

LEARNING FROM **DHARAVI**

Land Ownership Patterns and Redevelopment Strategies



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LEARNING FROM DHARAVI

Land Ownership Patterns and
Redevelopment Strategies

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Contents

Preface

Part I

Koliwada and Dharavi

Introduction to Koliwada **01**
*Koliwada as the ancient village
of Mumbai city and it's evolution*

What is Dharavi? **02**
*A look into the history
and formation of Dharavi*

Incremental Development **03**
*Development of Dharavi and
Koliwada since pre-colonial era till today*

Redevelopment Efforts **04**
*Redevelopment efforts by officials
during different points in time & it's effects*

Land Ownership Patterns **05**
*Redevelopment efforts by officials
during different points in time & it's effects*

Part II

Case Studies

Collection of Real life projects

A study of real life projects which managed to improve the quality of life in informal settlements through redevelopment or participatory interventions.

06

Part III

The Design Strategy

Ravi Kenny's Residence, Koliwada

A study of the existing conditions of a Koliwada Residence and the redesign strategy proposed by Urbz

07

Design Interventions: Strategies for Koliwada

Proposal of some design strategies to deal with the current problems of the area

08

Conclusion

09

Acknowledgments and Bibliography

Preface

Before we started working on Dharavi, we just knew of it as the world's largest slum among other slums or favellas around the world. We had heard how people get by their daily lives by working on low wages and the people have really small houses which are mostly overcrowded. We were thinking of working on a project involving low cost or affordable housing for the poor when we came across Dharavi as a project. While researching we developed a deep connection with the project as the conditions of the area tore our hearts.

It was at this moment that we realized that it's spaces like these which actually need the help of architects or other professionals who could connect with and understand these areas. By this time we had a longing to work for an area like this and bring about a change in the lives of the people living here.

So, this thesis is our attempt to understand deeply what Dharavi is, how it works and what does it needs? The thesis deals with the history and development of Dharavi since pre-colonial era while trying to understand how Dharavi came into existence. Huge focus has been laid on Koliwada due to its connection with Mumbai as well as Dharavi. We have tried to explain how Koliwada correlates with both and why it is an imperial part of Dharavi even today.

The research part of the thesis has been divided into five chapters ranging from the history of Koliwada, Mumbai and Dharavi to the incremental development that has been happening over the years in Dharavi with or without the help of the government, shaping Dharavi the way it is today along with the Redevelopment that the government has been trying to do since independence and even before. And lastly, the peculiar land ownership and occupancy that occurs in Dharavi and is majorly responsible for how Dharavi is today. These parts together helped us gain a wider view of what and how this so called slum works and which are the key points that needs to be touched if we ever want to improve the condition of this area.

Also, we have tried to focus on Koliwada a bit more since it has been excluded from the redevelopment plan of 2004 and thus, holds huge potential.

The second part is the case studies which can be termed as projects from around the world that have inspired us and helped us to move forward and think outside the box regarding the solutions that can be looked at in such situations. Not only are these projects inspiring but are also an eye opener for the governments who think that top down developments are their only options towards the elimination of poverty.

The third and final part of this thesis explains our approach towards these situations. We have taken Koliwada as a prototype and tried to think of strategies that would help improve the conditions of these areas while also understanding and trying to fulfill the needs of the occupants. The design strategies proposed in this section is an effort to show the concerned authorities that there are even more ways of redevelopment without being too invasive while keeping the modes of income of people intact and discovering ways to earn profits.

Our main aim while designing was to keep in mind all the factors that make Koliwada so unique and the ability of Koliwada to retain its fabric but also grow incrementally over time as it has always done in the past. We wanted to give the freedom to people to construct as per their convenience & have tried our best to do so.

The aim of this thesis was to show everyone who tends to think of Dharavi as just a slum, like we did before, that it is so much more than that. And how the world needs more places like Dharavi which are self-sustaining, so forward that the idea of shrinking the distance between work and life has already become a reality in this place and that too years ago. Dharavi has so much to teach the world only if we were willing to stop for a moment and look at it.

We hope that our thesis can give new perspective to the people and spread awareness about much more informal settlements like these from which one always tends to look away but are the ones that needs most of our attention.

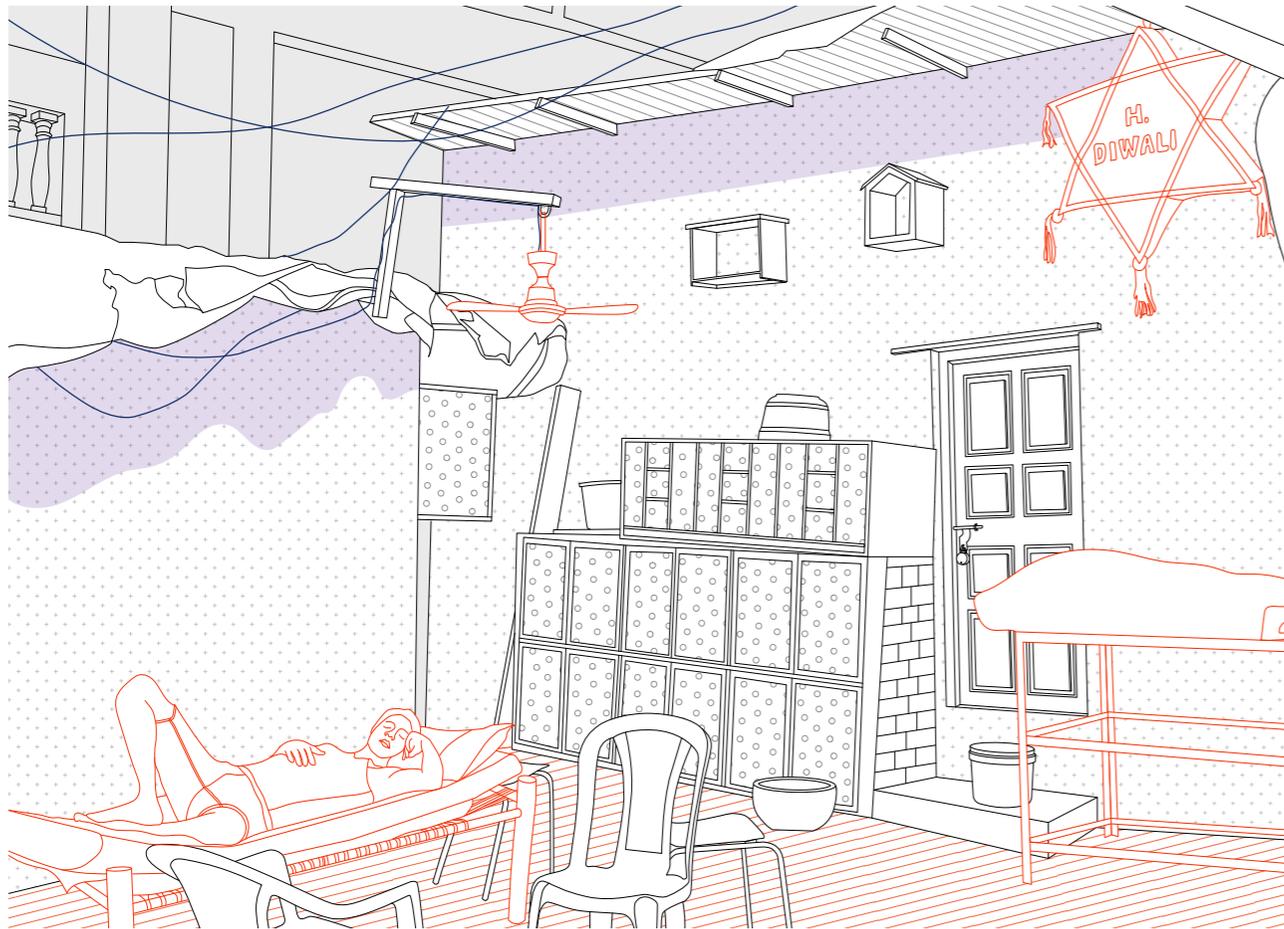
Part I

Koliwada & Dharavi

Introduction
to Koliwada

01

THE JOURNEY BEGINS...



It was our first day when we reached Dharavi and Rahul from Urbz asked us to go for a walk and experience the essence of the place.

While walking in the burning sun for about an hour and taking in all that Dharavi had to offer, from bustling streets with shops and traffic to the small pockets of space with the kids playing cricket and riding bikes, we came across Koliwada.

There was something special about this area, something unique. It felt as if we were in one of the most peaceful places with shade and cool air, away from the noise of streets. It was a part of Dharavi yet so different. And at that moment we started wondering “What is it about this place?”

With so much curiosity we started digging into the history of Koliwada and what makes it different. What was the reason behind those fishes drying on the streets? And what we came across was nothing less than mesmerizing.

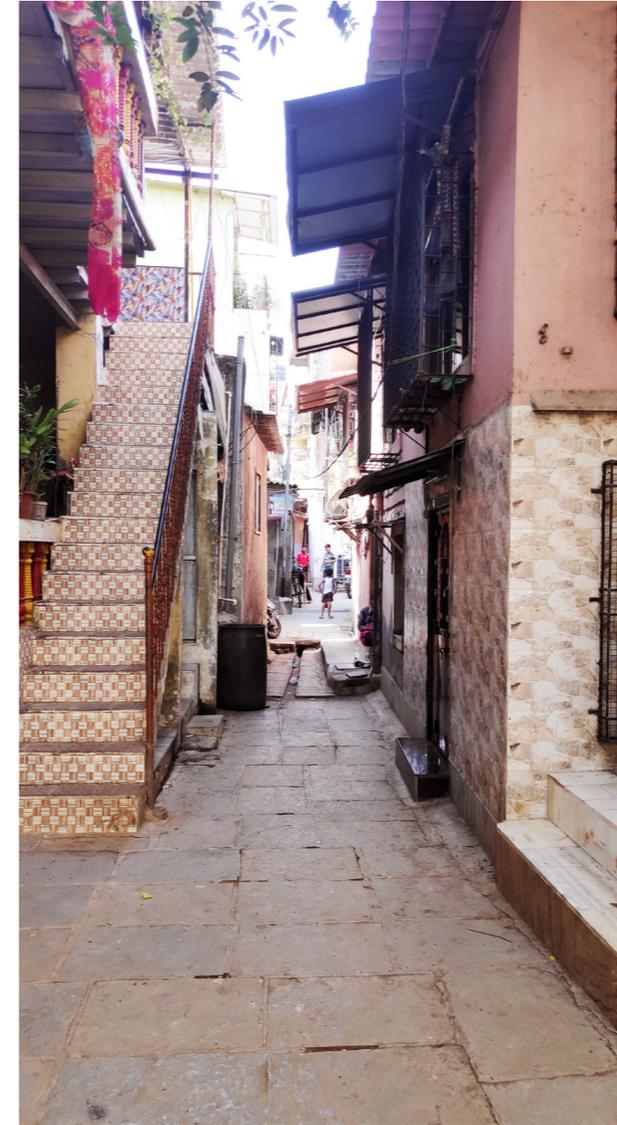


The feeling of a tranquil stillness in the village
Source: *Colours of Koliwada*, Anushka & Riddhi, URBZ, 2019

Koliwada, in literal sense, meant the habitat of the fishermen or Kolis. In the early centuries when Mumbai was still a collection of seven islands, the Kolis were a small fishing community living in the sea-facing districts. The recorded history of the community has been traced to the time Portuguese arrived in the sixteenth century as per the archival records.

It seems like the earliest inhabitants of Mumbai were the Kolis with the settlements that date back to at least 400 years. The major occupants of the then archipelago with a small village next to the sea. It is believed that they migrated from Aparant's mainland mass at the beginning of the Christian era or probably even before and were the members of the Kul tribe. They occupied the islands slowly over time and undertook fishing and husbandry due to the abundance with the presence of the sea.

There are around 38 Koliwadass in the whole city of Mumbai who have survived the various waves of colonization, ranging from Hindu Colonization to the Muslim rule till 16th century and foreign colonizations by the Portuguese and the British respectively. And then came the ultimate explosion which was the expansion and escalation of the Mumbai city as we know it.



The peaceful street
Photograph: Anil Singh, Niharika

The connection of Kolis with Mumbai's history is evident in the names of the various areas of the city. Even the original name of the city "Mumbai", "Mambai" or "Mumbai" is considered to be derived from the patron deity "Mumbadevi" of the Kolis. As Kolis believed that everything they have is derived from nature and therefore trees, their reverence could be seen in the names of the Koliwadass those were derived from the same. For instance, "Colaba" primary a Koliwada but now a historical center and hence one of the major tourist spots has its name derived from "Kola-bhat" that literally translates to the "Koli Estates" or "Parel" inspired and transformed over-time seems to be derived from the local name "Padel" which was a trumpet-flower tree.

As per a copper plate and a few documents, currently kept in Mumbai museum, Queen Elizabeth bequeathed the land tenure formally to the "Kolis of Dharavi." Also, as a solution to the robbing of fishing boats by pirates, the Queen gifted pistols to three residents of Koliwada. As per colonial records, the Koli's were categorized as a tribal community, but post-independence this stature was abrogated. The major reason behind this was the abrogation of affirmative



Community Spaces
Source: *Colours of Koliwada*, Anushka & Riddhi, URBZ, 2019

action benefits which would have substantially benefited the community otherwise, making Koliwada a part of the slum that exists today. The edge of the settlement was marked in 1900 with the construction of Dharavi Main road. The area beyond the road consisted of fields being used for agriculture. In the southeast corner, there were natural ponds that were utilized for fishing in the monsoons whereas otherwise the creeks were used. Also the area housed two mills of khadi. As per many older inhabitants of the area, Koliwada back then had very few houses in the form of huts which were located far away from each other and was covered with numerous trees bearing fruits and flowers. Whereas the west side had the shoreline and grassland for cow grazing.

In order to administer Koli's land use patterns, special Gaothan laws are evoked which apprehend their identity as urban villages and therefore, for redevelopment, comprise of a different set of clauses. Until recently, it was not permitted to construct past a certain height, hence maintaining the village like habitats of the inhabitants. But the fact that went against them was their anachronistic habitats in an expeditiously



A small house in Koliwada
Source: *When Dharavi Grows up, it does not want to be Shanghai*, Smita Dalvi, First Post, Mumbai, 2009

altering urban landscape. Due to the declining quality of the waters, their reliance on the sea for their livelihood was quickly eroded. And because the authorities never really invested in these areas to improve the infrastructural conditions, resulted in the slum like conditions that exist today.

Due to the availability of affordable rental housing in Koliwada villages, a huge amount of immigrant population settling in Dharavi was drawn to Koliwada thus increasing the infrastructural strain on the area. But it also led to the transfusion of cultural diversity and a modification in the ethnic composition. Therefore, resulting in the Koliwada of today: a village with various ethnicities from different parts of the country living with the fishermen community.

But even today the typology of Koliwada remains that of a village with independent houses and small courtyards or patios. Maybe this is what differs the feel of Koliwada from the rest of Dharavi and doesn't correspond to the predetermined notion of a slum. The land ownership and tenancy complications as existent in colonial era are still visible in Koliwada.



This is due to the reason that Koliwada still has 500 landlord Koli families who augment their incomes by sharing these spaces with another 2500 tenant families. Approximately 40,000 square meters of total land belongs to Koliwada which is shared between the Koli Jamaat and

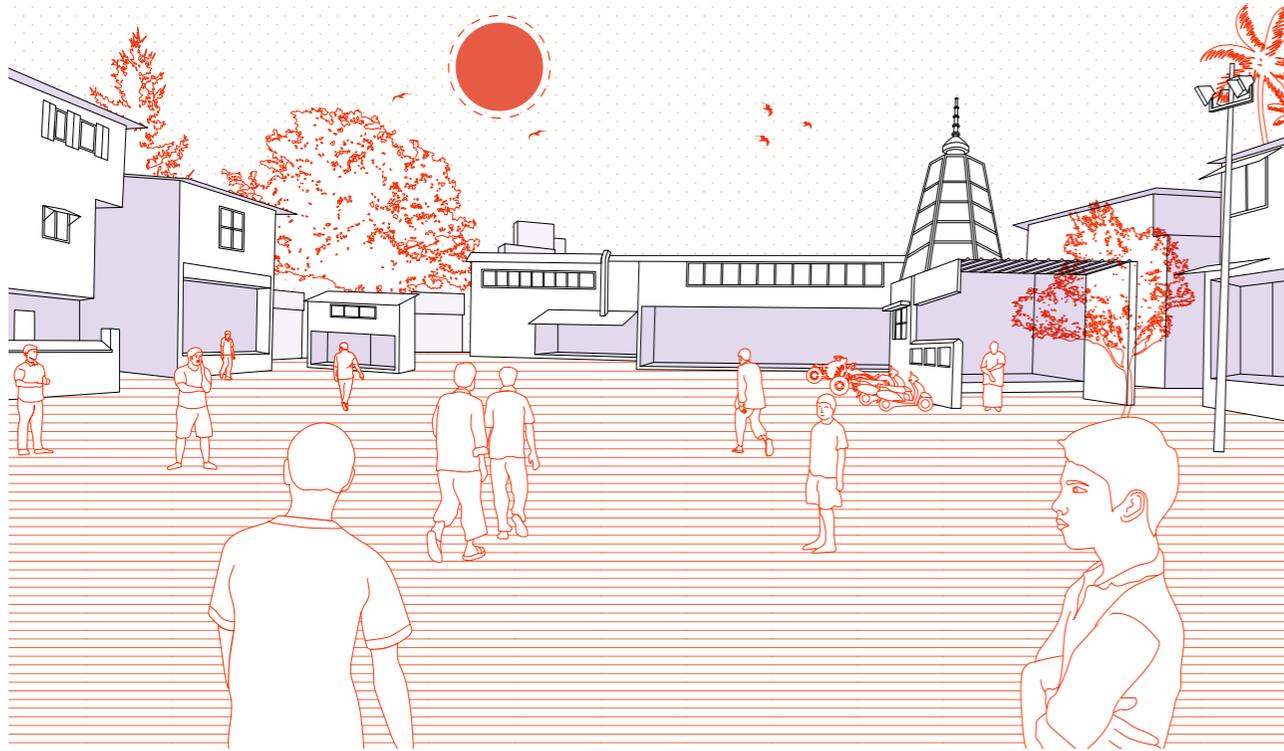
the independent owners. Koli Jamaat is a public trust that uses the land for the inhabitants of the area and provides public services like fish markets, gyms, temples etc. and owns a total of 10,000 square meters. It also earns rental income from the tenanted families living on this land.

Left: Street of Koliwada showing the lifestyle
Source: Urban Typhoon Workshop Report, URBZ, 2008

Right: Open spaces as the key nodes of communication
Source: Colours of Koliwada, Anushka & Riddhi, URBZ, 2019



Koliwada Land-use Plan



Evolution of Koliwada

Koliwada's earliest houses were actually huts, made of Bamboo and palm tree leaves roofs. Eventually with time, they were replaced by stone huts and brick and plastered a few decades later. But today most of the houses are made of Bricks and concrete.

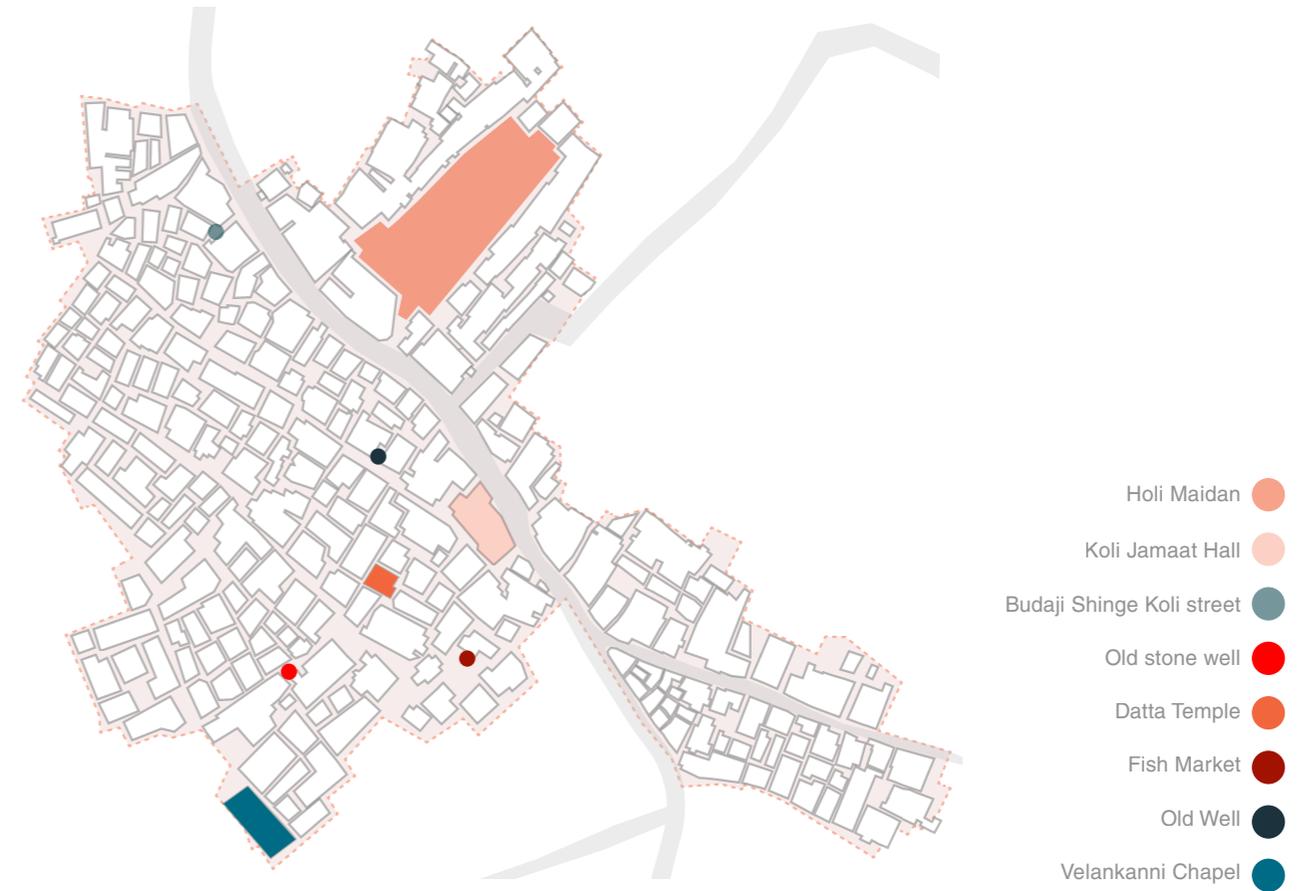
Since Koliwada has been in existence for a long time, the community has formed a small group of representatives who represent Koliwada to the government but also, provide various services for the residents of Koliwada. The organization is known as Koli Jamaat and was registered in 1975, although it existed way before that. Therefore, the Koli Jamaat Hall holds a

Holi Maidan in Koliwada

huge importance in Koliwada as all the important meetings and decisions are held there. Another most important aspect of Koliwada is the sense of community among the residents. Kolis have always celebrated all the important festivals together including weddings, games and other social activities. And it is for this reason that Koliwada has a huge ground called

Holi Maidan which dates back to the 18th century.

