LEAVING SPACE

an alternative for the chawl redevelopment in Nala Sopara
problem statement // urban growth in Mumbai

Problem statement // Urban growth in Mumbai
problem statement // urban growth in Mumbai
problem statement // population densities
problem statement // rent prices
problem statement // Growth Nala Sopara
problem statement // Growth Nala Sopara
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problem statement // Growth Nala Sopara
problem statement // Growth Nala Sopara
problem statement // urban fabric of Nala Sopara
problem statement // urban fabric of Nala Sopara
20% of the population of Mumbai is housed in chawls.

Problem statement: The chawl.

one story building // alley

4/5 story building // gallery

4/5 story building // corridor

problem statement // the chawl
problem statement // the baithi chawl
problem statement // the chawl
problem statement // current redevelopment strategy
problem statement // current redevelopment strategy
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problem statement // current redevelopment strategy
But how about the open space?

“Successful housing is a seamless continuum of spaces that go all the way from the most private, to the semi-privat to the public. in this way it create communities”

Charles Correa
(DASH #12-13, ’96)

problem statement // open-to-sky space
System of open-to-sky space // charles correa

Chawls

1. Terraces  2. front doorstep  3. water tap  4. open space for the community

problem statement // open-to-sky space

problem statement // densification
problem statement // lack of daylight
problem statement // monotonous areas
How can the crammed (baithi)chawls, of the Rahmat Nagar area, be re-interpreted into a mixed-use area that leaves space for inclusive communities, able to set a feasible alternative for the current chawl redevelopment?
How can the crammed (baithi) chawls, of the Rahmat Nagar area, be re-interpreted into a mixed-use area that leaves space for inclusive communities, able to set a feasible alternative for the current chawl redevelopment?

How can architecture provide for inclusive communities?
research // morphology
high rise density clusters research // history conclusion
m² open space per person

3,0 m²

residents per dwelling

4

m² dwelling per person

3,95 m²

units per hectare

325

people per hectare

1300

m² open space per person

3,0 m²

FSI = 0.75

open space index = 0.2

research // density baithi chawls
research // desity chawls

- 0.57 m² open space per person
- 3.95 m² dwelling per person
- 1325 units per hectare
- 5300 people per hectare
- FSI = 3
- Open space index = 0.3

Typical floor plan:
- 15.8 m²
- 4 residents per dwelling
- 3.95 m² dwelling per person
- 1325 units per hectare
- 5300 people per hectare
- 0.57 m² open space per person
URBAN STRATEGY
research // current situation
strategy // the community spine
strategy // key points

- integration of amenities
- bigger amenity cluster
- preserving of commercial plinth
- creating secondary connections
DESIGN
Design // building types

CLUSTER
- 48 units
- 150m² amenities

SEPARATE
- 12 maisonette units
Design // cluster
design // cluster // basic unit

usable space

loft

main floor

use of space // daytime

use of space // nighttime
usable space

upper floor

main floor

use of space

design // separate // basic unit
CONSTRUCTION PRINCIPLES

- concrete columns
- concrete slabs
- with embedded beams, and an infill of claypots
- free spanning fly-ash brick wall
FRAGMENT I // 1:20

ROOF
- free spanning fly-ash bricks vault
- waterproof membrane
- concrete column
- bricks
- jali
- paint
- i.c.o. balustrade
- capped with a ceramic tile

FLOOR
- concrete slab // 300
- embedded beams // clay pot infill
- waterproof membrane
- cement
- tile finishing

WALL
- concrete column // 300
- bricks // jali
- paint
- i.c.o. balustrade
- capped with a ceramic tile

FRAGMENT II  // 1:20

OUTER FACADE
- concrete column // 300
- bricks // jali
- plaster
- i.c.o. balustrade
- capped with a ceramic tile

FLOOR
- concrete slab // 300
- embedded beams // clay pot infill
- waterproof membrane // only verandah
- cement
- sloping on verandah
- tile finishing

DOOR
- wooden double egress door // 2700
- wooden frame
- ceramic plinth

building construction // facade fragments
HOT and HUMID CLIMATE:
- June - September: protection from the rain
- Summer: protection from the sun
- All year: ventilation to cope with the humidity

building construction // climate buffer zone
English bond brick pattern

Jali pattern 1 // 45% less brick

Jali pattern 2 // 47% less brick

Jali pattern 3 // 47% less brick

Jali pattern 4 // 47% less brick

Jali pattern 5 // 47% less brick

building construction // jali brickwork
building construction // climate buffer zone
building construction // climate buffer zone
building construction // climate buffer zone
URBAN LAYOUT
urban layout // progressive growth
COMMERCIAL PLINTH
one story plint + clusters

