Typology
Community Land Trust
Loans
Community fund
Current Dwellers
Profit Used to Repay loans and put into community fund.

Set up /
Secure

Convey
Wishes
Decide
Design & Build
Extra Units
Sold to

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OPERATIONAL MODEL 133/156
Phase 2

1. Current dwellers start a Community Land Trust.
2. With a community fund and loans they can start the redevelopment.
3. Current Dwellers decide on which typology/typologies they want.
Phase 2


2. With a community fund and loans they can start the redevelopment.

3. Current Dwellers decide on which typology/typologies they want.

4. Dwellers convey their wishes to the architect and contractor who build the new building(s).
Phase 2


2. With a community fund and loans they can start the redevelopment.

3. Current Dwellers decide on which typology/typologies they want.

4. Dwellers convey their wishes to the architect and contractor who build the new building(s).

5. New building is handed over to the Current Dwellers.
Phase 2


2. With a community fund and loans they can start the redevelopment.

3. Current Dwellers decide on which typology/typologies they want.

4. Dwellers convey their wishes to the architect and contractor who build the new building(s).

5. New building is handed over to the Current Dwellers.

6. Extra units are sold to new families. Profit is used to repay loans and put into community fund.
(RE)CONNECTING MUMBAI

Alley of Intimacy

'Claiming Space'

Secure Open Space

Waiting Points

Flexible Open Spaces

Social Corridor
Communal square
Communal square
Entrance communal square
Entrance communal square
Entrance to courtyard
Entrance to courtyard
Courtyard
Courtyard
Social hub

(Re)Connecting Mumbai
Social hub

(RE)CONNECTING MUMBAI

ATMOSPHERIC IMPRESSIONS
Sites & Services

(RE)CONNECTING MUMBAI

ATMOSPHERIC IMPRESSIONS
Social polarization happening in Mumbai
Not beneficent for the city
Patterns of inhabitation
Needs and aspirations
Implemented into Urban and Building strategy
Coherent building design/technology
Which in turn decreases the social and spatial polarization
“Were people to mingle only with those of like mind, every man would be an insulate being.”

- Thomas Jefferson

Thank You