An interesting aspect of the area is the Budaji Shinge Koli street that was named after a Koli resident who on national radio, use to sing Koli songs. There are also other streets that have been named after residents but are not officially signed.



Major landmarks of Koliwada developed over time
Landscape Map: Hernan Guerrero; Source: Urban Typhoon Workshop Report, URBZ, 2008



Koliwada had always been an independent village even before the colonial era and supported the immigrants during and after the British rule. Their welcoming attitude worked against them and eventually with the settlement of Dharavi and the neglect of the authorities made it a part of the slum. The village that existed since 400 years was until now considered an illegal encroachment. Even in 1964, when a redevelopment plan was proposed by the Municipality under Town Planning Act where the area was reserved for a shopping center, a library, colleges and hostels. At this point, Koli Jamaat drafted an objection letter for the fellow Koli residents stating that the government cannot uproot the village and the people staying in it. They argued that *“our Dharavi Koliwada Village has been in existence in Dharavi for the last 400 years and that our land tenure holding... dates back to... 12 November 1672 and hence among the entire public of Dharavi we Kolis are the original residents.”*¹

The road of Koliwada’s residents has not been easy as yet again in 1978 when a roadway was proposed to cut through the village, they had to raise their voices once again to protect their habitat.

And when the Dharavi Redevelopment Project was announced in 2000, it also considered Koliwada to be a part to be demolished and redeveloped in Sector V of the project.

It was at this moment that the Kolis protested with the help of local NGOs. After 7 years, in 2007 they were finally exempted from the redevelopment plan. The officials in Koliwada are now forming housing societies and thinking of developing Koliwada themselves with the help of local organizations like Urbz.

It can be thus, inferred that Koliwada was the root of Incremental Development, spreading on to Dharavi. The way it’s residents have always fought to maintain their habitat and lifestyle and keep it protected from the outside environment can now be seen in Dharavi as well. Dharavi now fights with the problems head-on and keeps on growing and changing.

¹ Pg: 27, *Urban Typhoon, Mumbai (2010)*



Essence of Koliwada
Source: *Colours of Koliwada*, Anushka & Riddhi, URBZ, 2019



Optimum use of space
Source: *Colours of Koliwada*, Anushka & Riddhi, URBZ, 2019

**What is
Dharavi?**

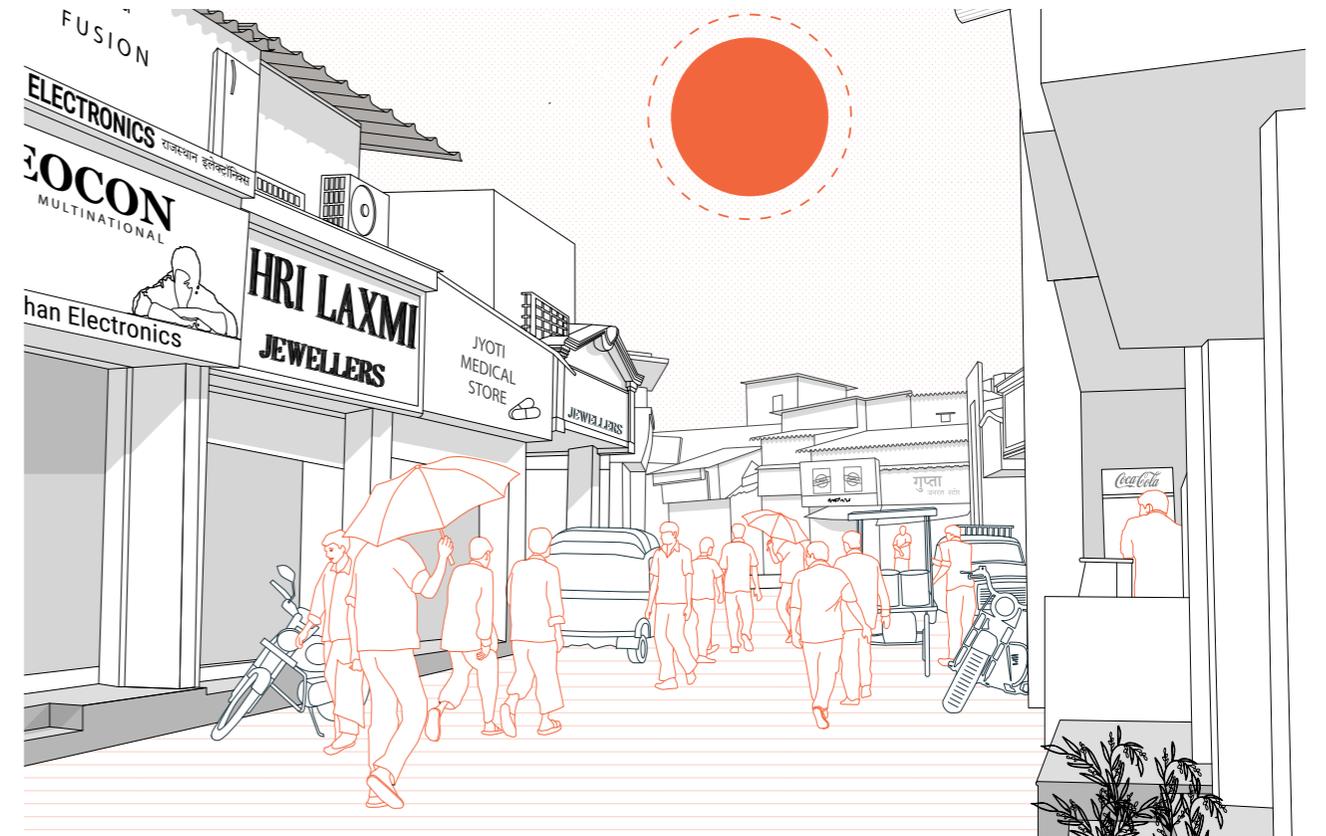


02

“ We are now forced to see our future as something that must be carved out of the present; pragmatically, incrementally and tactically. ”

Matias Echanove & Rahul Srivastava

It is said that the name Dharavi has been derived from “Dharevarhca Bhag” which is a marathi word meaning “the creeks shore”. Also, due to the fact that the title of the original inhabitants of Dharavi and the city Mumbai is often attributed to the Kolis, we can infer that Dharavi has been originated from Koliwada.



The marshland around Koliwada saw the advent of a huge number of immigrants from the rest of the country over the past few decades. But Mumbai never had the space for its poorer citizens which forced them to move towards the periphery of the city and villages like Koliwada with their surrounding areas.

This forced the inhabitants in a way, to pick themselves up and make use of the little resources available for survival. Dharavi has numerous stories of people making a better life for them right in Dharavi from nothing. Eventually, as the city grew, it swallowed the peripheral area of Koliwada-Dharavi while the creek got polluted and dried. The Dharavi crossroad displaced the shore in 1950s.

SO WHAT IS DHARAVI?

A locality in the city of Mumbai, Maharashtra, India, now ranked as the second largest slum in the world. Dharavi has an area of around 2.1 square kilometers with about 700,000 inhabitants. It consists of a population density of approximately 277,136 per square kilometers and can be considered as most densely populated areas around the world.

But is it suffice to say that Dharavi is just a densely populated slum?

Slum has been defined in legislation *“to include buildings and areas that are environmentally and structurally deficient. Slums are considered to be the result of multiple deprivation such as:*

- a. Illegal land tenure*
- b. Deficient environment and*
- c. Inadequate shelter”²*

But Dharavi seems to contradict all these points.

- a.** Because all the land of Dharavi is either under the state or central government and after our intensive research and interview with the residents as well as municipality officials, we discovered that the residents pay property taxes to the government as well as they have the land ownership rights as opposed to land occupancy. For instance, some neighborhoods such as Shivaji Nagar in Govandi, were never illegal encroachments to start with. On the contrary, it was a resettlement colony planned by the government to relocate the Dalit communities and the poor Muslims from the encroached slums in the 1980s. But it was neglected as the other poor areas and now it's treated and even



called a slum.

- b. When it comes to deficient environment, it's not right to say that the whole of Dharavi has poor environment. The narrow streets are mostly clean and ensure cool air flow during the summers. It is surprising how cool the areas can be.
- c. The shelters can be considered inadequate but it's not enough to term Dharavi as a slum.

So what really is DHARAVI?

URBZ, an experimental action and research collective that specialized in participatory planning and design. Their main agenda is to work with the inhabitants of areas like these as well as citizens along with the local governments and private clients. They have been working in Dharavi since last 11 years and we are using the term that they use to describe the area and we found the most appropriate and that is *Homegrown Neighborhoods*.

And not just Dharavi but we think this applies more or less to most of the informal settlements which grow over the years without any support from the authorities. If anything, all these areas face are a criticism for the conditions they

live in but no real action is ever seen from the governments. If looked closely, one might even say that just like the skyscrapers in the history of urbanization, they belong to an even older era, emerging from villages.

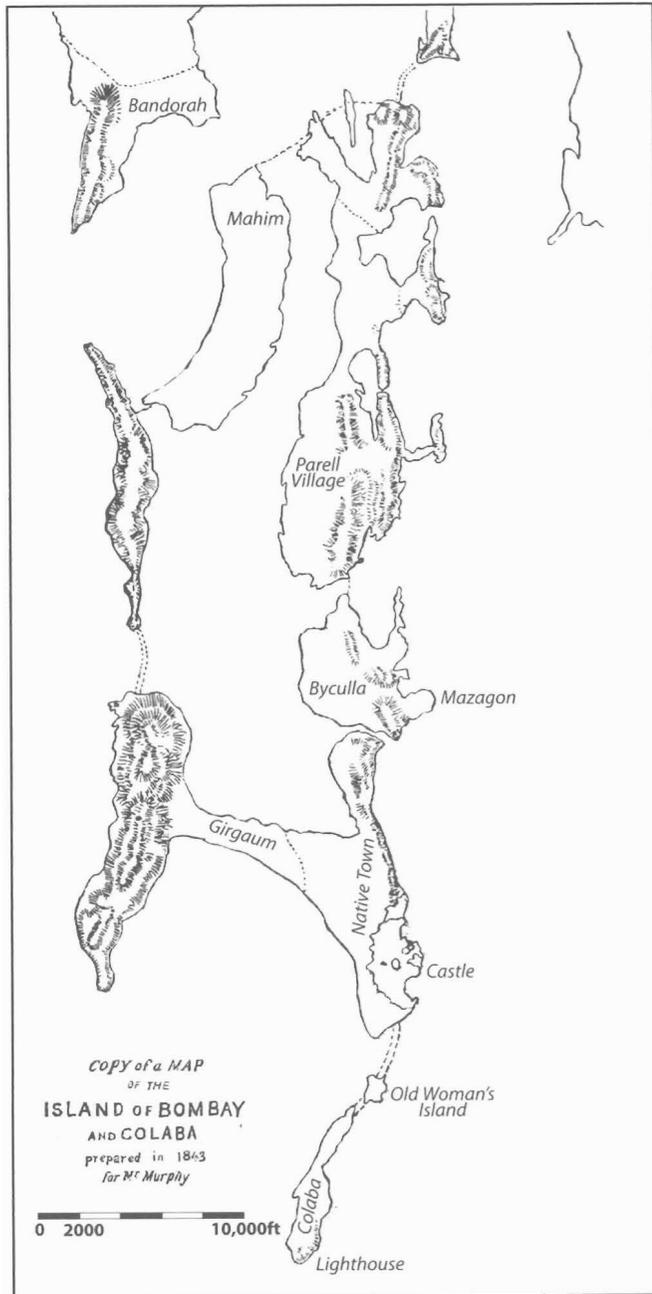
To understand Dharavi, we need to understand the history of Bombay and how the formation of the city led to the formation of Dharavi.

HISTORY OF MUMBAI

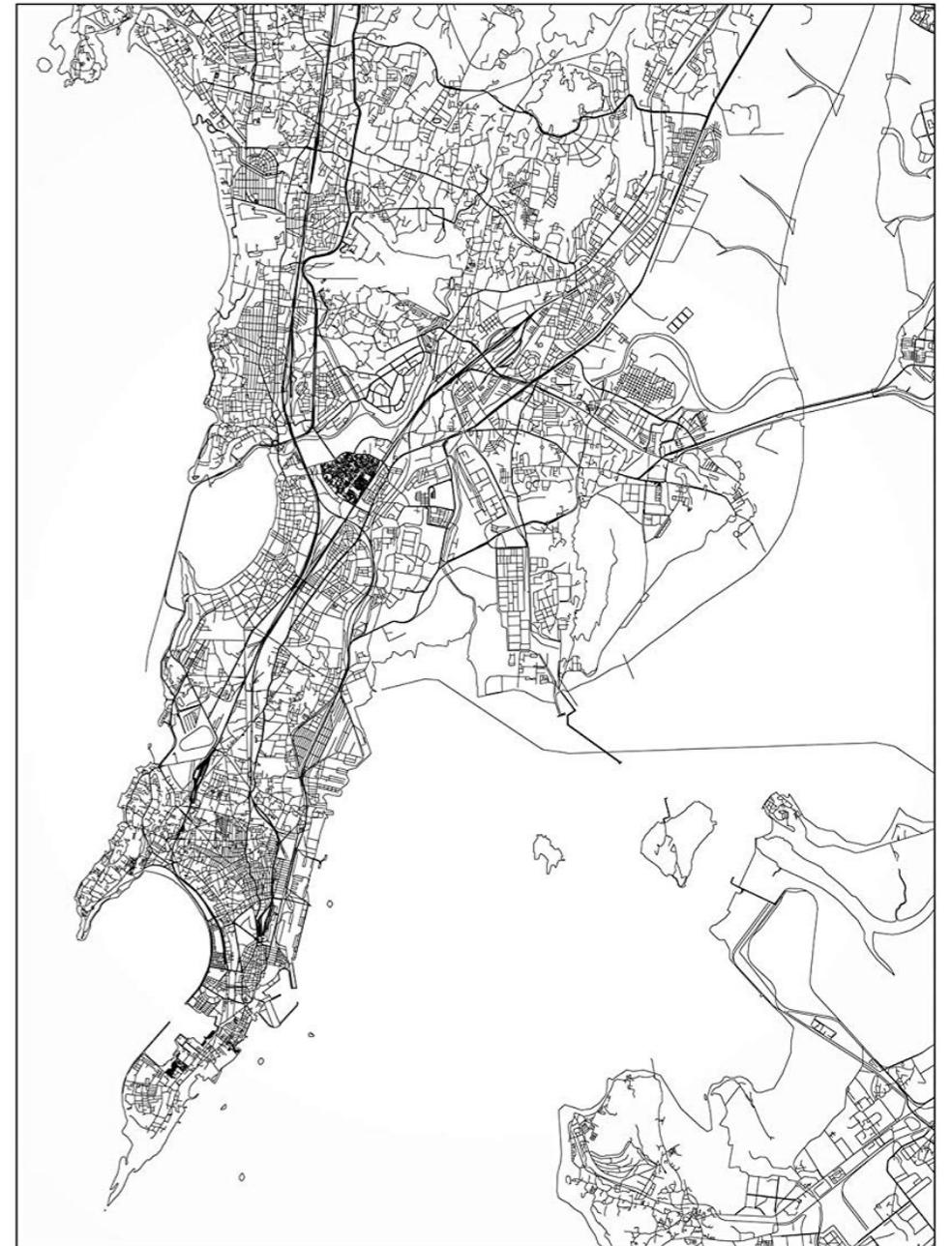
In the 17th century while Bombay was under the Portuguese, it was an archipelago with very few people living in the area including the village of the Kolis who had settled here due to the presence of nature. But Bombay was given to the East India Company by the Portuguese in 1668. And they saw the potential of the city with a port the city with a port and decided to develop it for trade and commerce center. The Colonial government moved its headquarters to Bombay in 1687. This led to an increase in the trade and hence, the migration to Bombay increased in search of jobs from villages. It was at this time that the poor population was shifted to the periphery of the city due to the neglect of the government and the poor housing facilities. This led to the formation of informal

settlements like Dharavi. Initially the settlement started with Koliwada expanding out to 175 hectares of the area at present.

So, now that we know the journey and formation of Dharavi, it is safe to say that the settlement developed over a long period of time due to migration and is still enduring the process of transformation and has surfaced as a great example of informal urbanism. It comprises of 85 clusters (*nagars in Hindi*) arranged in a labyrinth of work-live units consisting of a high amount of commercial activities including production. It contributes towards one-sixth of the GDP of the city. Dharavi can be looked upon as a completely functional unit formed with a multitude of organic spaces including the multi-functional living spaces, industrial areas, open and social zones. It is a microcosm of the city showcasing the migrant habitat.



Archipelago of Mumbai in 1843
Source: Mumbai Fables, Gyan Prakash, Harper Collin Publishers, 2010



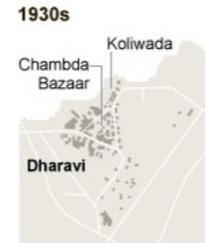
Mumbai in 2018
Source: Mumbai White map, Displate.com

The Slum Rehabilitation Act of 1995 re-located some slum dwellers from huts to new developments including most of Dharavi's high-rise structures like the Rajiv Indira project, completed in 2002.

Koliwada is often considered Dharavi's original neighborhood settled in 17th century by the fishermen. It has many small patios and old houses which is why it is very different from rest of the slum.



Dharavi grew outward from the neighborhoods of Koliwada and Chambda Bazaar. By some estimates, this is one of the most densely populated areas in Dharavi, about six times as dense as daytime Manhattan.



As new constructions were to be done for the slum, New Transit Camp was built as temporary relocation site. But the site was declared a permanent construction later.

The 13th Compound is at the heart of Dharavi's recycling industry. An estimated 80% of Mumbai's plastic waste is recycled in the slum, in some 15,000 single-room factories.

Kumbharwada consists of houses which are used as both: a living space and production. The Kumbhars, were the community of potters who migrated and formed the neighborhood in the 19th century.

Dharavi's Economy

Estimated Land Value : 10 Billion Dollars
 Annual Turnover : USD 380 Million
 (1/6th of Mumbai's GDP)

Population : ~1 Million
 Total Site Area : 175 Ha
 Declared a slum : 1971
 Density : 600-2000 ppa

How does Dharavi produce one-sixth of the GDP of the city?

Dharavi's residents are highly involved in small production businesses as discussed earlier. Their products are not only used in Mumbai and the rest of the country, but are also exported abroad. This is what keeps the micro-city of Dharavi moving. From genuine leather products to metal products, Dharavi manufactures almost everything one can think of. But some of the major occupations that contribute to the high amount of gains are discussed below.

Textiles and Tailoring

Post the colonial rule, in 1950s Mumbai faced a decline in the textile industry due to the decrease in the export of the cotton and other fabrics and left a lot of people jobless. This led the residents of Dharavi to develop another survival tactic that was to start small scale industry of the textile. From weaving, printing and tailoring at home, it slowly started to develop into a whole industry that outsources garments to major companies worldwide.

Leather Workers

Leather industries were one of the earliest industries in Dharavi. With animal skin being dyed and dried in the open spaces of Dharavi until a few years ago, it has today become the most prominent industry of the area. Although the tanning and drying in Dharavi itself was banned a few years ago to prevent the pollution, the tanned products are still procured from nearby areas and used for production.

Waste Pickers

Though one of the toughest jobs but it helps the migrants living in Dharavi to earn their livelihoods. After the down surge in the labor jobs in 1980s and 1990s, they were forced to find another source of income. Some people who were unable to procure a place to live, moved to the slums around 5km from the dump-yards.

Recycling

Mumbai generates about 9,400 tonnes of waste daily. All of the Mumbai's waste is recycled in the 15,000 factories employing 250,000 people in Dharavi. These people sort and recycle the solid waste. It works like a never stopping machine without which Mumbai wouldn't be able to survive.

Different parts of Dharavi
 Source: An Industrial Slum at the heart of Mumbai, The New York Times Archive, 2011



Women braid leather strips into straps, for a variety of products
Source: *The Informal Economy of Dharavi*, Johnny Miller/Millefoto



Workers in a small studio designing and making leather products
Source: *Mumbai's Dalit workers turn designers*, Sohini Dey, Livemint, 2018

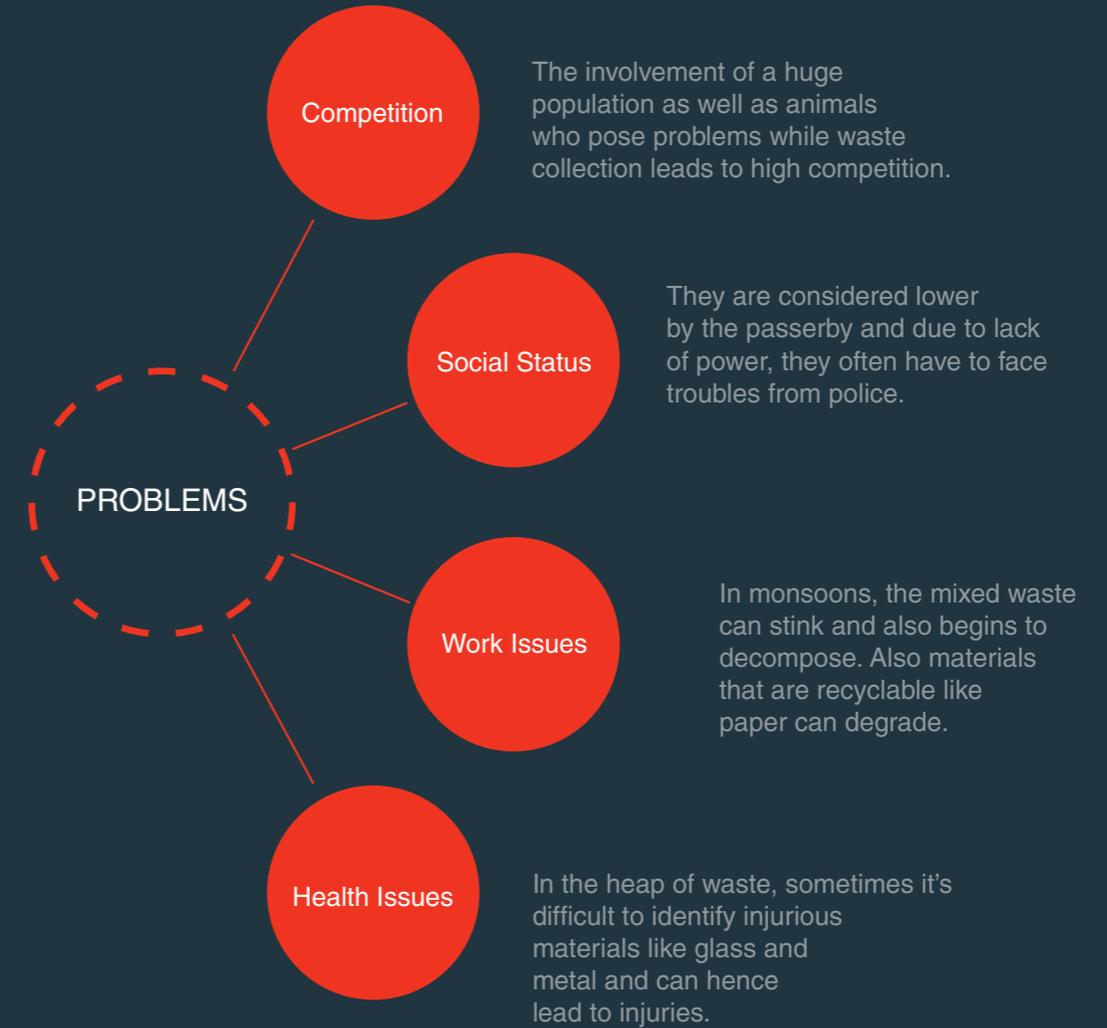


Pottery

Dharavi has a lot of artisans including builders and contractors who design and construct the houses from scratch. But the most prominent one are the potters of Kumbharwada. They have been living in Dharavi since 1700s and the tradition of crafting clay pots is handed down from

generation to generation. Each family has about 6-8 persons living in a small area of 600 to 800 square feet made of brick and cement walls with corrugated roof. They work in those same houses and the shanty lanes. And later the same space is used for eating and sleeping.