THE COMMUNITY CLUSTER
one separate and one cluster

COMMERCIAL PLINTH
one story plint + clusters

urban layout // clustering principles
ONE CLUSTER
40 units

BENEFITS INHABITANTS:
- improved living conditions

BENEFITS NEIGHBORHOOD:
- urban layout // progressive growth
ONE COMMUNITY
52 units

BENEFITS INHABITANTS:
improved living conditions
small public space

BENEFITS NEIGHBORHOOD:

urban layout // progressive growth
THE POCKET
180 units

BENEFITS INHABITANTS:
- improved living conditions
- system of public space amenities

BENEFITS NEIGHBORHOOD:
- improved infra structure
- enables building sites more inward the area
- small public square

urban layout // progressive growth
ONE CLUSTER
180 units

BENEFITS INHABITANTS:
- improved living conditions
- system of public space amenities

BENEFITS NEIGHBORHOOD:
- GOOD infra structure
- enables building sites more inward the area
- public square
- network of open spaces

urban layout // progressive growth
255 bathi chawl units
ONE CLUSTER
180 units

BENEFITS INHABITANTS:
- improved living conditions
- system of public space
- amenities

BENEFITS NEIGHBORHOOD:
- GOOD infra structure
- enables buildings sites more inward the area
- public square
- network of open spaces
- bigger open spaces at crossings

urban layout // progressive growth
155 baithi chawl units
117 baithi chawl units

urban layout // progressive growth
ONE CLUSTER
180 units

BENEFITS INHABITANTS:
- improved living conditions
- system of public space
- amenities

BENEFITS NEIGHBORHOOD:
- GOOD infra structure
- enables building sites more inward the area
- public square
- network of open spaces
- bigger open spaces at crossings
- connections through the area

urban layout // progressive growth
urban layout // water management
urban layout // built vs unbuilt

BUILT
FSI = 2.3

UNBUILT
open space index = 0.6
The baithi chawls are perpendicular to secondary roads which are themselves perpendicular to the main road. In this secondary roads local shops are placed along the streets. These shops vary in size, ranging from a couple of square meters to deeper units which sometime have a backroom or second floor to house the owners family. The roads are wider than the baithi chawl paths giving space for other forms of mobility than pedestrians. The shops sell a variety of products mostly related to daily needs and in some cases other functions are housed such as small offices. The sidewalk in front of the shop is used to place signs, tables and stalls as an extension to the shop.

INCOME GENERATION

2. Local shops

STREET VENDOR income generation

THE HOLY TREE social spaces

LOCAL SHOPS income generation

THE COMMERCIAL PLINTH income generation

4. Communal pavements

The communal pavement of the alley between baithi chawls is an element that highlights the semi-public character of the communal lane. This pavement is characterised by a little height difference and different type of bricklaying and is often well maintained showing the community’s tight interaction. By entering a different street, characterised by a smaller width and materialisation than that of the bigger commercial street a person enters a new domain, here a semi-public area. With this well maintained different communal pavement the dwellers living here signal that a person entering here is mere a visitor.
Temples or places of worship are scattered all around the bythi chawl alleys, often situated in open areas. These places are spaces to pay respect to the gods but also to meet the community, to show that you are pious and committed and fitting within the group.

The street vendor stand offers another way of selling goods in the shopping streets. In the busier streets these stalls are clustered in a market but they also appear 'alone'. They are mostly made of wood or metal with plastic sheet covers and often mobile or temporary constructions. The vendors sell mostly products related to daily needs such as food. Sometimes the stall is part from the shop where they stand in front of and serve as an extension to the interior.
COMMUNITY AND PRIVACY
“Successful housing is a seamless continuum of spaces that go all the way from the most private, to the semi-private to the public. In this way it creates communities.”

Charles Correa
(DASH #12-13, ’96)
COMMUNITY SPINE
STREET PROFILE // 1:75

community and privacy // commercial plinth
community and privacy // commercial plinth
community and privacy // community spine

- street + commercial plinth
- community spine
- public square
- entrance square
- community space outside
- inner courts
- community space inside & circulation
  - roof top space
  - open areas on higher floors
- the dwelling
street + commercial plinth
community spine
public square
entrance square
community space outside
inner courts
community space inside & circulation
roof top space
open areas on higher floors
the dwelling
community and privacy // entrance square
community and privacy // entrance square
INNER COURT