Women in Kumbharwada making clay products
Source: Dharavi Slum Tours, Mumbai



**Incremental
Development**

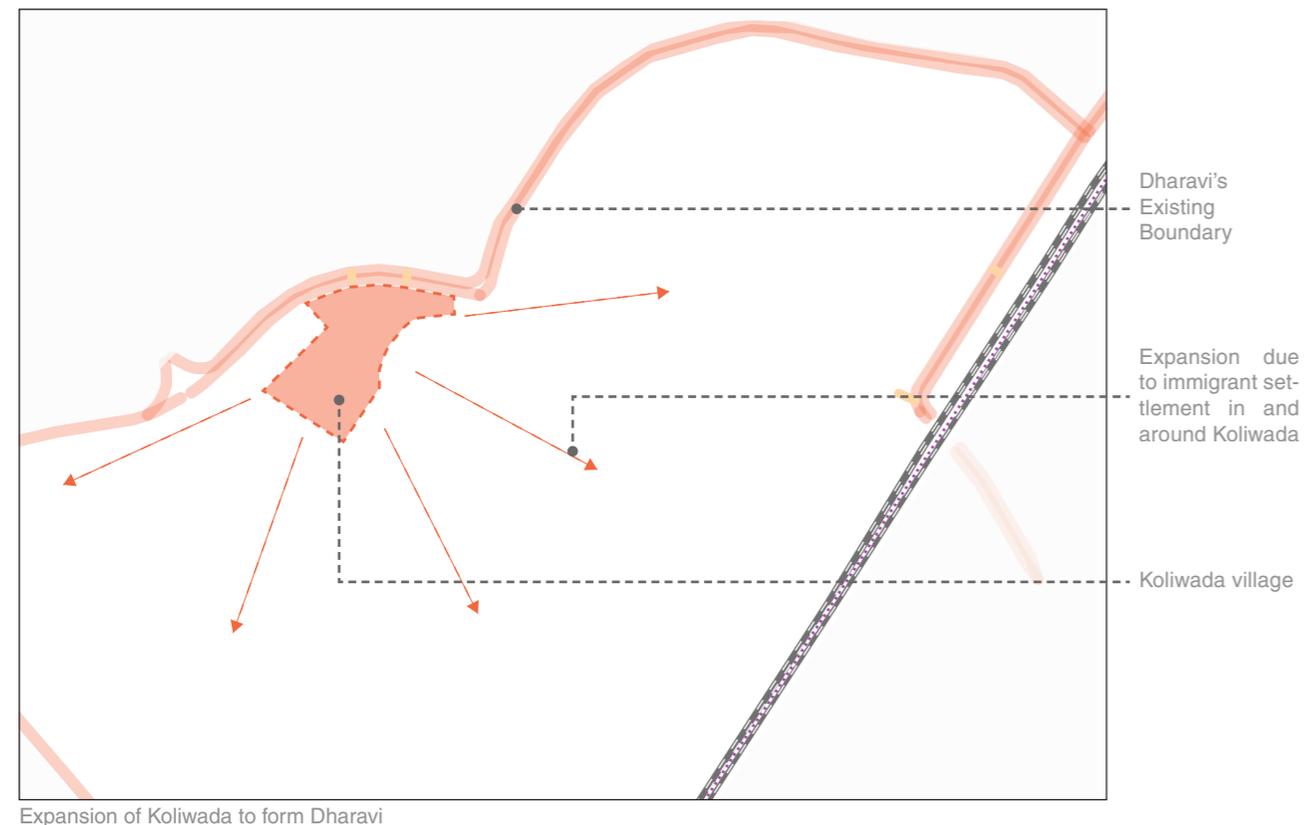


03

Urban Fabric of Dharavi

As we know that Dharavi was formed by the encroachments around Koliwada and most of the fabric in the early days was inspired from Koliwada. Although today with the increasing population, the area has gotten even denser. So today the urban fabric of Dharavi is similar to Koliwada.

Dharavi can be characterized as an area with two to four storeys structures aligned along the pedestrian oriented narrow streets with commercial spaces like shops, workshops etc. on the street level and the residential spaces on the upper floors. The Roof terraces made of iron sheds or corrugated galvanized iron in



most cases are mostly used for storage purposes. In other cases, there can be seen a few roof terraces accessible with staircases and are used for children to play and as a family social space in the evenings.

The small open pockets in some areas and even the nooks and bends of streets are best utilized by the street vendors with their small carts, maximizing the selling opportunities. Not only that, but these spaces also allow the residents for casual meetings and a social exchange, one of the most important aspects of Dharavi. The smaller streets that are away from the main streets have a very peculiar character along with the small occasional courtyards. These are the spaces majorly used by the women and children. These streets which are very narrow and shaded, serve as the workspace for women, where they can interact with the other women while working on their crafts and food processing or even doing house chores and can also enjoy the breeze in the hot weather. And the kids play in the streets while their mothers work and keep an eye on them parallelly. These public spaces and streets are an integral part of the life of the residents of Dharavi.

Another idiosyncratic characteristic of Dharavi

is the large open spaces which can be found while you walk. These spaces serve many communities and areas and have been safeguarded against the encroachments. During the political speeches, festive seasons or weddings, these spaces serve as the celebration areas of various communities and otherwise are used as a playing area by the children for cricket matches. This creates a feeling of Kinetic spaces as opposed to the completely static spaces in the rest of the city.

Despite all these amazing and peculiar aspects of the area, Dharavi still lacks in the quality of infrastructure. There is a dearth of sewage systems in the homes forcing a lot of people to use the public toilets which are mostly in a bad condition and the ones that are maintained are unaffordable for the extremely poorer sections due to their fee of ₹1/ use (€0.012). Also, a lack of water supply compels people to stand in queues for hours with no certainty or guarantee of receiving the water for their basic activities. There are private vendors who sell water at a higher price but can provide water to everyone. The only hiccup in this process ends up being that all the people are unable to afford it and hence, depend on the communal taps. This leads



them to consume low quality and dirty water and defecate in the open, hence, increasing the risk of diseases. These poor living conditions are mostly due to the ignorance of the authorities but also due to the high density in the area. The people of Dharavi end up paying higher costs of basic services due to these reasons.

Left: Roofs as a storage space
Source: *Slumming It*, Charles Anderson, Wordpress, 2011



The infrastructure of the area depends from nagar or cluster to cluster. Some areas of Dharavi have permanent structures built of brick, cement and plaster with toilets and water storage whereas others are made of scrap materials like corrugated iron and pieced together.

Right: Scrap Materials houses
Source: *Dharavi*, Charles Anderson, Wordpress, 2011



Kinetic spaces
Source: *The Dharavi Paradox*, Urbz, 2018

Building Quality

The building quality of Dharavi has always been a matter of concern but we think it's safe to say that it has improved with time. With more and more people constructing their houses out of materials like bricks and concrete, the construction of houses is getting better every day.

With the walls made up of bricks and cement and whether a metal roof on top or an accessible terrace, the buildings in Dharavi seems to be modernizing with time. Also, with the help of organizations like Urbz and their constantly held participatory workshops, people are becoming



Building Quality of Dharavi
Source: Dharavi: Asia's largest slum or India's very own recycling and circular economy goldmine, Trisha Mascarenhas, Green is the New Black, 2018

more aware about their needs and how to implement them in a building.

But it's not in the whole of Dharavi that we see such permanent structures. Some of the areas still construct buildings using scrap metal sheets or even newly produced corrugated sheets are stuck together to make a building. These is one of the cheapest, fastest and most affordable methods to construct a house which can then be sold for around ₹20,000 (250€) The recycling workshops or the families involved in recycling can mostly be seen living in these houses due to the low income.

But for the permanent structures, much credit needs to be given to the prodigious artisan-ship available in Dharavi. The contractors who live in the area are very well familiar with the needs and requirements of the residents and therefore, put their best foot forward in designing the houses along the clients and construct them brick by brick. It is on this kind of artisan ship that Dharavi survives on everyday and manages to move forward towards betterment even with all kinds of hurdles. And one of the most important aspect to keep in mind is that it's not the aesthetics that requires your attention, but the way the design process uncovers and the

amount of thought exerted into one the construction of one building in order to make it functional and economical. It this kind of process which outsiders might not be able to imagine, due to their lack of experience in the area. But for someone who lives and works in spaces like these, it's very important to understand the aspects of Dharavi that make it so unique and yet so functional.

And one of the most shocking aspect of Dharavi's buildings is that one always talks about how the living conditions are poor and therefore, the government needs to take over and provide housing for the residents.

But all the high rise buildings that have been constructed until now are either unmaintained with no renovations done over the years and the lifts not working, forcing the residents to climb up to 7th or 8th floors or left empty as the MHADA constructed buildings in the last few years in the name of redevelopment. It is to this poor infrastructure that the government labels as slum, even though the people living inside these buildings are not encroachers but have received the housing from the municipality.

These factors then lead to the residents selling their apartments and shifting to another slum



A Comparison: Government's construction
Photograph: Niharika, Anil



A Comparison: Local construction
Photograph: Niharika, Anil



area, therefore, generating a similar environment as Dharavi. Also, the fact that the government refuses to provide the basic amenities is also responsible for such living conditions. Public toilets that remain clogged with no

services are a major example in this case. Or the failure from the government's side to provide sewer pipes to the residents are some of the reasons why Dharavi remains a slum in the eyes of a layman.

Models by Local Contractors in Dharavi
 Source: *The Design comes as we Build*, Matias Jai Bharat Samidha Rahul Marius Manou Yangyang, Urbz, 2017

Dharavi has been developing incrementally for over last 100 years now, metamorphosing from temporary structures in a village like area to permanent structures being constructed today using brick, cement and mortar. But it's not just Dharavi, cities all over the world share a trajectory of incremental development like that of Dharavi. Urban development happening with the needs of the people and without any pre-proposed plan in a large amount of areas in the world ranging from China to South America and it's during this kind of development that we see urban forms which are vernacular, functional and even universal. Even the most dignified cities in Europe have risen from this process. The classic European towns, some of the authentic Asian markets or bazaars and even urban villages have emerged for such processes. It's places like these which become sanctums for social and urban diversity. Yet in the burgeoning stages, these neighborhoods have been usually dismissed due to their clash with the ever existing perfect image of a city in the eyes of the officials. They refuse to acknowledge the potential of these

developments and are determined to transform them into the "A-class city" that they envision. These neighborhoods are generally dominated by the utopia of a master planned city. But they fail to observe the culture existent in these areas which tend to bring together all the people of different communities in harmony. But it's places like these that can bring together the national, local as well as global experts to think and implement radical strategies that can help improve the condition of these areas as well as help bridge the gap between the incremental worlds and the Utopian worlds that exist in the mind of the officials. Homegrown neighborhoods can be considered as these laboratories for experimental and collaborative urbanisms whose results in turn can be used to maintain management and order in such settlements while elevating them to their highest potential and making it habitable and comfortable for the people living in these settlements.

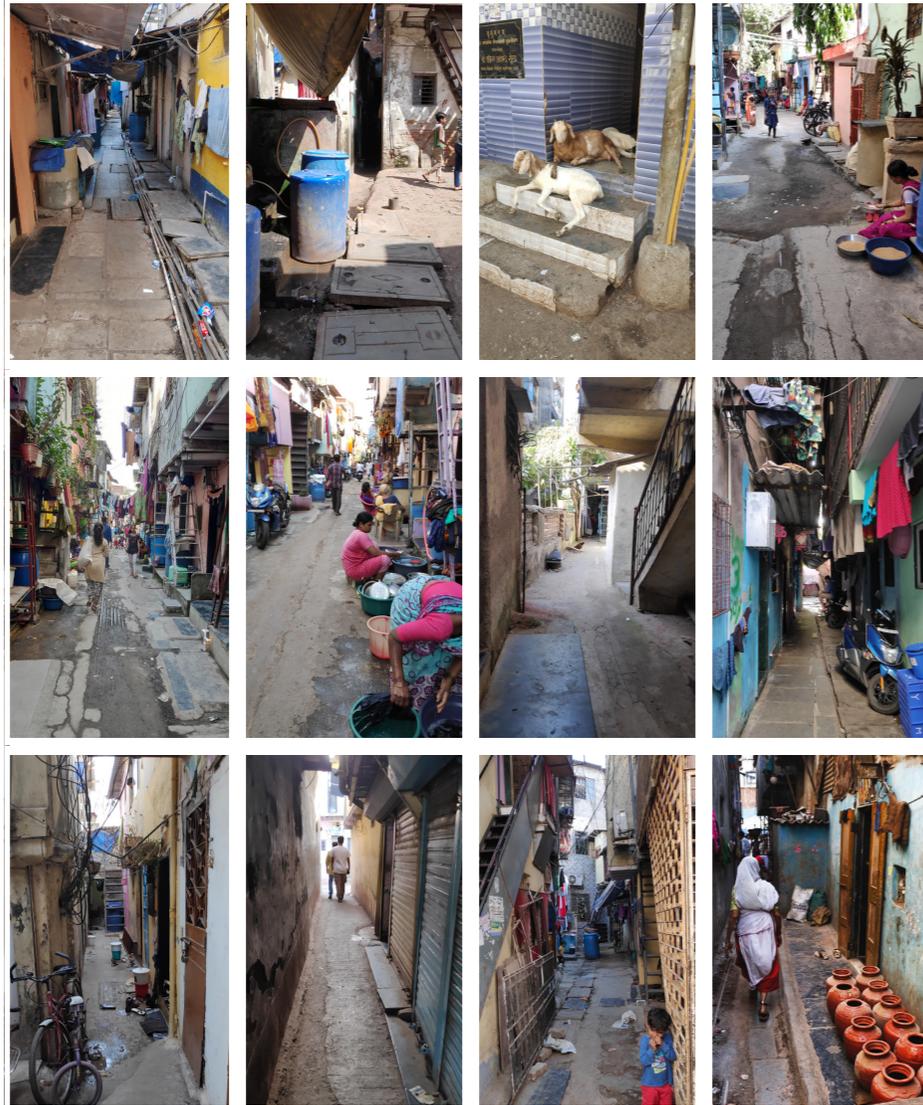


Dharavi left – Napoli (Italy) right
Source: Collage by Niharika and Anil



Dharavi left – Shenzhen (China) right
Source: Dharavi Mashup, Matias Echanove, Urbz, 2015

NARROW STREETS



OPEN PUBLIC SPACES

Kumbharwada

Kumbharwada in Dharavi is another very peculiar village which was settled during the colonial era by the skilled potters who migrated from Gujrat. They have been doing pottery ever since and it's considered a skill that's passed down from generation to generation. The moment you enter the village, you are hit by the noxious smoke of the pots being dried in the big

brick kilns.

The Potter families generally live in joint families of six to eight members occupying a small house which is used for work and living. Most of the houses in Kumbharwada are black from the outside due to the excessive amount of smoke produced by kilns. This even leads to breathing problems in lot of the residents. And it's due to



Pots being fired in a kiln
Source: Kumbharwada- A pottery village, Cameron Bray,Urbz, 2018

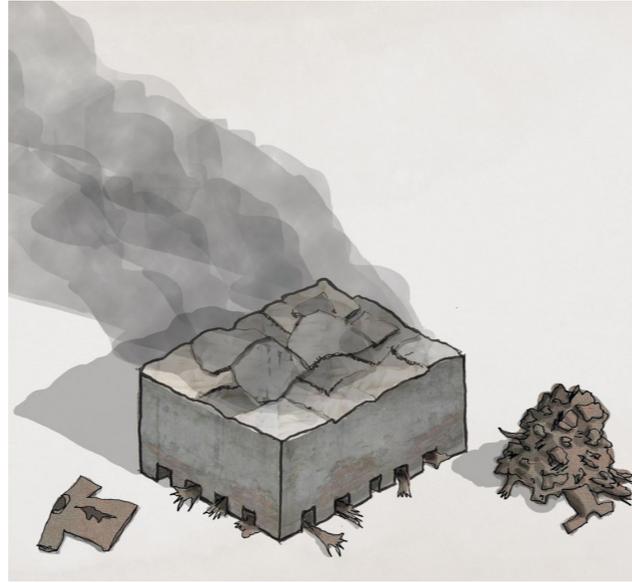
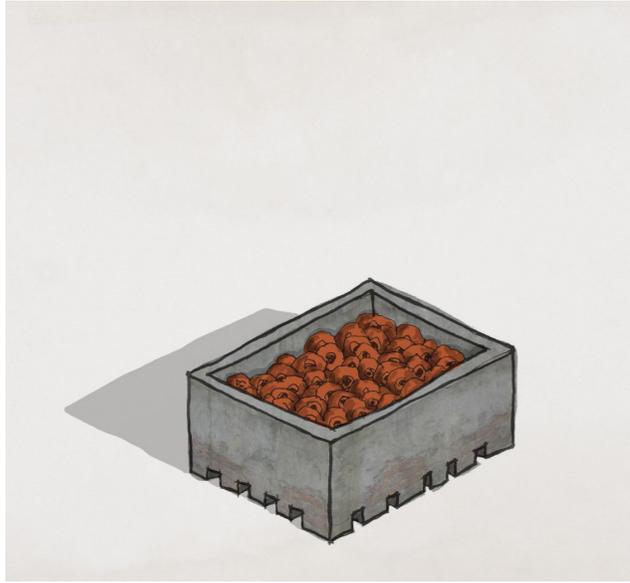
this reason the people of Koliwada have started looking for greener ways to fire the pots. Another reason being their fear that the government might just make it illegal to fire pots in Dharavi, due to the amount of pollution it produces as the same happened with the leather tanning a few years ago. And in order to do this, they have started using bio pellets to fire the kiln instead of old rags of clothes, which at times contains plastic content. But they still continue to face some

some problems as the new kilns that use these pellets are more expensive and not every family can afford to buy one. But still their journey to find better solutions continues.

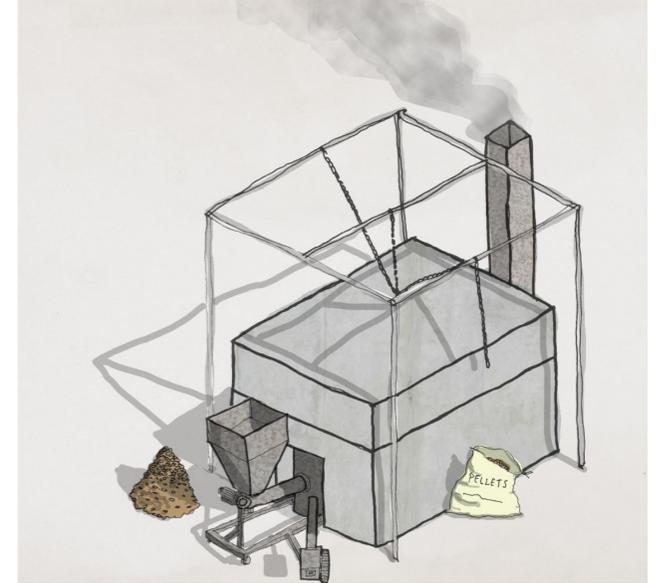
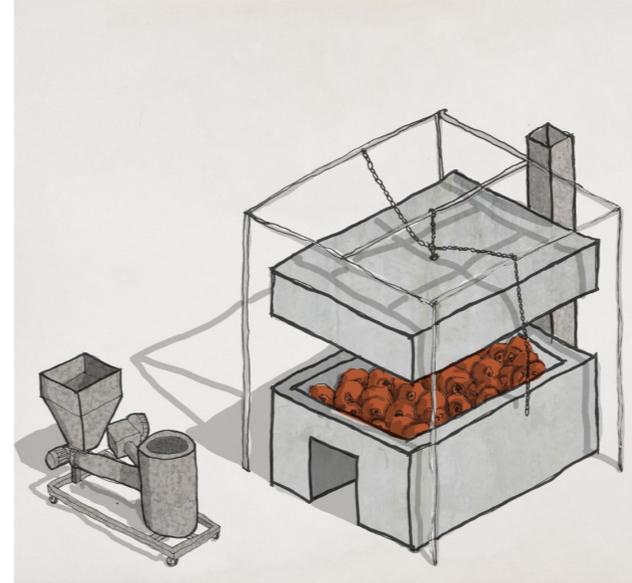
This shows that even though the government is not taking any steps to improve the condition of the residents, they have taken it upon themselves to make the environment better. This is what incremental development leads to if it reaches it's full potential.



Black exteriors due to smoke
Source: Kumbharwada- A pottery village, Cameron Bray,Urbz, 2018



Original method of firing pots using waste rags
Source: Kumbharwada- A pottery village, Cameron Bray,Urbz, 2018

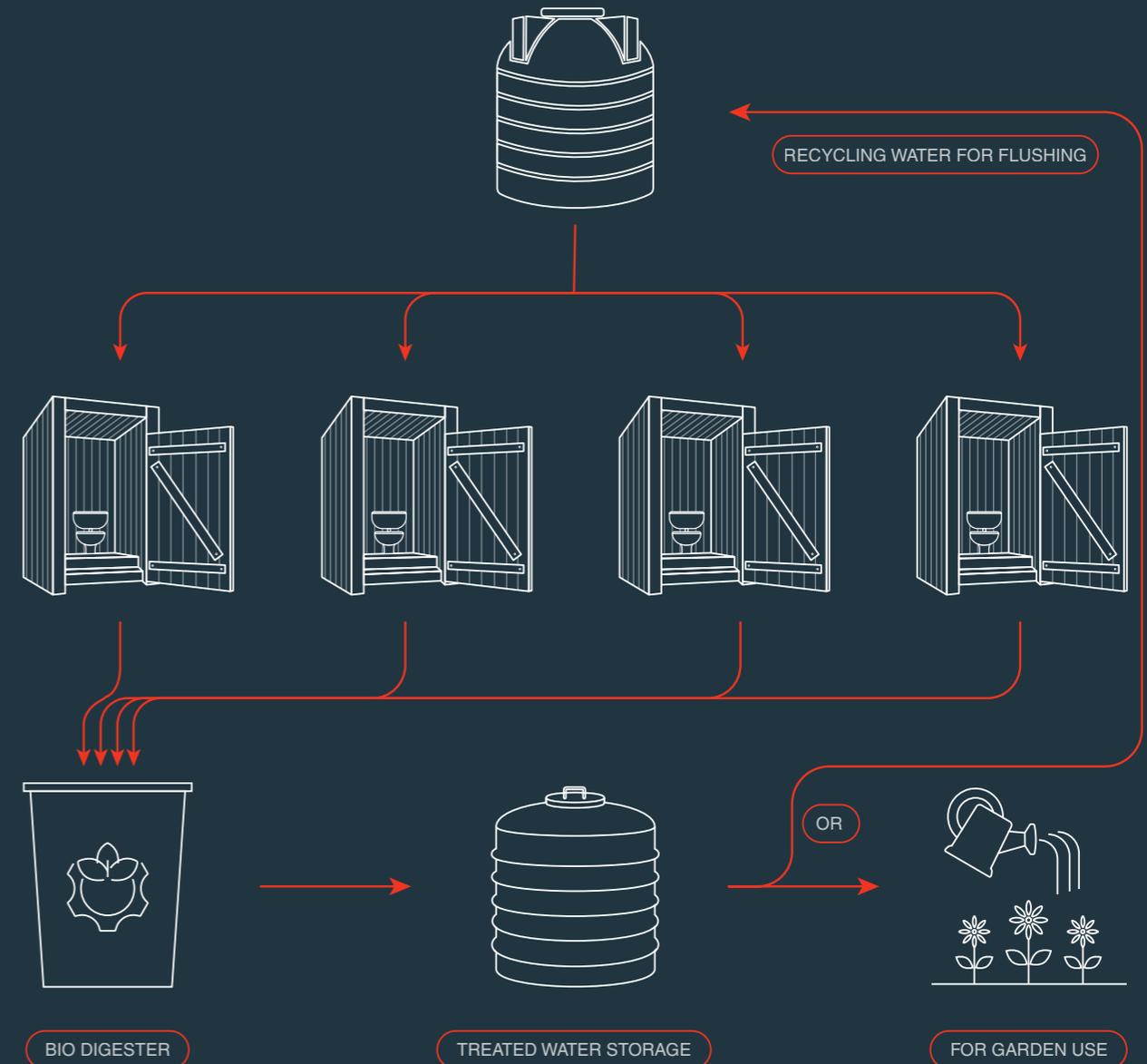


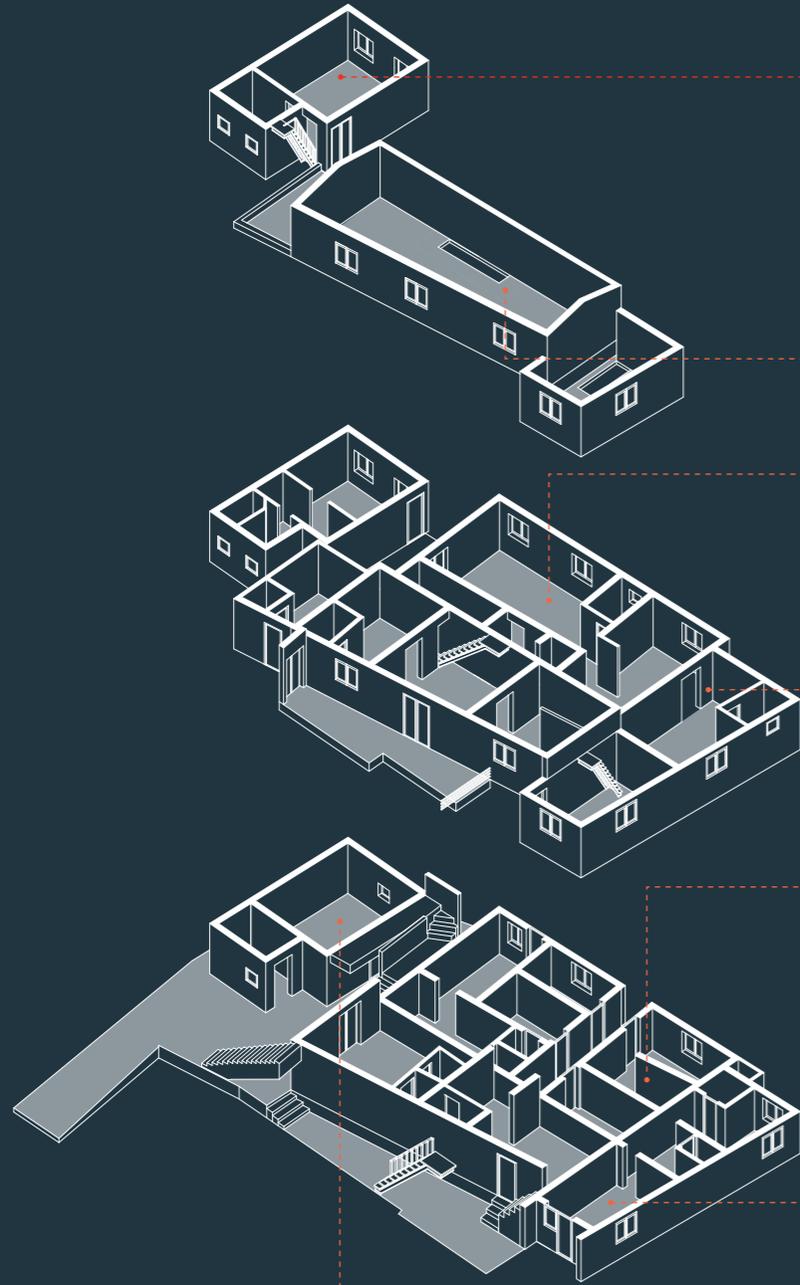
New method of firing pots using Bio-pellets
Source: Kumbharwada- A pottery village, Cameron Bray,Urbz, 2018

Bio-Digester Toilets in Dharavi

Another huge effort by the residents of Dharavi was to deal with the poor sanitation facilities. But they received help in this case from the municipal cooperation of Greater Mumbai as well as the local NGOs.

The idea was to install bio-digester toilets in areas where there is no sewerage system. As an experiment, 30 bio-digester toilets have been installed. These toilets break down the human excreta to water and gas and therefore, the requirement of physical removal is negligible. Also, it prevents the contamination of soil and ground water. But the biggest gain is that it solves the problem of defecating in the open for the poor in an affordable manner and can be easily installed at a massive scale.





Tool House: Mr. Kenny's Residence, Koliwada



RENTERS LIVING IN THE BUILDING AND USING THE SPACE AS A WORKING AREA



RENTERS LIVING IN THE BUILDING AND WOMEN USING THE SPACE AS A DINING AREA



MR. KENNY'S RELATIVES LIVING IN THE BUILDING



MR. KENNY'S COUSINS LIVING IN THE BUILDING AS RENTERS



MR. KENNY'S HOUSE HAS THE MOST SPACE IN THE WHOLE BUILDING



MR. KENNY'S RELATIVES LIVING IN THE BUILDING AND USING THE SPACE AS A MULTI-PURPOSE AREA



RENTERS LIVING IN THE BUILDING

Tool-house

The Tool-house is something very peculiar to Dharavi. It can be termed as a typology that one can only find in this particular informal settlement. And the credit for this invention can be given to the needs of the people of Dharavi. The need to earn as much as possible from the rented space and the shortage of space that forces people to use such a small area to its maximum. In Dharavi, even the families who own a house tend to rent most of the space to earn some income that would make it easy for them to get by in their daily lives. This is why it can be seen that in most of the cases, even the owners live in just the amount of space needed for the family, which is usually less than half of the area of the whole house and the rest is rented out. Also, the people living in these rented spaces, barely are able to meet their own needs, let alone their need for the space which is why the people in Dharavi use one small room that they rent for almost everything ranging from eating, sleeping as well as working. Mostly the women who work from home tend to be in the same room for the whole day where they make family preparations as well as doing

small jobs which help them in earning small incomes, just enough for their daily needs.

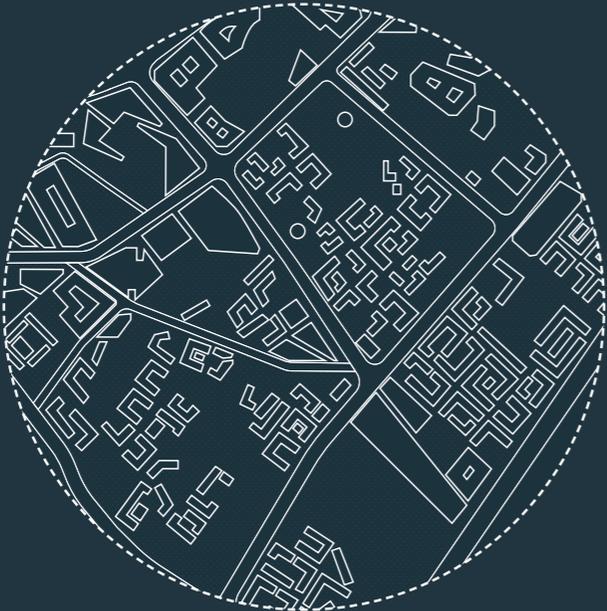
This is the reason Tool-house is one of the most special aspects of Dharavi, emerging from the need of the users.

An Inference

After looking and understanding deeply the history, existence and the efforts by the inhabitants it is very clear that whatever has been achieved so far in Dharavi can solely be credited to its residents and their quest for finding a better way of life while maintaining their social threads with the community. But if incremental development is explored to its full potential, we might be able to develop a very different kind of urbanism which would bridge the gap between the utopian world class cities and small settlements like these. But it would need the help and efforts of outside sources as well, such as the architects, government authorities, local NGOs etc. It would regenerate in a way, the co-dependence between the rest of the Mumbai city and Dharavi.

There might be a different way to look at these settlements, if observed closely. And not just by the architects and government but also the citizens of Mumbai city. The importance of such settlements will become very clear if juxtaposed against the city and how one part won't be able to survive without the other.

Redevelopment Efforts



04

Dharavi has always been a concern for the officials, even during the colonial era, specially after the Bubonic plague epidemic that emerged in 1896 due to unhygienic conditions of the area. Once the plague was over, the authorities decided to finally pay some attention to the neglected area of Dharavi and provide them with better facilities and thus, proposed a redevelopment plan.

Pre-Independence Redevelopment Proposal

The Municipal Redevelopment Plan for Dharavi was announced on May 31st, 1944. Though there are no documents available for the masterplan of Dharavi, but a masterplan for Koliwada is available where it can be seen that it was proposed to divide the village in two parts where the two-third was reserved for the Koli residences and the remaining one-third for the fish market. But India gained independence soon after and therefore, these plans remained on paper and were never implemented.

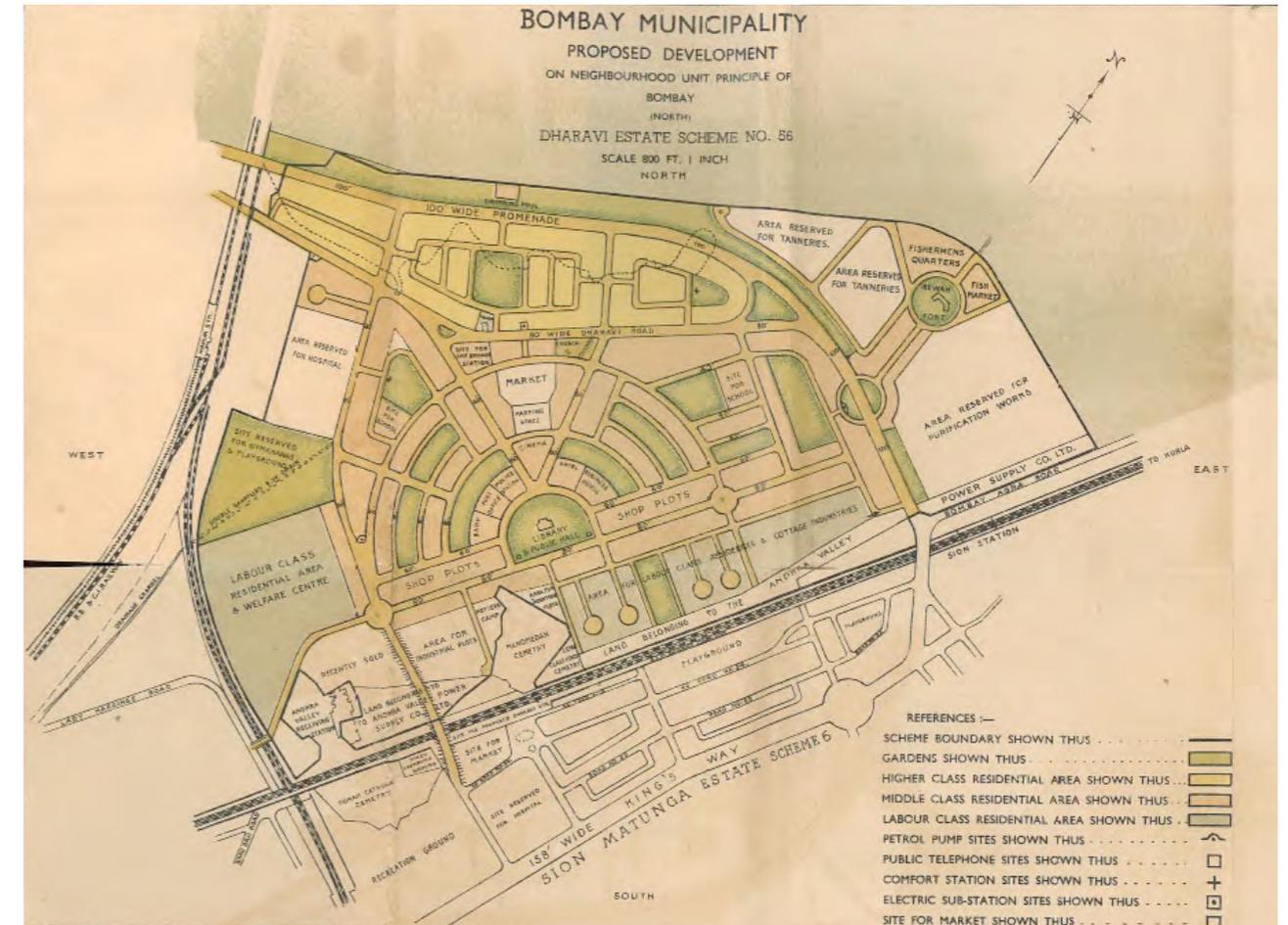
Post-Independence Redevelopment Proposal

Before the Redevelopment Proposal of 2004,

various attempts were made in the past to improve the situation of Dharavi, starting since post-independence.

But none of them could be completely implemented due to lack of funds, incomplete survey and the lack of information. This led to an even more stronger incremental development during those years, leading to the formation of several clusters along with commercial units and other informal sectors.

The first ever talks of Redevelopment after independence started in 1950s as by that time Dharavi had already been surrounded by the city and had become the hub of the informal economy. Maharashtra Government proposed plans for redevelopment at this time and the idea was to demolish the unauthorized dwellings and rehouse the residents in permanent structures in a different part of the city. And under this plan, a few evictions took place but the government didn't have the appropriate funds to build permanent structures and hence, made a lot of residents homeless. It was due to this reason that this that the redevelopment plan could never succeed. In the meanwhile, the number of immigrants were increasing each day and by the 1960s, the slum population had



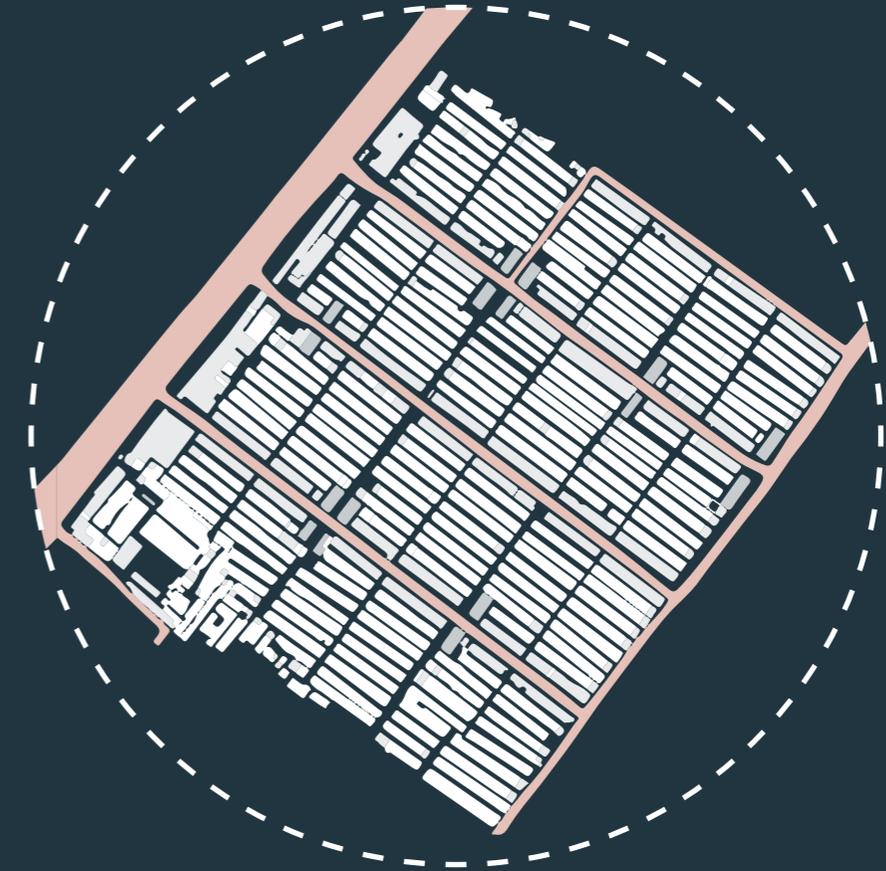
Municipal Redevelopment for Dharavi, 1944
Source: Urban Typhoon Workshop Report, URBZ, 2008

reached approximately 1.5 million.

By 1971, the state government was under the pressure of the central government to improve the worsening condition of Bombay's housing. In order to achieve the same in the slum areas, the government launched several programs such as the Slum Improvement Program (SIP) and Affordable Low Income Shelter Program (ALIS). But even these programs were unable to achieve any significant results due to the fragmented politics. Though small interventions were carried out in between for the next few years but nothing major happened. In 1973 the state government created Maharashtra Slum Improvement Board which along with the Slum Improvement program helped the government to make small interventions and improve the quality to some extent. In 1976 repairs were made like the installation of water taps, public baths, toilets and electrical connections. Some of the major roads like the Sion-Mahim link road, 60 and 90 feet road were constructed during this time and sewer and water lines were laid. Even Transit Camps were constructed to transfer the people whose houses blocked the construction areas and other projects. In the same year the government ordered to carry out

a census for the people living in the area at the time and issued photo-passes as the identities to the families. These families were then classified as the regularized slum dwellers who were given the right to occupy the land as a monthly charge and also, were given the assurance of relocation if their homes were demolished.

But as the elections started approaching in 1980, the state government along with the Brihan Mumbai Cooperation again launched "*Operation Eviction*" in July 1981 in order to clear the slums for slum improvement and make Mumbai a better city. An order was issued by the Chief Minister to evict about a hundred thousand of slum and pavement dwellers and return them to their places of origin. One of the most disturbing aspect of this was that the order was issued during the time of peak monsoons. And just before the evictions were to begin, the people formed a group "*People's Union for Civil Liberties*" and filed a petition in the Bombay High court to postpone the evictions until after the monsoons. Their petition was approved and the evictions were paused until October. But until then, a lot of petitions were filed stating that evictions like these were an exploitation of the rights of the people. Therefore, the



Plan of New Transit Camp

evictions were halted for the next four years until the court's ruling came out. And in 1985, the supreme court's ruling stated that the people had a right to live in the city whose livelihoods and place of work existed in the city but the trespassers were supposed to be evicted. Therefore, the operation eviction began again in 1985. During this time, a huge number of families were evicted, even the ones with the photo passes. This led to the creation of a lot of NGOs and activists to oppose the actions of the government, some of them remain active even today. And at this point, the Prime Minister of India, Rajiv Gandhi visited Dharavi and was moved by the condition of the residents. He launched the Prime Minister Grant Project (PGMP) and assigned a grant of 1 billion rupees to improve the condition of the settlement. But due to the state politics, the grant amount of 1 billion was later used for the whole city. The grant for PGMP were transferred in 1986 and hence the state government formed a committee headed by the architect Charles Correa for Dharavi's redevelopment. A Special Planning Authority was formed for the same. The first step of the committee was to collect data.

Although, the data collected was accused of being highly inaccurate, it still became the basis for developing the Redevelopment proposal. The proposal had funding also from the World bank at the time as a loan to the residents, who were supposed to share the construction expenses. Also, the plan proposed not to raze the whole of Dharavi but focused on the improvement of infrastructure. This was to be achieved by upgrading or improving the existing clusters. This was to be done by reconstructing the temporary structures into permanent structures but Reinforced concrete was not allowed to be used. Also, the reconstruction would include the installation of indoor toilets and plumbing services. The whole of Dharavi was imagined to be made into middle class style apartments. But due to the high density of Dharavi consisting of about fifty five thousand families as per the data, it was proposed that the space was not enough for so many families and thus, around twenty thousand families had to be relocated. This led to a series of protests and hence, undermined the whole project. But before the protests began, the project had already initiated some construction and about twenty seven buildings were constructed during the time.



High amount of congestion in the inner parts of Dharavi

Now the remaining funds for Dharavi were used in majorly three aspects: first was to clean the highly polluted Mahim Creek that formed the northern border of Dharavi, secondly was to widen the roads and provide more sewage and water facilities and the lastly, the very few amount of funds that remained after this were used to reconstruct housing instead of improving it. This was done after discussing with the residents who wanted new buildings rather than improving the old ones. But the funds were very less for the new construction in the whole area and was used to construct in some areas.