STREET PROFILE // 1:75

community and privacy // inner court
community and privacy // inner court
street + commercial plinth
community spine
public square
entrance square
community space outside
inner courts
community space inside & circulation
roof top spaces
open areas on higher floors
the dwelling
public/private
community spaces
street + commercial plinth

community spine

public square

entrance square

community space outside
inner courts

community space inside & circulation
roof top space
open areas on higher floors

the dwelling
community and privacy // the unit
GROWTH AND CHANGE
AMENITIES
<table>
<thead>
<tr>
<th>Total Community Environment Diagram</th>
<th>Social Structure</th>
<th>Physical Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person // 1p //</td>
<td>room</td>
<td></td>
</tr>
<tr>
<td>Family // 5-10p //</td>
<td>house, front yard, backyard</td>
<td></td>
</tr>
<tr>
<td>Neighbourhood // 100-150 f //</td>
<td>nursery, school, nutrition centre, basketball court, playground, small general store</td>
<td></td>
</tr>
<tr>
<td>Community // 500-750 f //</td>
<td>community centre, elementary school, health clinic, religious place, shops and stores</td>
<td></td>
</tr>
<tr>
<td>Zone // 1500-2500f //</td>
<td>Zone centre, Police Centre</td>
<td></td>
</tr>
<tr>
<td>New Town</td>
<td>Police headquarters, commercial area, fire station, high school, market, hospital</td>
<td></td>
</tr>
</tbody>
</table>

amenities // reference scheme
COMMUNITY
buildings facing entrance square
60 families

SHARED SPACES:
entrance square
vertical circulation system
community space on roof
community space on higher floors

SHARED AMENITIES:

amenities // community
NEIGHBORHOODS
area defined by community spine and/or commercial plinth
+ 150 - 280 families

SHARED SPACES:
inner courts
with
playgrounds and places to sit

SHARED AMENITIES:
small scale amenities
like a nursery or community centre
+ 5 neighborhoods

SHARED SPACES:
the community spine
public squares

SHARED AMENITIES:
one bigger amenity cluster
primary school and community centre
RAHMAT NAGAR

SHARED SPACES:
- commercial street
- pocket park

SHARED AMENITIES:
- the commercial plinth
- amenity pockets
COMMUNITY COMPARISON
Density

baithi chawl

FSI = 0.75

325 units per hectare

open space index = 0.2

community comparison // density
DENSITY
chawls
FSI = 3
units per hectare = 1325
open space index = 0.2

DENSITY
new proposal
FSI = 2.3
435 units per hectare
open space index = 0.6

community comparison  //  density
DAYLIGHT ACCESS
chawls

DAYLIGHT ACCESS
new proposal

community comparison // Rahmat Nagar
VENTILATION

chawls

community comparison // Rahmat Nagar
DWELLING TYPES

- chawl
- corner apartment
- standard unit
- basic unit
- small basic unit
- maisonette
- penthouse

new proposal

community comparison // Rahmat Nagar
DIVERSITY - DWELLING TYPES AND INCOME GROUP

Chawl

Average unit size = 16.5 m²

DIVERSITY

83% standard unit
17% corner unit

INCOME GROUP

100% EWS

New proposal

Average unit size 40 m²

DIVERSITY

60% EWS
20% LIG
20% MIG

INCOME GROUP

EWS // <27.88 m²
LIG // 27.88 m² - 45 m²
MIG // 45 m² - 80 m²

Community comparison // Rahmat Nagar
RECREATIONAL OPEN SPACE
according to DCR

community comparison  // Rahmat Nagar
RECREATIONAL OPEN SPACE

chawls

community comparison  // Rahmat Nagar
The Mumbai DCR regulations state that 5% of developed areas should be reserved for amenities.
community comparison // Rahmat Nagar
### Feasibility

**Total New Build Floorspace:** 53,922 m²  
**Added Saleable Floorspace:** +40,441 m²

<table>
<thead>
<tr>
<th>EWS</th>
<th>LIG</th>
<th>MIG</th>
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</thead>
<tbody>
<tr>
<td>40,441 m²</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Total:** 205 crore

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### Feasibility

**Total New Build Floorspace:** 46,255 m²  
**Added Saleable Floorspace:** +19,907 m²

<table>
<thead>
<tr>
<th>EWS</th>
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<th>MIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2221 m²</td>
<td>3875 m²</td>
<td>8508 m²</td>
</tr>
</tbody>
</table>

**Total:** 196 crore

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**Community Comparison // Rahmat Nagar**
1. 6 - 7 floors
   435 units /hectare
   average unit size = 40m²

2. 6 - 8 floors
   488 units /hectare
   increase of profit: 476,196,000 rupees
   +24%

3. 6 - 10 floors
   612 units /hectare
   increase of profit: 1,428,598,000 rupees
   +73%

4. 10 floors
   722 units /hectare
   average unit size: 31m²
   increase of profit: 3,375,408,000 rupees
   +172%

// community comparison // Rahmat Nagar
COMMUNITY COMPARISON

// Rahmat Nagar

Community Comparison - Rahmat Nagar

Density

FSI = 3

Units per Hectare

1325

Average Unit Size

16.5 m²

Open Space /pp

0.57 m²

Recreational Open Space /pp

0 m²

Amenities

< 5%

100%

Community Comparison - new proposal

Density

FSI = 2.3

Units per Hectare

435

Average Unit Size

40 m²

Open Space /pp

13.8 m²

Recreational Open Space /pp

7.4 m²

Amenities

> 10%

4%