The talks of redevelopment started gain in 1995 after the elections. This time the elected government's proposal was to invite private developers to do the construction in Dharavi and provide houses to the residents free of cost in return of the right to land on the cleared slum areas. In order to do the same, Slum Rehabilitation Authority (SRA) was developed. And in order to achieve the same, the residents were told to form housing societies and select an architect and builder and SRA would overlook the whole project. The residents would now get ownership of their residences but would be prohibited to sell them for a period of ten years.

But once the project started, many cases of builders garnering the profits came forward, where they would force the residents to accept the plan. It was due to this reason that the project was never fully completed but a few housing societies were built.

Redevelopment Proposal of 2004

The Redevelopment Proposal of 2004 was proposed by Maharashtra State Government. They hired Mukesh Mehta, an architect practicing in America at the time. He was asked to provide a Master Plan for Dharavi and to do the same, Architect Mukesh set his office in Dharavi for approximately nine months and studies Dharavi and came up with a plan. The concept was to divide Dharavi into five sectors, each sector was proposed for a different community. Sector 1 was reserved for Leather and recycling industries and had the Slum Rehabilitation Authority land for rental housing. Sector 2 was for clusters that had strong social structures and a high amount of commercial activities. Sector 3 was reserved for Industrial and Institutional functions whereas Sector 4 had the ephemeral population, majorly the migrants and consisted

of areas not older than forty years. Lastly, Sector 5 was to consist of Municipal and public services for entire Dharavi. High rise buildings were to be constructed and the inhabitants were to be given an apartment of an area of 21 square meters in the high rise buildings.

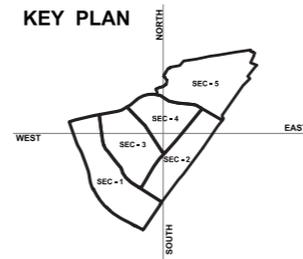
But the project started facing a huge amount of backlash due to a number of reasons. The major reason were related to the amount of families taken into consideration as the estimation given in the proposal was too less. Also, there was no accepted estimate for the population. The population estimation was not the only reason for the protests. Another huge concern for the residents was the amount of area provided per apartment for a family. The area of 21 square meters for a family of 4-5 persons was extremely low. Along with this, there was no clarification provided on the infrastructure planning of the area as well as the environmental impacts of the proposal. Lack of information in every aspect led to a series of repercussions. These included even the details about how the land will be acquired from the private owners and even the eligibility of residents to get the ownership of an apartment. These were some of the outright problems with the plan but as the

time passed, other deeper concerns were developed.

If looked deeper, it can be observed that the plan leaves absolutely no scope for future expansion or development. It basically stacked the people in vertical slums with no scope of expansion. And the one part of Dharavi that would suffer the most due to this would be the large scale informal businesses. These businesses flourish in the small and narrow alleys. The plan raises questions about what will happen to the informal economy and it's sustenance.

One of the most affected communities was Koliwada which was always an independent village but was considered as a slum for the Redevelopment Plan. The residents of Koliwada had to once again fight for what was theirs. The people along with the support of several Non-profit organizations protested for Koliwada to be excluded from the Redevelopment proposal.

But paralelly there was huge amount of opposition from the rest of Dharavi. People were getting worried about the eligibility for getting an apartment and if the plan had enough space to accommodate all the people. Not only that, but how will the relocation take place and what will happen to the local businesses in the meanwhile.



COST



Expected Cost 2004
1.3B Dollars
Expected Cost 2008
2.9B Dollars

PROPOSAL



Five sectors area with specific function of each sector and neighborhoods of 670 sq. m each

SHOPPING AREAS



Shopping areas along with small local vendor shops and markets.

DEVELOPMENT



20-30 floors of residential towers at general market price with apartments.

INFRA STRUCTURE



Services and Infrastructure to be developed by real estate developers

Dharavi Proposed Redevelopment Plan, 2004
Source: Slum Rehabilitation Authority

There were no answers to these questions and no assurance was being provided. But on top of that the main concern was the area of 21 square meters to be increased to at-least 37 square meters.

The government didn't provide any answers to the people for almost three years. But in early 2008 the government finally rendered some solutions to the questions raised by the inhabitants. The main aim of protest being the area of an apartment 21 square meters was raised to 27.5 square meters. Also to accommodate the current density of Dharavi, the floor height was increased to 10 floors or more. And the eligible families would be the ones living in Dharavi before the year 2000. This was later increased to year 2004.

Also, it was in this year that the government announced that Koliwada will be excluded from the redevelopment plan.

Once these announcements were made clear, the state government decided to release the Global Tender and invite bidders for the project. Out of the whole area of Dharavi, just 450,000 square meters was reserved for the residents whereas, the rest 1,050,000 square meters was for outsiders. 19 bidders were shortlisted.

But 14 bidders eventually left due to the Global recession in the year 2009-2010. Only four bidders were left at the time but eventually everyone left due to the recession. Now the project was stuck but the government decided to go ahead with Sector-wise development and the sector 5 with an area of 21 hectares with construction to be done for 9,000 families was given to Maharashtra Housing and Area Development Authority (MHADA). The work started in 2011 and the area for cleared for construction. Up until the year 2018, three high rise structures were constructed with one completely finished and the rest two were on the verge of finishing when the state government gave the orders to stop the construction. As the recession period was over, now the government had different plans in mind for the redevelopment.



Dharavi Proposed Land-use Plan, 2008
 Source: Slum Rehabilitation Authority

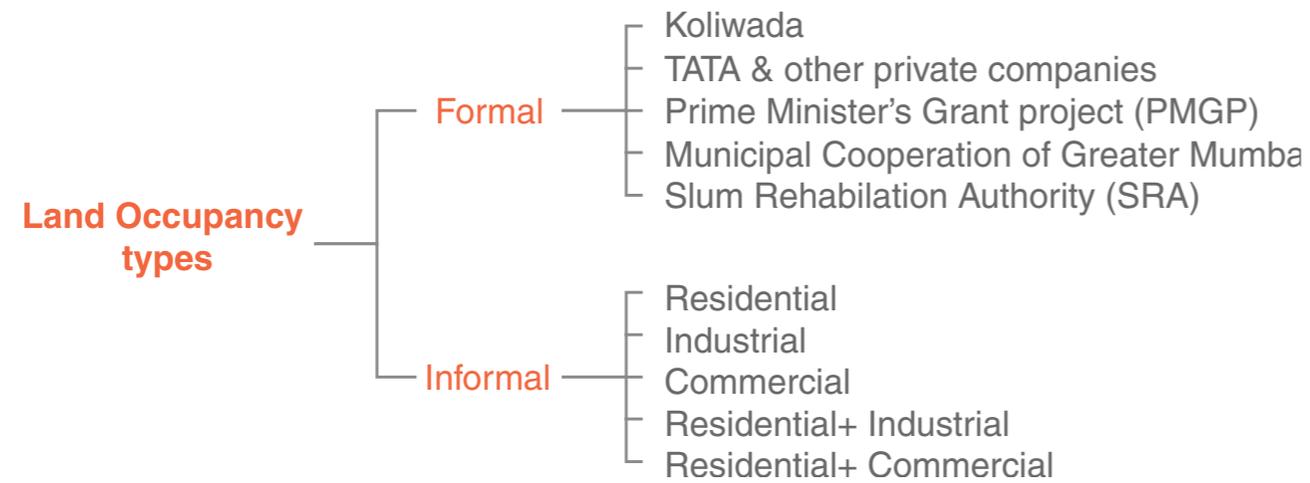
Current Scenario of Dharavi Redevelopment

In the year 2019, the Maharashtra State Government again invited bidders for the project and the tender was bagged by Seclink Technology Corporation (STC), a Dubai based company. The company will be backed by the United Arab Emirates' Royal family and will help in the transformation of the 600 acre area, considered to be one of the largest slums of Dharavi. The project was estimated to be completed in nine years. The state government has also introduced a Special Purpose vehicle (SPV) founded by four people based in India. The main aim of SPV is to tightly control the development process and is a subsidiary company and due to its legal status obliges to finish the development even if the parent company goes bankrupt. When the project is finished, all the families eligible for the apartments will be provided a house with an area of 350 square foot or 32.5 square meters with some additional compensation. The process of redevelopment will start primarily with the construction of Rehabilitation towers in a ten acre empty plot whose location isn't very clear and about 1,200 residents will be moved there. The commercial businesses will

be rehabilitated followed by that and sale towers will be constructed in tie ups with builders who would have the liberty to sell those. And as per the latest information available, out of the 600 acres of the total area, 200 acres will be used of rehabilitation of the slum inhabitants, 100 acres will be reserved for a large green space whereas the remaining area of 300 acres will be used for the construction of commercial complexes and sale buildings.

As per the information available, the space for rehabilitation would be along the Sion and Mahim area and the commercial complexes along with the sale buildings will be constructed next to the Bandra-Kurla complex (BKC). But since the land of Dharavi is under different owners including the central government, the Railways and municipality, how the land will be acquired is not clear.

Even though the company has been finalized since the last ten months, the construction hasn't started. It is because the government hasn't yet provided Seclink with an official go ahead through the Letter of Award. This has been leading to several legal issues and hence, once again Dharavi Redevelopment project is at a halt.



A local shoe store in Dharavi
 Source: For Dharavi's Leather Industry troubles are more than skin deep, Manasi Phadke, The Print, 2017



A Metal Repair shop in Dharavi
Photograph by: Niharika and Anil



A local street market in Dharavi
Photograph by: Niharika and Anil

Land Ownership Patterns



05

Land Ownership in Dharavi has a very peculiar pattern and is a very important part to understanding Dharavi. The land ownership pattern of the area can be traced back to the colonial rule. During the time when immigrants were migrating from other parts of the country in search of jobs, the poor settled in the peripheral areas of the city wherever the space was available. The people were allowed to build anywhere they found the space but with time as the density of the city increased, the government started taking over the land and extorting the residents for revenues. So by the early 1900s, the land occupants paid revenues to the British government in order to use the land. But Koliwada was not a part of this arrangement as it was given the right to the land by the government due to their long time occupancy of the area. Though this right was revoked when India gained independence. And Koliwada became a part of the slum in a way.

But as years passed and the density of Dharavi kept increasing and several failed efforts of the government for redevelopment, the encroachers were finally provided with the right to occupy the land in return of a monthly fee. The occupants were allowed to construct on these lands

as well as can sell the building with the permission of the government. This gave the residents an opportunity to improve their conditions by constructing better building with time along with several facilities like water & electricity.

This also gave the possibility to the land occupants to sublet floors or even parts of their house for an additional income.

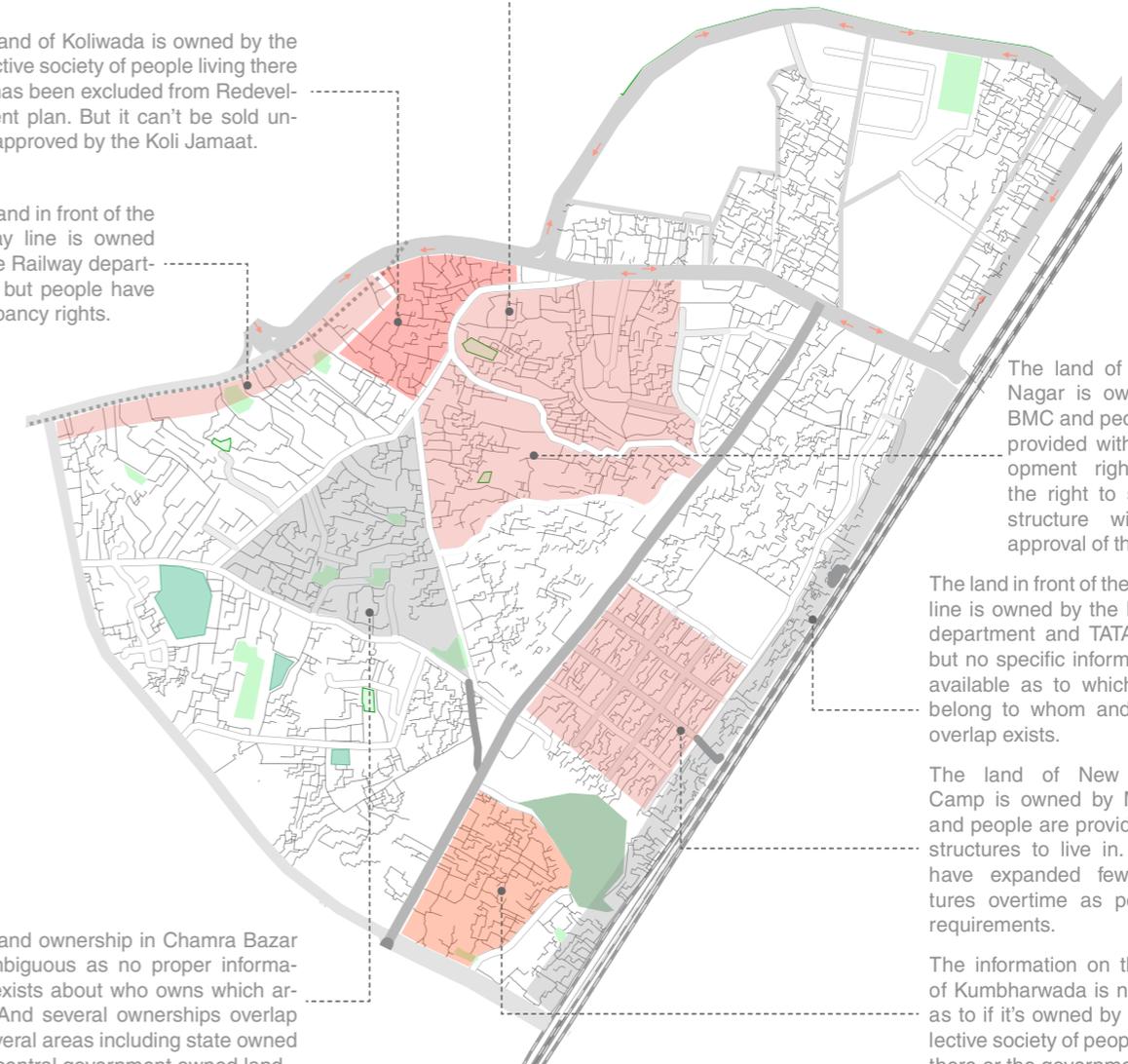
But in today's time it's very difficult to determine as to which land belongs to whom. There are various owners of the land ranging from the state and central government to the private companies. Some of the land has been bought by the private companies and housing societies were constructed in the area whereas other areas are just used for providing services such as electrical plants to provide electricity to the whole of Dharavi. There are even some anonymous areas which have no proof or documents regarding the current owners. And not just that, but due to the lack of documentation it is extremely difficult to recognize the exact boundaries of lands. This is also one of the points which may hinder the redevelopment process if it ever begins.

Whereas in terms of incremental development, some owners don't need to pay the fee for

The land of Mukund Nagar is owned by MHADA and it asks people to develop the infrastructure and provides them funds to do so.

The land of Koliwada is owned by the collective society of people living there and has been excluded from Redevelopment plan. But it can't be sold unless approved by the Koli Jamaat.

The land in front of the railway line is owned by the Railway department but people have occupancy rights.



The land of Shastri Nagar is owned by BMC and people are provided with development rights and the right to sell the structure with the approval of the BMC.

The land in front of the railway line is owned by the Railway department and TATA group but no specific information is available as to which areas belong to whom and so an overlap exists.

The land of New Transit Camp is owned by MHADA and people are provided with structures to live in. People have expanded few structures overtime as per their requirements.

The information on the land of Kumbharwada is not clear as to if it's owned by the collective society of people living there or the government.

The land ownership in Chamra Bazar is ambiguous as no proper information exists about who owns which areas. And several ownerships overlap in several areas including state owned land central government owned land.

Land Ownership in Dharavi

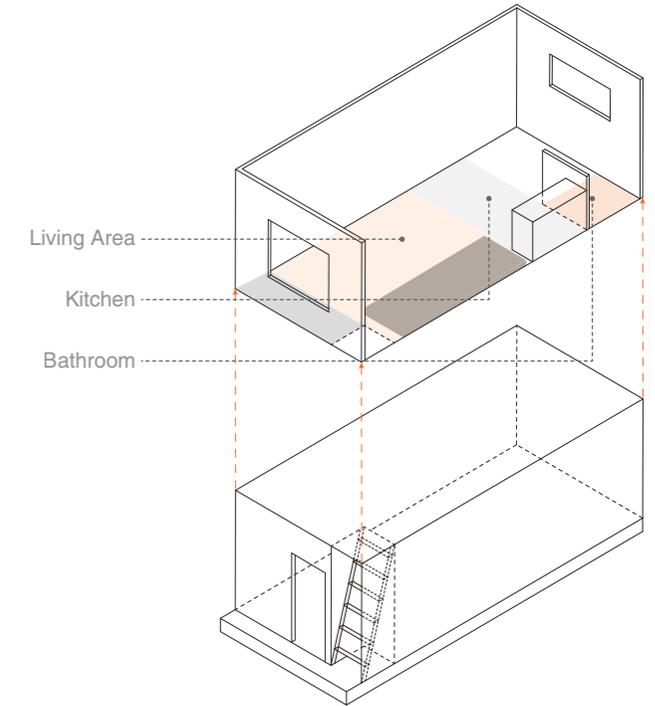
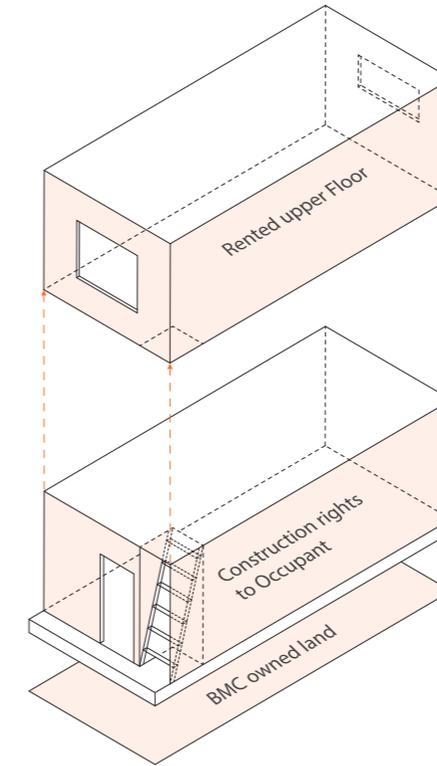
occupying the land due to the reason being that government cannot keep track of every occupant and the taxes that they need to pay. It's probably because the latest identification of Dharavi's residents was done in the 1970s and since then a lot of new occupants have arrived whose records don't exist leading to a haphazard arrangement in the land occupancy.

Land ownership Pattern of a residence: Shastri Nagar

While we were walking around Dharavi, this time with Shyam who is one of the guides of Urbz and helps researchers like us interact with people, we came across a very small house in Shastri Nagar. It was a two floor building with an area of about 75 square feet (7 square meters). The ground floor was occupied by the owners while their own house was under construction in the adjacent plot. We got lucky as the renters were home for a break and therefore, had a chance to meet them. Rekha Kale, the woman of the house was really nice to talk to us and explain how everything works in Shastri Nagar. She is living in the small room cum house with

her husband and three daughters. Her father-in-law migrated from a small village in Karnataka about fifty years ago. Today her husband paints houses while she sells snacks in the local train. Her eldest daughter is married while the youngest one is studying Bachelor of Arts in a college. The other daughter is highly educated and has her own NGO who helps the people of Dharavi in need. It was astonishing to see how a family who hardly gets by could manage educating their three daughters so well.

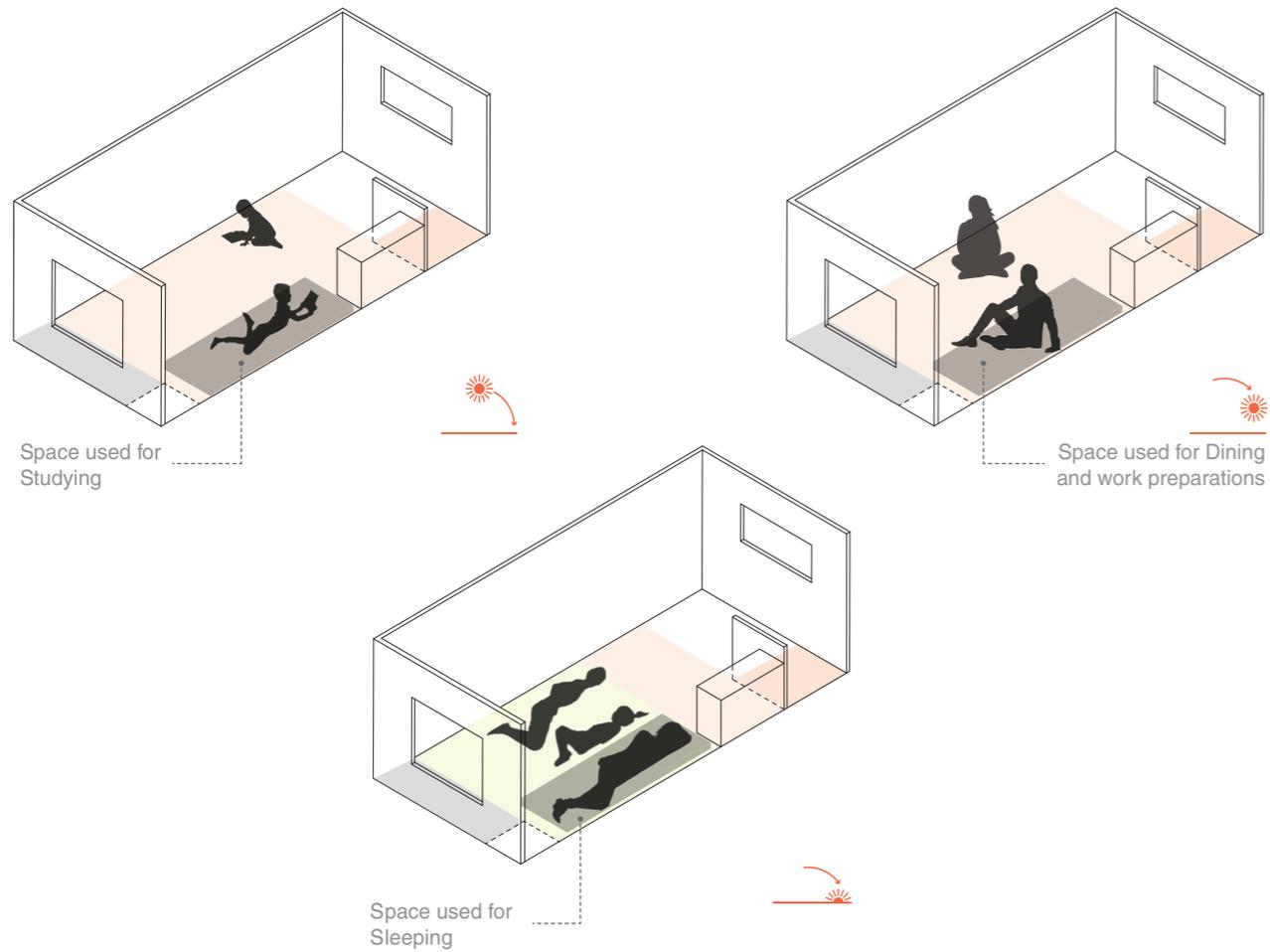
Rekha was kind enough to welcome us into her home and offered us some water and snacks and gave us a tour of her house & her daily life. Rekha's home was a perfect example of how life is in Dharavi. A small room consisting of an even smaller kitchen or pantry and a washing area. The same space is used by five members of the family. In the morning the space is used by Rekha to prepare her baskets of snacks in order to sell them and while the parents are out until the evening, the daughters use it for studying. In the night, the same area is used by the whole family for dinner and to sleep. As we sat we showered her with our questions regarding the land ownership in the area. She explained us that the land of Shastri Nagar is



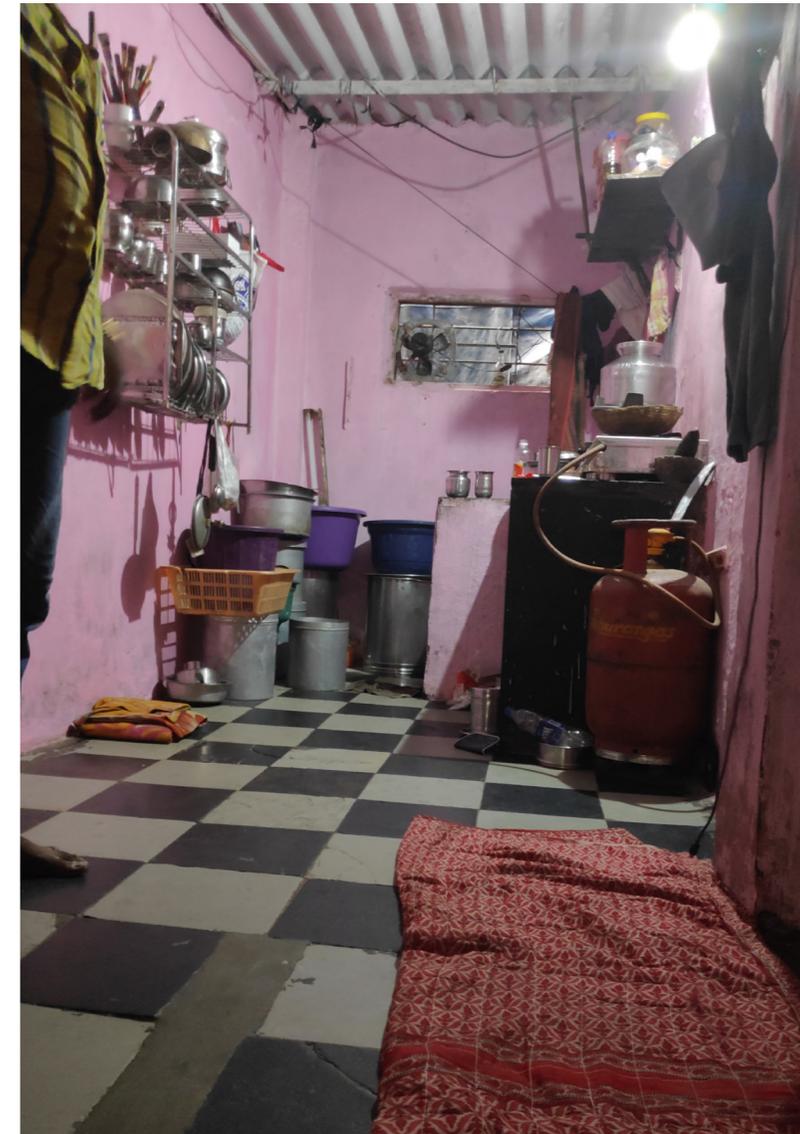
owned by BMC and people are provided with development rights and the right to sell the structure with the approval of the BMC. The rights of the property or the structure are transferred to the other person in this case. The Structure is owned by the occupant and one floor can be rented in order to earn some added income. The occupants have to pay a monthly charge of

₹100 (1.27€) as their family has the photo passes issued back in 1970s and are eligible for the relocation if the redevelopment occurs. But if the family fails to pay the rent for some period of time, there is a chance of the municipality sealing the house and kicking the residents out making them homeless.

Land Ownership Pattern of a residence



The same space being used for multiple purposes



Rekha Kale's home in Shastri Nagar
 Photograph by: Niharika

Land Ownership of Koliwada

The land of Koliwada has two types of ownerships. One is the land that is collective society of people living there and is governed by The Koli Jamaat and the other is the land owned by Koli Jamaat and is used to provide services to the people like the temples, markets etc. and also, some land owned by Koli Jamaat is rented and they collect the rent for the land. The whole of Koliwada has been excluded from Re-development plan. But the land owned by the collective society of people can't be sold unless approved by the Koli Jamaat.



The Land Ownership Patterns can also be considered as a result of Dharavi's development. New encroachments over the last few decades forced government to provide solutions for the housing problems and hence, land occupancy rights were given to the residents. The ownership pattern have been changing over the years and play a huge role in determining the potential for development in Dharavi.

Effect of development on Land Ownership patterns

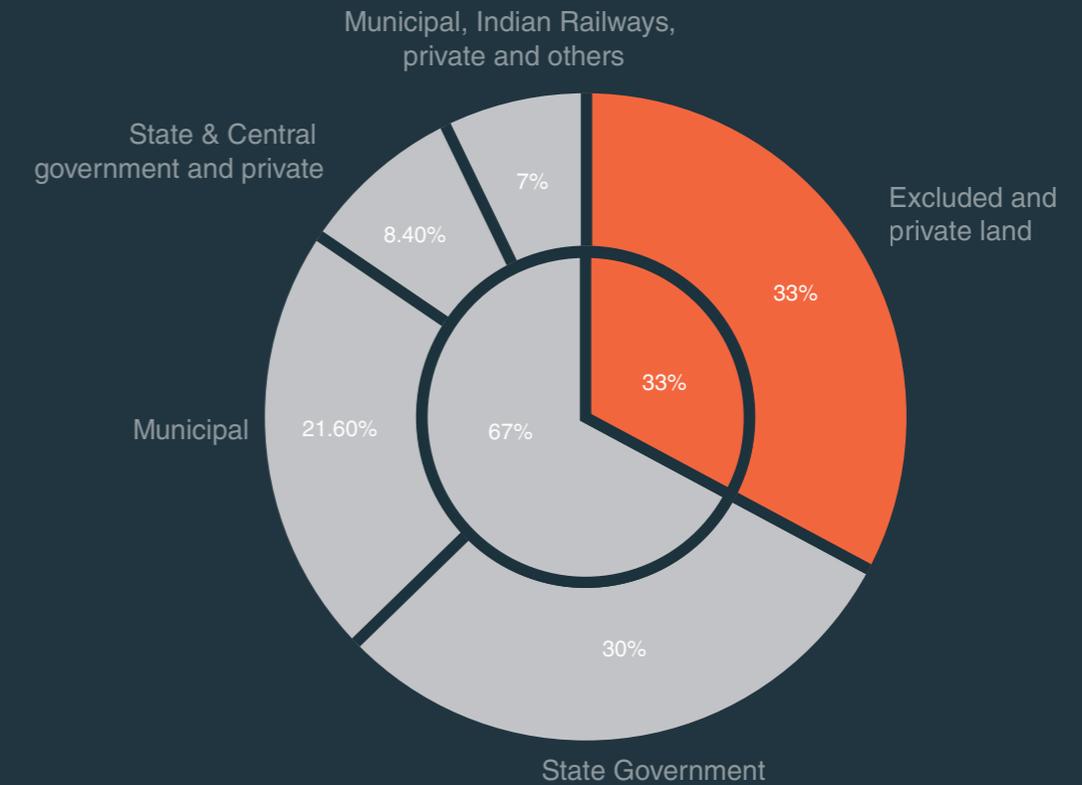
Incremental Development

Incremental Development was a result of ignorance by the Colonial as well as the Indian government. This led to the haphazard growth in areas starting from the existing village of Koliwada, thus forming Dharavi while growing outwards. The land encroachment kept increasing gradually and immigrants started living in these areas separated from the rest of the city. Therefore, a few years after independence, when the Redevelopment talks initiated and proposals were presented, they mostly included vacating the area and starting from scratch. But the inhabitants revolted, claiming that they have been living in these areas since colonialism

and therefore, have the right to the land. This led to the unsuccessful efforts for redevelopment. Also, the reason that Dharavi holds a huge amount of voters, leading to high political interest, most of the redevelopment plans stayed on paper and the people were given the Right of Occupancy of the areas they had inhabited, while the land was owned by various different government bodies. And the fact that no practical solution and better infrastructure was provided by the government, led the government to atleast provide the inhabitants with land to build in a hope of better construction and maintenance that the government itself could provide.

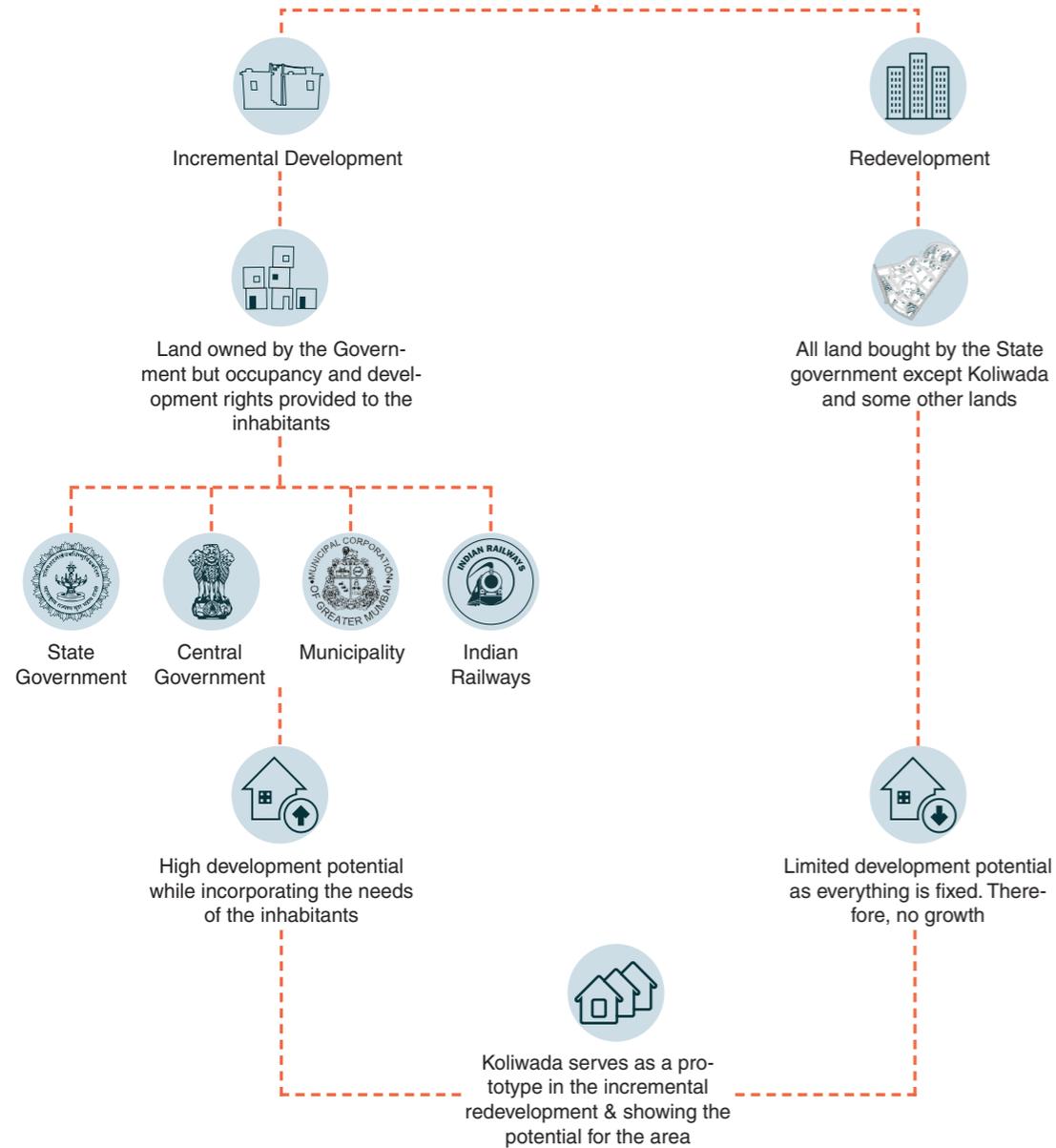
Redevelopment

If the Redevelopment of Dharavi is done as proposed since 2004, the state government will have to buy all the land from various authorities, leaving the inhabitants with nothing but the possession of small apartments in a high rise building. This approach could be dangerous as it would leave no room for the inhabitants to improve their living conditions if not supported by the government and ultimately would lead to the development of another slum in a different part of the city.



Land Ownership of Dharavi

Land Ownership Patterns Effects on Government Land



Conclusion

Incremental Development

Both approaches of development seems to yield drastically different results. But none of them is completely satisfactory in terms of development, space distribution, organization and better services.

On the one hand, Incremental development seems to fulfill the space needs of the people as per their requirements, it also lead to congestion, poor infrastructure and services. Also, the lack of government support leads to even worse conditions. Even when the government seems to participate in the process, resulting in the construction of small structures like toilets or community halls, such services in most of the cases remain unmaintained or poorly maintained leading to the poor infrastructural conditions. This works like a vicious cycle that keeps on going. This is the reason that though government has made several efforts to gradually transform the area it has never yielded the expected results as there is no maintenance and once services like these stop working people prefer to go back to their old lifestyles rather than putting efforts into these structures.

Redevelopment Plans

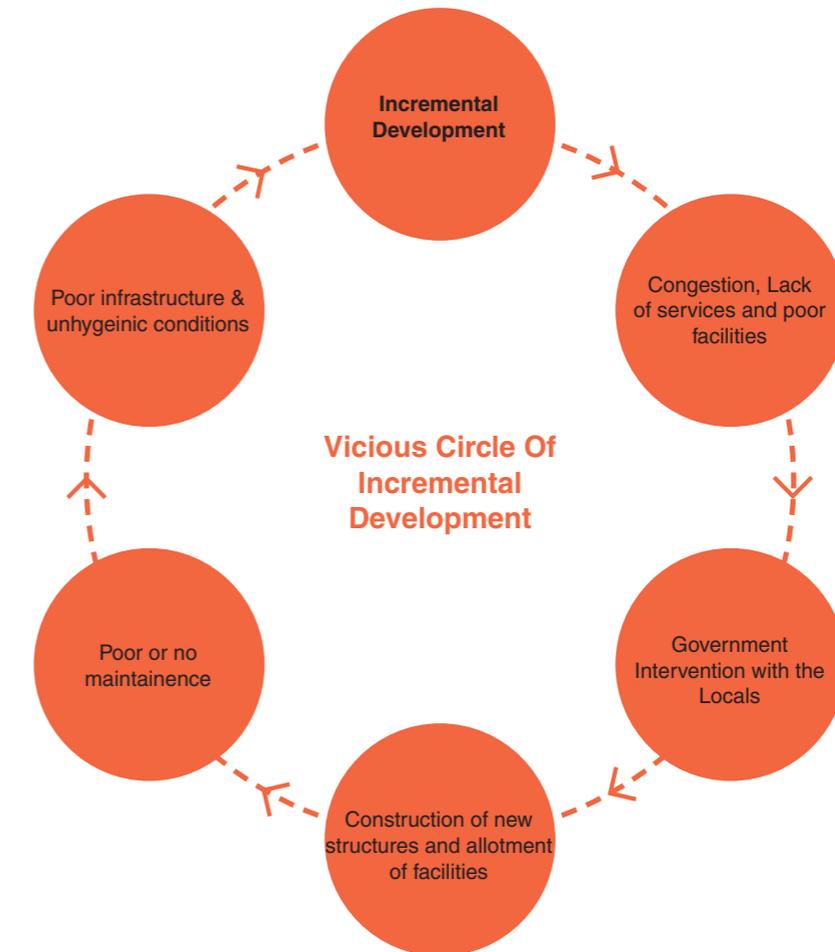
The top down plans have always been in controversies since they mostly never seem to take into account the needs of the inhabitants.

In case of Dharavi, almost everytime a redevelopment plan has been proposed, the data obtained from the surveys has always been insufficient, leading to contradictions and eventually failure.

Another aspect is the lack of involvement of the inhabitants or the authorities in direct contact with the locals.

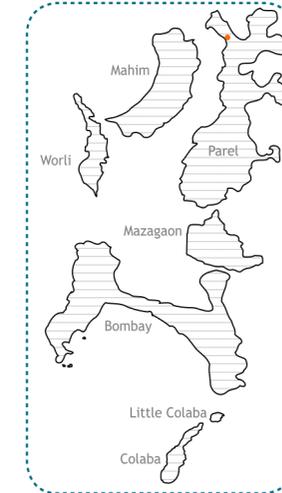
And the fact that the only aim in case of Dharavi for redevelopment was profit and land acquisition was one of the major factors for the failure of these proposals.

Also, one of the most prominent reasons lies in the maintenance of these structures. Constructing high-rise structures and with no backup for maintenance, ultimately leads people to leave their allotted residences and move to another slum where they won't have to be dependent on the government or private developers for maintenance.



Therefore, a strong strategy needs to be developed in order to merge the two approaches and find a practical solution.

1700s



- In 1700s "Bombay" was made up of 7 different islands.
- Most of the area was consisted of mangrove swamp.
- It was meagerly populated.
- The first inhabitants of the island were the *Kolis*.

1800s



- Koli* fishermen inherited Bombay distinctly.
- Fishing business attracted more inhabitants.
- A 99-year lease was given to *Koli* community by Colonial govt. in 1895.

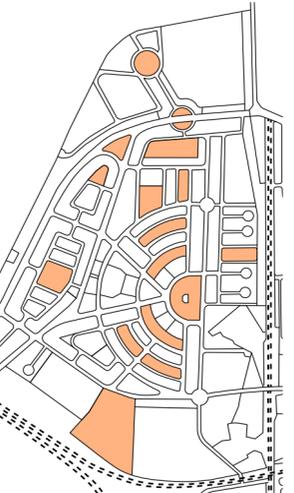
1800-1900s



- Bombay attracted more people for new businesses.
- Incremental construction was carried out by the inhabitants over the years.
- The unplanned and non-supervised constructions led to haphazard growth, improper sanitation and improper drinking water.

1944-1947

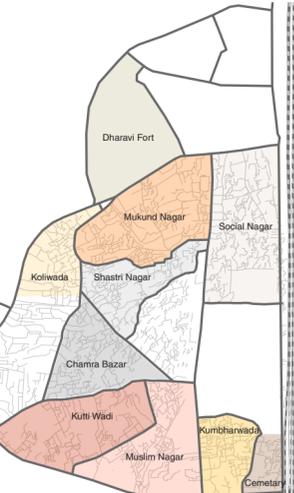
- Municipal Redevelopment Plan was proposed for Dharavi in 1944
- Though, this plan was discarded after India got independence in 1947.



- Dharavi had become one of the largest slum in the country in 1947.
- Empty spaces were treated by operators of the city as dumping grounds.

1950s

- In 1950s Maharashtra Government proposed plans for redevelopment of Dharavi.



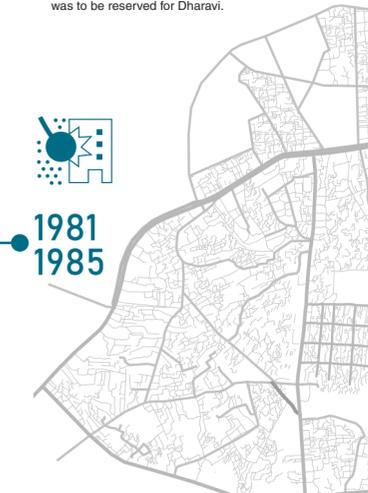
- Soon enough the city grew around Dharavi & the area became the center of informal economy.

- A census of the area was carried out and photo-passes were issued to families.
- Slum Improvement measures were taken and electrical and sewage connections along with taps were provided.
- Roads like 60 and 90 feet along with Sion-Mahim link road were constructed.
- People whose homes blocked the new roads and other projects were relocated to New Transit Camps.



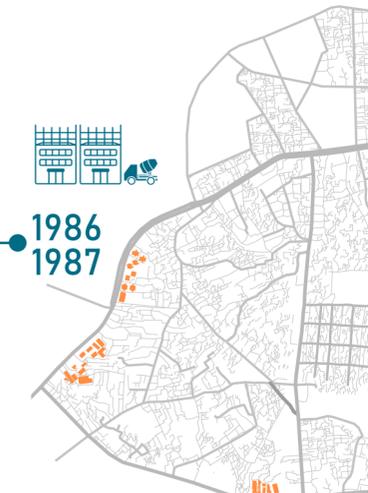
- Over the next years, people also built structures, according to their needs, on the newly constructed transit camp.

- BMC launched "Operation Eviction" in July 1981.
- Order was issued to evict 100,000 slum residents and pavement dwellers and return them to their places of origin.
- The evictions were halted as a result of petitions by activists for the next four years until the Court's ruling was issued.
- "Operation Demolition" was launched in late 1985.
- The Prime Minister announced a financial support of 1 Billion (~10 Million USD) for the improvement of housing and infrastructure to be used for Bombay, and one-third of the sum was to be reserved for Dharavi.



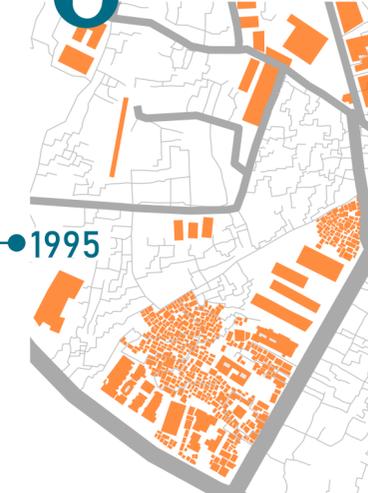
- Incremental constructions were carried out by the inhabitants over the years.
- 85 nagars or clusters were formed in the form of a labyrinth of dense multi-functional work-live dwellings.
- Multi-functional living units, open spaces, organic clusters, industrial institutional, commercial, social zones were created.

- The Maharashtra govt. assembled a committee, chaired by Charles Correa.
- The initiation of PGMP (Prime Minister's Grant Project) was done in 1987 and MHADA (Maharashtra Housing and Area Development Authority) was set forth as SPA (Special Planning Authority) for Dharavi.
- Twenty seven buildings along with a number of houses were constructed under this project.



- The areas around were developed gradually, by the residents, with the help of local artisans.
- Also, people expanded few structures in the Transit Camp overtime as per their requirements.

- After 1995, under the Slum Rehabilitation Authority (SRA) eighty six Schemes were sanctioned in Dharavi for the upcoming years upto 2004.
- But in the interior of Dharavi, no major redevelopment schemes were proposed as the access was inadequate and also because to the presence of huge number of industrial/commercial areas.



- Redevelopment was halted leading to the continuation of the incremental development around the already redeveloped parts of Dharavi.

REDEVELOPMENT PROGRAMS

2004

- Maharashtra State Govt. proposed Dharavi Redevelopment Plan (DRP) and hired Mukesh Mehta.
- Dharavi was proposed to be divided into 5 sectors.
- High-rise buildings were to be constructed while providing residential space for the inhabitants.
- Separate commercial units were to be developed.



- Involve of organisations like Urbz for awareness and help in incremental development.
- Incremental development plans for Koliwada by the community.
- Urban Typhoon workshop organised by Urbz and Koli community to develop strategies for incremental development.

2004-07

- Opposition by NGOs - no clarity on infrastructure planning, land acquisition.
- Controversy regarding counting of families.
- Opposition regarding allocation of area of 21 m² per house.
- Demand for area of 37 m² per house.
- Koliwada community protested, claiming that they are not part of the slum and were the original residents of Dharavi.
- 19 bidders were shortlisted.



- Existing service and amenities areas
- Koliwada: The only settlement excluded from the redevelopment plan
- Dharavi Redevelopment Project Area
- Areas excluded from Redevelopment including housing societies, temples, hospitals etc.
- Green areas including parks and playgrounds to be kept intact.

2008

- Max. height of buildings reduced to 10 floors.
- Apartments size was increased to 27.5 m².
- Koliwada excluded from redevelopment plan & the land given to the Koliwada community.
- 2007- Global tender was released.
- 19 bidders were shortlisted.



- Land Owned by MHADA
- Land Owned by Private owners
- Koliwada: owned by the residents
- Land to be owned by the state government
- Land Owned by Cooperatives between people and the state government
- Land to be owned by the Railways Department

2009-10

- 14 bidders withdrew their application due to recession.
- A government sub-committee recommends the sector-wise redevelopment of Dharavi



- Land to be owned by the Railways Department
- Land to be owned by the MHADA and it asks people to develop the infrastructure and provides them funds
- Koliwada is owned by the residents
- Land to be owned by the BMC and people are provided with development rights and the right to sell
- The land of New Transit Camp is owned by MHADA and people are provided with structures to live in.
- The land ownership in Chamra Bazar is ambiguous as no proper information exists about who owns which areas with overlapping of ownerships.

2011-18

- MHADA gets sector-5 to redevelop 21 hectare land for 9000 families.
- 450,000 m² for slum dwellers and rest 1,050,000 m² for outsiders.
- In 2018 MHADA was told to stop the construction.
- Introduction of SPV



- Higher flexibility as people can change their spaces as per their needs.

2019

- Dubai's Seelink finalised for development with UAE royal family backing up the project.
- Rehabilitation towers in 10 acre empty plot will be constructed
- Out of 600 acres, 200 for slum inhabitants, 100 for garden and rest 300 for sale buildings and commercial complexes



- Limited aspects for incremental growth, once the construction is complete.
- People will be unable to expand the spaces as per their increasing family needs
- Can lead to the possibility of leaving the provided apartments and settling in another slum.

1944-1947

1950s

1976

1981-1985

1986-1987

1995

2004

2004-07

2008

2009-10

2011-18

2019

INCREMENTAL DEVELOPMENT

EFFECTS ON LAND OWNERSHIP PATTERNS

KOLIWADA (to be developed as a prototype)

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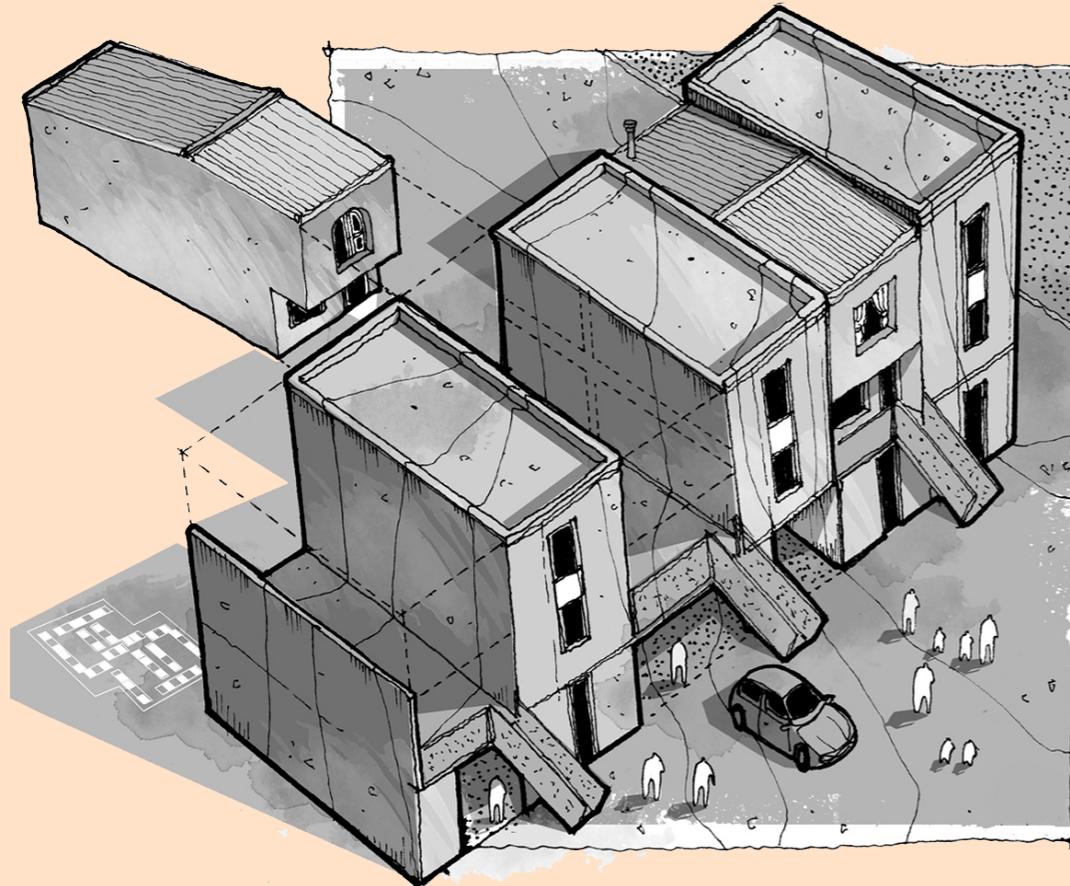
Part II

Case Studies

Collection of
Real life Projects

06

1 Quinta Monroy, ELEMENTAL

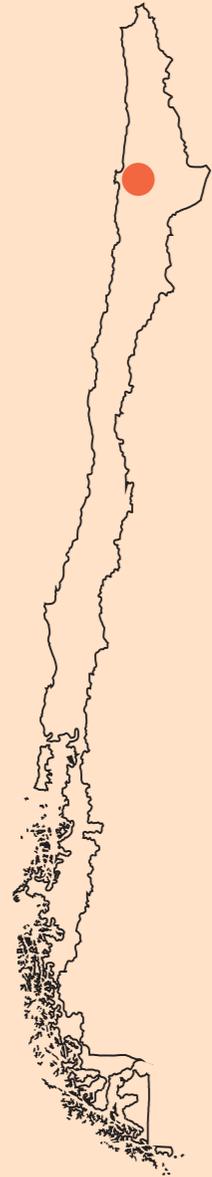


Quinta Monroy, Elemental
Source: Behance, Fer Neyra,

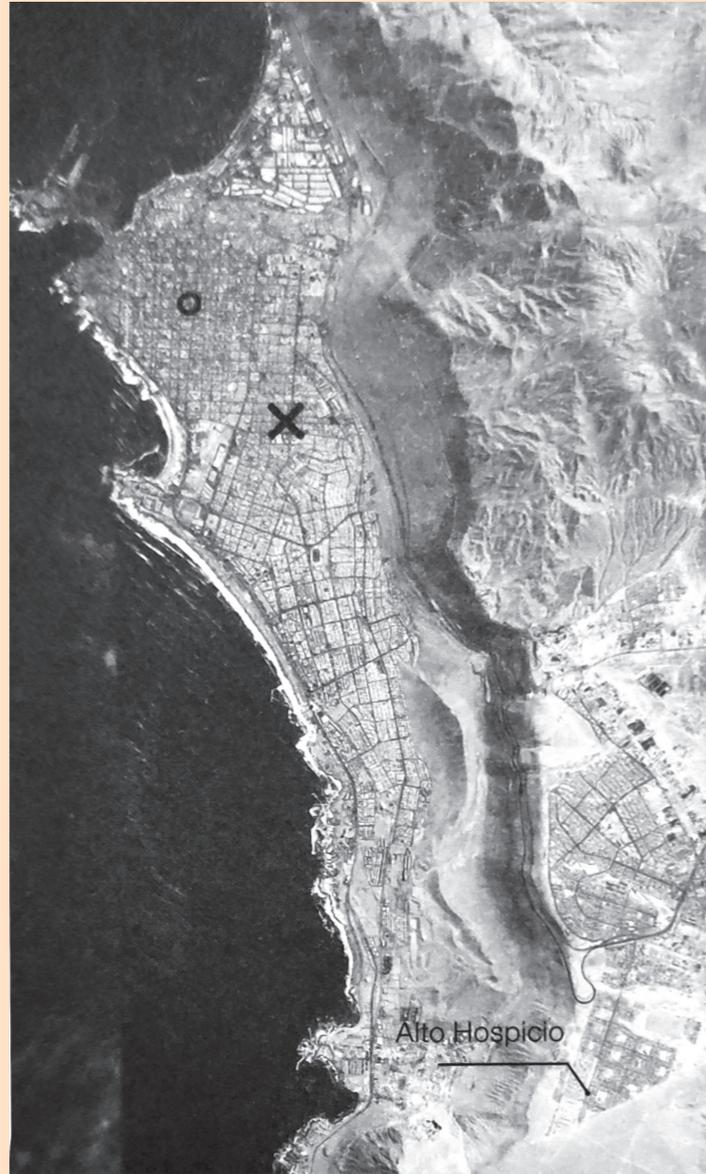
Quinta Monroy, ELEMENTAL

Quinta Monroy is located in Sold Pedro Prado, Iquique, a Chilean desert in Chile. The area located in the center of Iquique with approximately 5000 square meters was illegally occupied by about a hundred families for thirty years. The idea was to settle those families in the same site. Architect Alejandro Aravena was hired to propose a design strategy for the area.

No. of families	93
Location	IQUIQUE, Chile
Site Area	5,722 m ²
Built Area	3,620 m ²
Building Budget	Approx. US\$ 750,000
Cost of the site	Approx. US\$ 150,000
Cost per family	Approx. US\$ 8,300
Housing Committee	Quinta Monroy



● Sold Pedro Prado, Iquique



Project Location X Downtown ○

Location of Quinta Monroy
 Source: Alejandro Aravena: *Elemental: The Architect's Studio*, Michael Holm, Alejandro Aravena, 2018

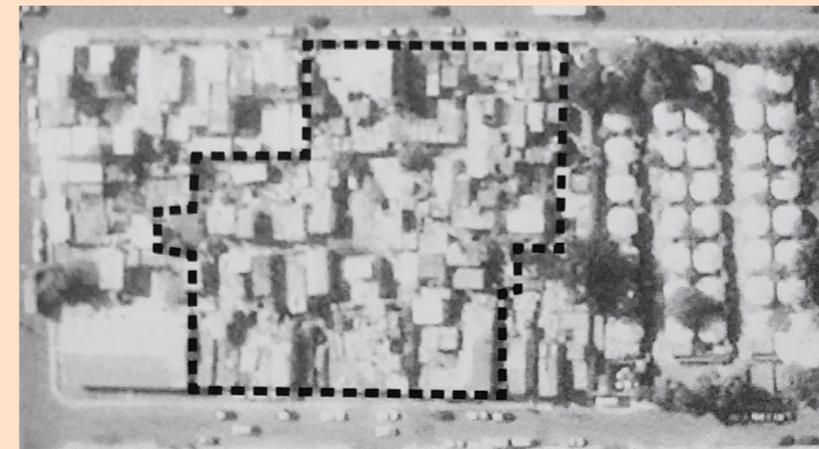
Site Conditions

Most of the spaces, approximately sixty per cent lacked any direct light or ventilation. There was no system of sewage or running water as the area was encroached and lacked the basic facilities. The families on an average occupied about 30 square meters of area per family which on average comprised of four members. So each family member had an area of approximately 8 meter square. But the quality of the structures was really bad as they were made out of scrap materials and had a labyrinth like feel to it.

Housing subsidies approval	September 2002
Building permits approval	December 2003
Construction start	January 2004
Construction end	December 2004

APARTMENT

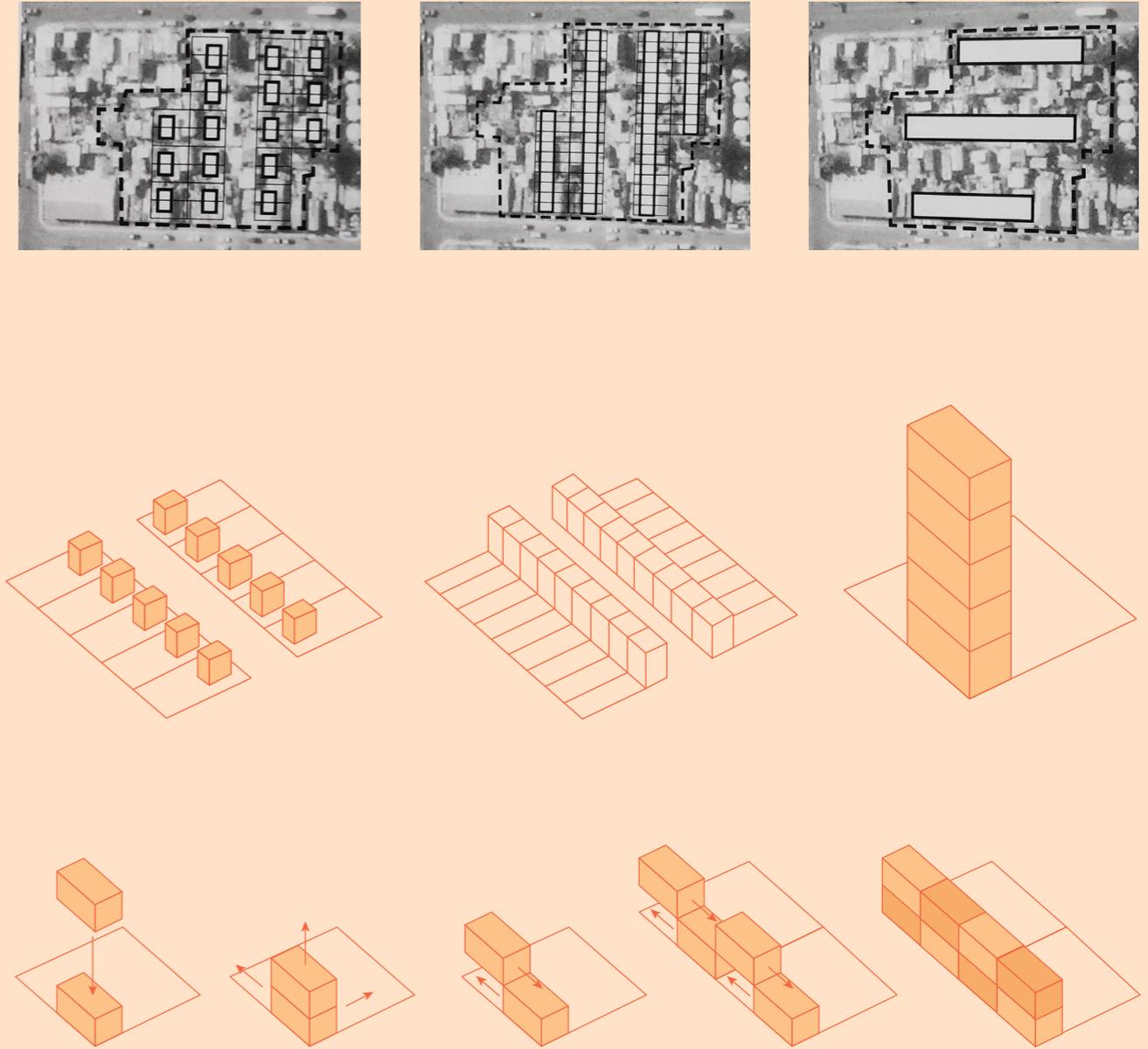
Initial built area	25m ²
Potential final area	72m ²
Green areas	2.215 m ²
Governmental subsidy	US\$ 1,069,500
Site cost	US\$ 31,000
Initial built area per house	36m ²
Potential final area per house	70m ²



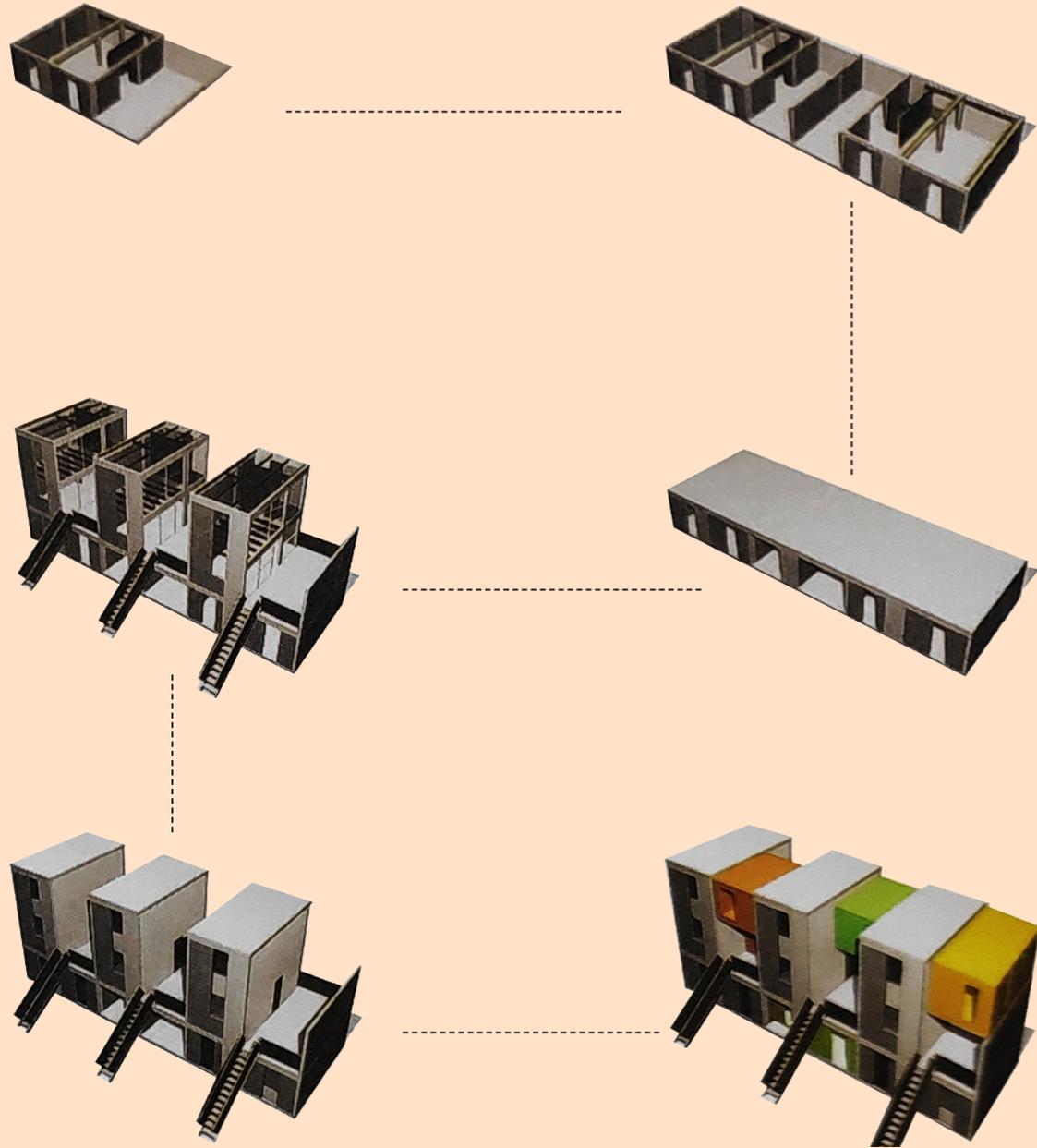
Site plan of Quinta Monroy before the intervention
 Source: Alejandro Aravena: *Elemental: The Architect's Studio*, Michael Holm, Alejandro Aravena, 2018

Challenges

1. The families were willing to accept only detached house typology and in this case if one house was placed on one lot, only thirty two units could be accommodated on the site and the rest would have to relocate. Also the families wouldn't be able to pay for the cost of land by the subsidy that was being provided that was US\$ 7,500 for the land, infrastructure as well as the houses. Not only that but detached houses typology didn't favor any future growth. So it would ultimately end up with informal additions over time. Therefore, the architects persuaded the inhabitants to look for another solution.
2. The other solution that was tried was to place the houses in a row where the width of the house would be same as the width of the plot. This provided much better results as compared to the last approach as the architects were able to house sixty families on the site but the rest would still need to relocate to Alto Hospicio, another site where more social housing projects were ongoing. But even this solution did not satisfy the needs. The future expansion was still a problem as construction of new rooms would block the light & ventilation of the existing spaces and lead to overcrowding.
3. The last solution tried was to build upwards utilizing the apartment block typology. This was the best solution out of all the three as it was very efficient in land use and all the families could be easily accommodated in this area. But the inhabitants did not like the solution and the families threatened to go on a hunger strike if this proposal was accepted. Also, there were conflicts among neighbors regarding the maintenance of the common areas which would ultimately lead to the deterioration of these spaces. It also didn't leave any room for future expansion and the apartments would only be 30 m².
4. As none of the existing typologies solutions worked out, Elemental decided to come up with a unique solution that would meet the needs of the residents but would also be architecturally and environmentally efficient. They decided to use low rise structures which would avoid overcrowding and leave some scope for incremental construction without deterioration of the area. The main idea was to design with the involvement of the community using safe and economic solutions. And all of it was done withing the guidelines and the provided subsidy of US\$ 7,500 per home.



Different typologies for Quinta Monroy
Source: Alejandro Aravena: Elemental: The Architect's Studio, Michael Holm, Alejandro Aravena, 2018



Structure Development
 Source: Alejandro Aravena: *Elemental: The Architect's Studio*, Michael Holm, Alejandro Aravena, 2018

The Construction Process

The main part of the construction process were the participatory workshops that were held at every stage. This included the initial workshops discussing the needs and the design with site visits, the workshops regarding the future expansion explaining everyone where and how should the future construction be done, the facade workshop discussing the facade of all the houses and the most important was the workshop regarding the collective spaces and their use and maintenance.

It took almost two years for the architects for the site work ranging from surveys and requirements to the negotiations for the right to the property for the residents.

The evictions of families began by gaining the trust of the families and by taking house by house inventory of everything that was required to be dismantled, moved and recycled.

In order to calculate the costs of the temporary location camps specific lists were made of the transportable materials, bathroom fixtures and items that needed dismantling and refitting. After the surveys it was concluded that forty six rooms of size 3x3m were required for emergency

shelters. During the dismantling, the inhabitants helped in dismantling their own homes and new temporary camp was built. It was proposed that once the construction gets completed, the temporary camps will be used for other project's relocation.

Once the architects received the permits for construction, the process began. But it was really a challenge to find a contractors as due to the new 2001 policy, most contractors were bankrupt. They were able to find one who was willing to do the construction. And finally the bid was won by Loga Building Company for US\$ 7,200 per house. The project was taken on as an apprenticeship as the company didn't earn a profit. The construction finally began in January 2004 with the reinforced concrete once the people were relocated to Alto Hospico. The inauguration ceremony took place on December 14, 2004 when most of the families moved from the relocation camps to their homes. Only a few families preferred to move once the expansions were completed.



Quinta Monroy in December 2004
Source: Alejandro Aravena: *Elemental: The Architect's Studio*, Michael Holm, Alejandro Aravena, 2018

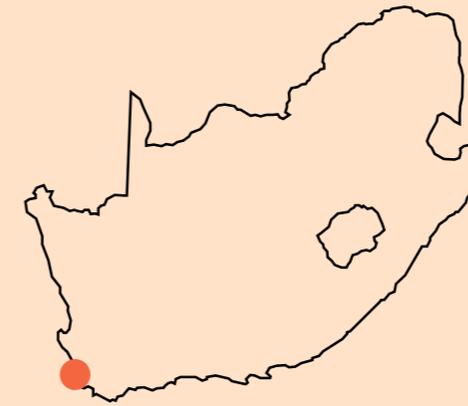


Quinta Monroy in June 2016
Source: Alejandro Aravena: *Elemental: The Architect's Studio*, Michael Holm, Alejandro Aravena, 2018

2 Empowered Shacks



Empowered Shacks
Source: Urban Think Tank, Daniel Schwartz, December 2015



Cape Town ●



Khayelitsha ●

Empowered Shacks, URBAN THINK TANK

In the year 2004, the post-apartheid Constitution of South Africa gave the “Right of Access to adequate housing” but the country and its poor population (almost 75 million people) are still locked out of the houses or the formal property in the market due to the prices that keep escalating every year, limited or no access to financing due to their lack of knowledge as well as money and the rigid land regulations creating a barrier for the low income groups.

No. of Shacks built	20
Location	Khayelitsha, Cape Town, South Africa
Year	2013-ongoing
Local Architect	Design Space Africa

Due to these circumstances approximately 2,700 informal settlements are caught in the poverty trap and lack basic services as well as infrastructure leading to poor housing quality which in turn develops the environmental risks and dangers due to ad hoc developmental patterns. Even though the present government is trying to meet those needs through social housing schemes but these schemes seem to fail due to the increasing demand as well as their inability to cater for diversity. Also, the fact that the problem exists at a very huge scale and the government's efforts have failed to integrate these informal settlements into the formal frameworks.

The main challenge therefore, is “to develop a scalable, transparent and replicable model that addresses both real demand, market dynamics and municipal planning objectives.”³

This was achieved by the designers by offering an inclusive methodology that is also innovative to ensure that everyone receives access to public space and basic services and also provides a safer environment both on the scale of the residence as well as the urban scale with new economic possibilities that the government fails to address in the repeated attempts. The

idea was to focus on the living environments and their construction which will integrate the livelihoods of people and their programs including micro-financing, water access and management, renewable energy and skills training.

The process started with the development of various models for the area. The idea was to construct the houses with two or more floors with the service core in the center of the cluster. This started with the design of one prototype shack with the help of a local NGO and students from ETH Zurich.

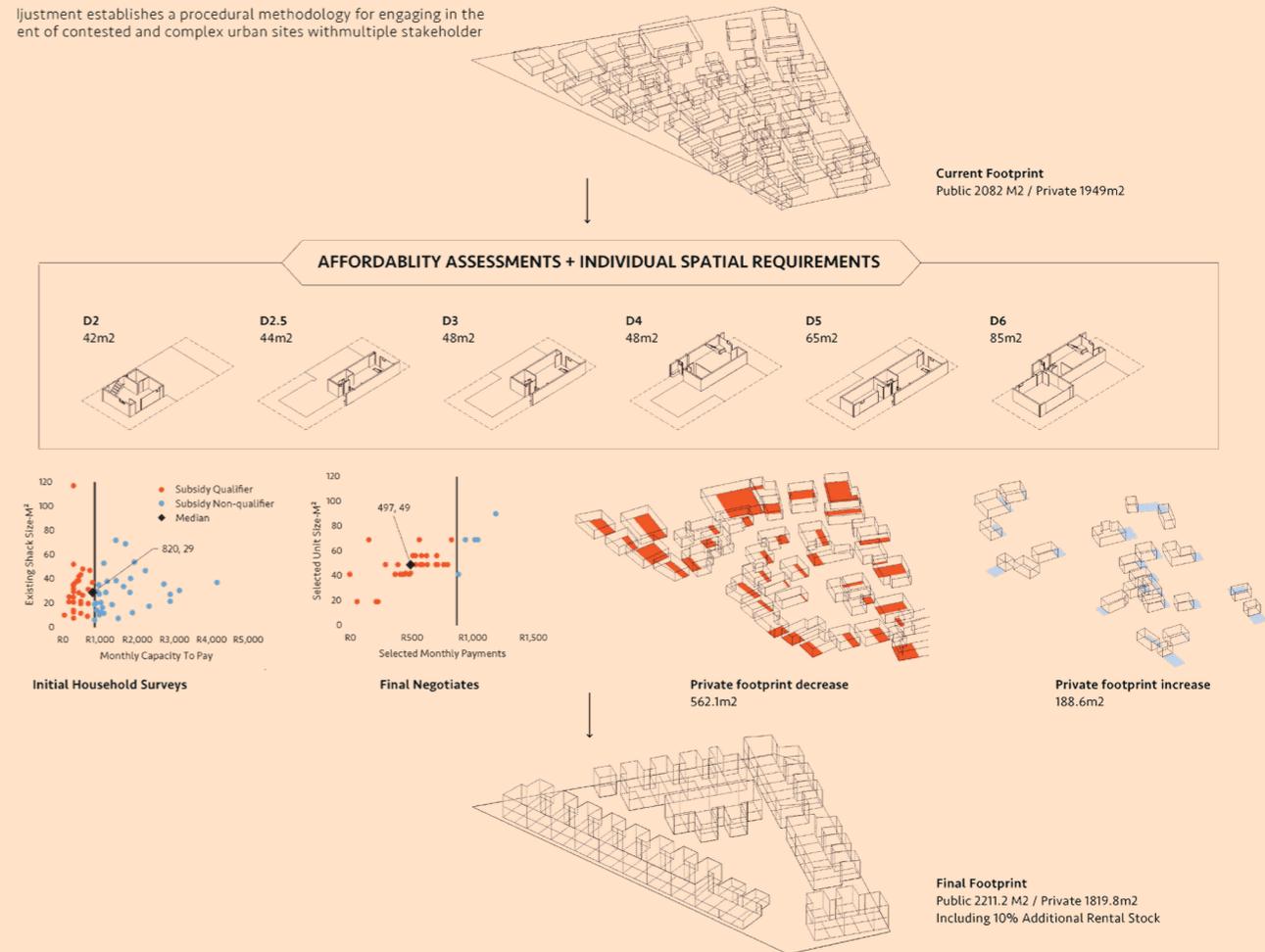
The shack is a basic structure of two storeys made out of timber frame with a sanitation core covered in metal sheeting. This would help the people living in the area to be able to use the land by half and hence create spaces for open areas, pedestrian streets and making the area fire safe. The shacks can be arranged as per the resident's desire from the inside and also, they can choose from a number of prefabricated facades with various configurations.

Special care was taken that the shack is built with cheap, renewable and durable materials so that they could be afforded easily by the residents and micro-loans could be issued to people for the same.

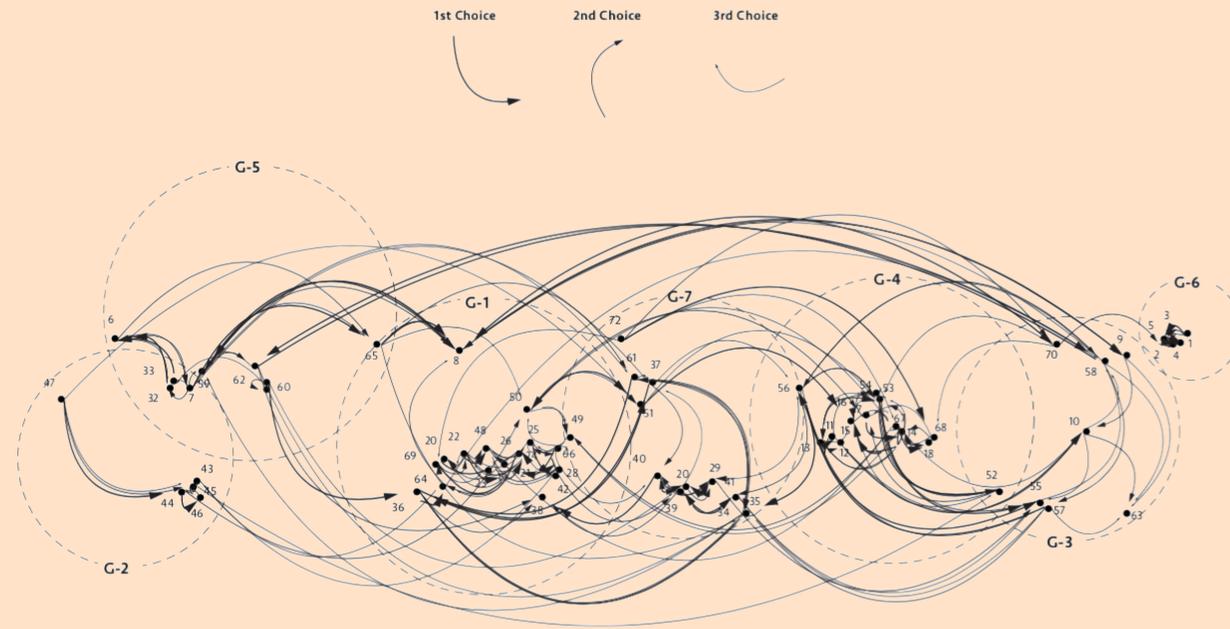
3 <http://u-tt.com/project/empower-shack/>

READJUSTMENT METHODOLOGY

Readjustment establishes a procedural methodology for engaging in the event of contested and complex urban sites with multiple stakeholder



Land Readjustment Methodology
Source: Urban Think Tank, Daniel Schwartz, December 2015



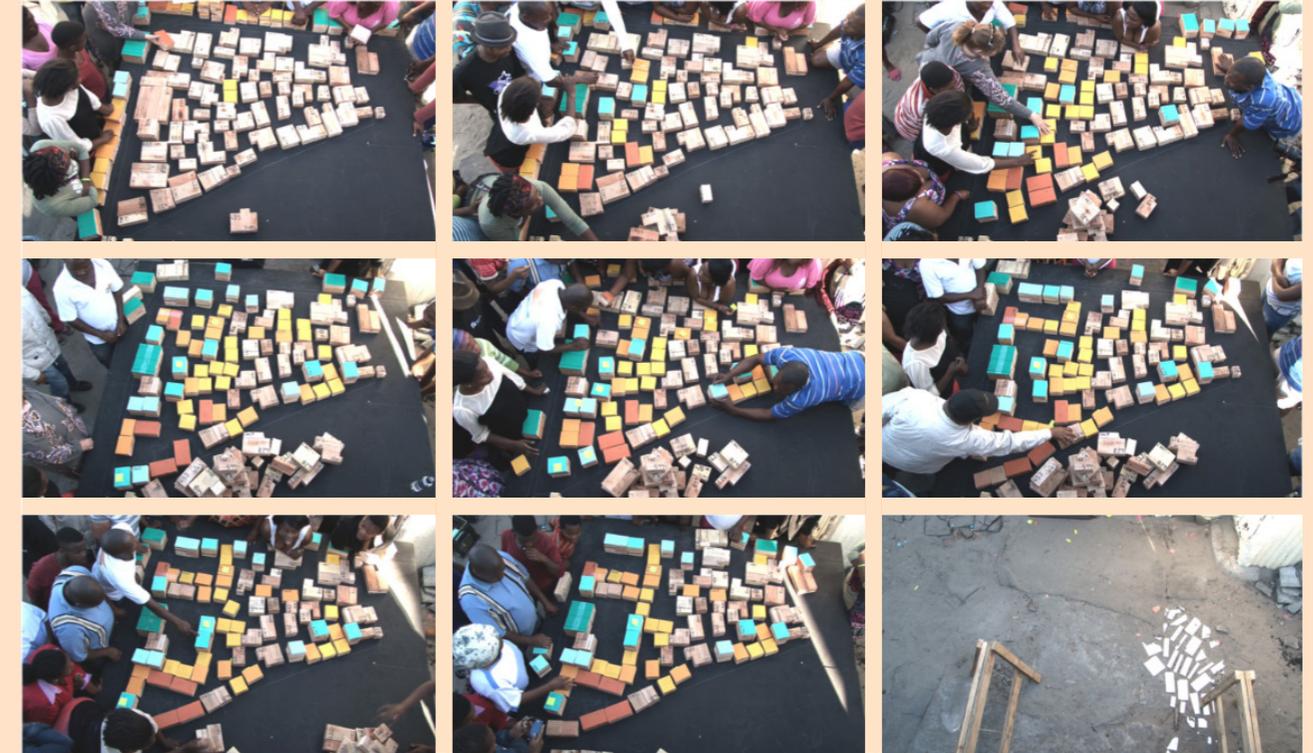
Process

Once the prototype was built and along with it four more shacks were built after the discussions with the community.

The next step was to involve and train the community so that they can build these shacks themselves in the future, according to their needs.

Workshops were organized with the people to

teach them how to do the construction along with the final planning regarding the placements of their shacks along with the choice of their neighbors. This was done through block models where the people would sit in a group along with the professionals and arrange the blocks according to their needs.



Survey of Individual neighbor preferences
Source: Urban Think Tank

People arranging blocks of houses in Land Readjustment Workshop
Source: Urban Think Tank, December 2015

The step that needed to be taken further was to explain and teach the residents about the financing and how to attain funds for the construction. This was done by the financial and affordability assessments workshops where the residents were taught about how to use the affordable materials, where to attain it and how to get micro-financing through loans to upgrade their single storey buildings to double storey.

The resulting structures would also help the people to give the upper floors on rents and thus, receive income or to get involved in the sales stock. These would help the residents to achieve stability and the right to stay on the land.

Once the workshops were over, the construction started where the residents constructed their own homes with the low-cost or affordable materials as proposed by Urban Think Tank. Almost 20 shacks have been constructed within the last years and more are constructed every year, giving the freedom to the residents to build as per their comfort and needs. The residents can even build up to three or four storeys in the future if they feel the need or requirement. Today the units are available in 6 sizes ranging from 38 meter square to 84 meter square with

an average construction price of 9,660 (ZAR 160,000). Not only that, but due to the workshops offered by UTT, the residents pay an average of 14% of the cost through micro financing.

Urban Think Tank has also developed a software which is able to model various urban layouts for different Empowered Shacks that needs to be built. The user can input various requirements including the needs of both individual as well as community combined with the frameworks of Municipal Planning. The software then generates various urban layouts that can be easily replicated. The software is also capable of generating 3D models online that can be accessed by the residents to view layouts and the residents in turn can send their feedbacks regarding the same. As the software is free and open to everyone, it can be easily accessed by the people and urban planners to help communities like these to construct affordable housing for themselves.



People constructing their homes
Source: Urban Think Tank, David Southwood, December 2017



Before Empowered Shacks construction
Source: Urban Think Tank, "Daniel Schwartz, December 2017"

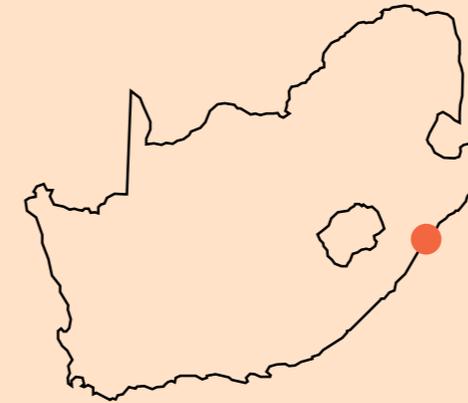


After Empowered Shacks construction
Source: Urban Think Tank, Daniel Schwartz, December 2017



Visualization of Empowered Shacks
Source: Urban Think Tank

3 Durban Street Vendors, South Africa



Durban ●



Street Market ●

South Africa had strong apartheid laws that forbade black people in the region to work informally. But since the post apartheid law was passed, informal employment became one of the major areas for employment growth. One of the cities with the same situation is Durban. The informally employed population of Durban was facing challenges due to the absence of rights to work securely. For the self-employed workers, the risk of investing in infrastructure or any other basic services was high and hence, protection was needed for them.

Hence the government took the action of issuing some socio-economic rights under the constitution. These included:

- 1991: The legislation of the country allowed the street vendors to trade informally and hence, stopped the local authorities from creating any problems for them.
- 1997: Under the Employment Act, some basic conditions were mentioned which were applicable to both formal and informal businesses as for many people working in the informal sector had the same living and



Mother Market, Durban
 Source: *Inclusive Cities, Asiye eTafuleni*, August 2011

- working space. And the government made policies for free basic amenities such as drinking water for first six kiloliters and electricity and also exempted from bills on these amenities if the consumption is under a certain value. These policies helped a lot the informally employed people.

The next step needed was to develop infrastructure using some innovative and low cost practices. And to do the same, some surveys were carried out asking the people their living preferences and the requirements of the ones involved in the informal economy or were working in the streets.

The results showed that the people who were involved in manufacturing on a small scale preferred housing units though small but near their place of work and also close to other people who were involved in similar activities.

And the requirements were majorly:

- Shelter for living and working
- Water and toilet facilities, and
- Storage spaces

Collaborative Planning

The City Council of Durban was very consul-

tative and helped promote interventions that genuinely responded to the needs of the people and helped the users attain a sense of ownership to the area. And to achieve this to the maximum level, the first task done was self regulation i.e through regulation of the local authorities as well as crime followed by cleaning of the site.

Result

Through these techniques government created an environment where collective action was possible and therefore, the last and final stage of the process could be implemented i.e. the construction of the infrastructure. This was now to be done with the help and involvement of people. The organization of informal workers along with the officials to consult was the most important part of creating the inclusive urban environment. This was done through the below mentioned steps:

- Shelter spaces were designed for the vendors
- Basic amenities like water and electricity were provided.
- Bovine cookers were provided for the ones with street food shops.



Pedestrian areas defined

Source: *Inclusive planning for the informal economy: Lessons from Durban* Caroline Skinner, November 2007

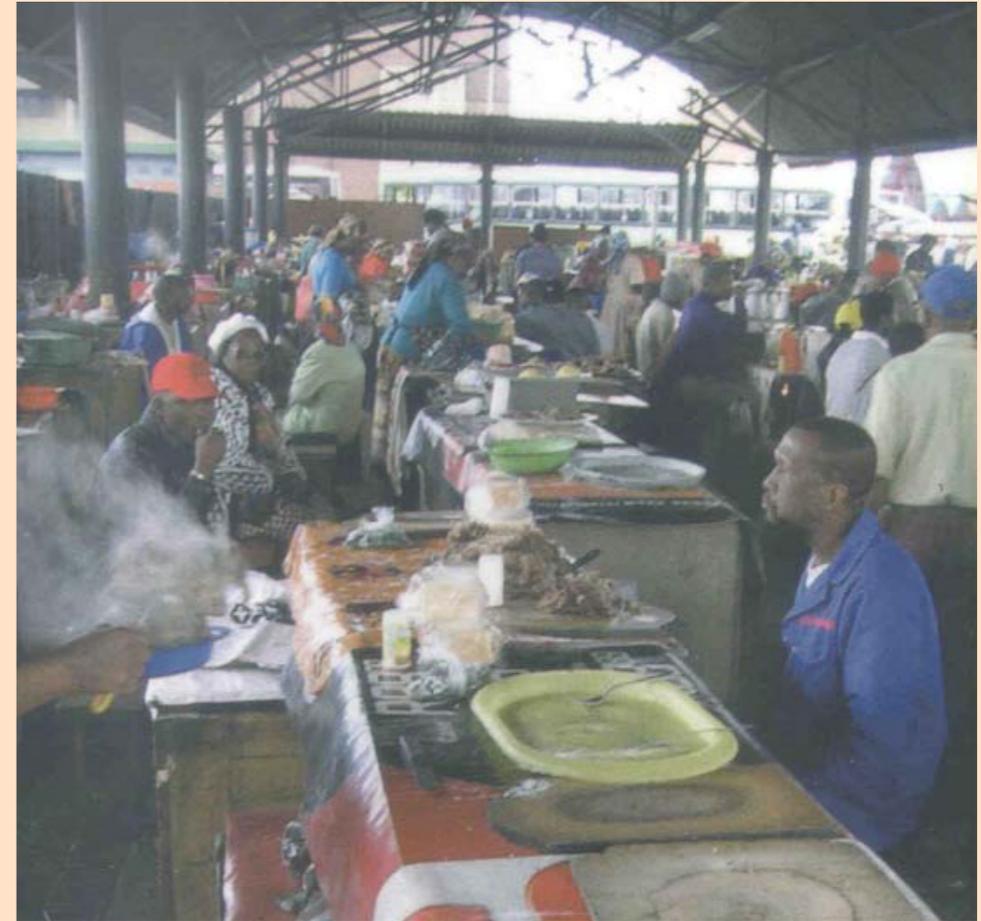


Shelter provided in the market

Source: *Inclusive planning for the informal economy: Lessons from Durban*, Caroline Skinner, November 2007

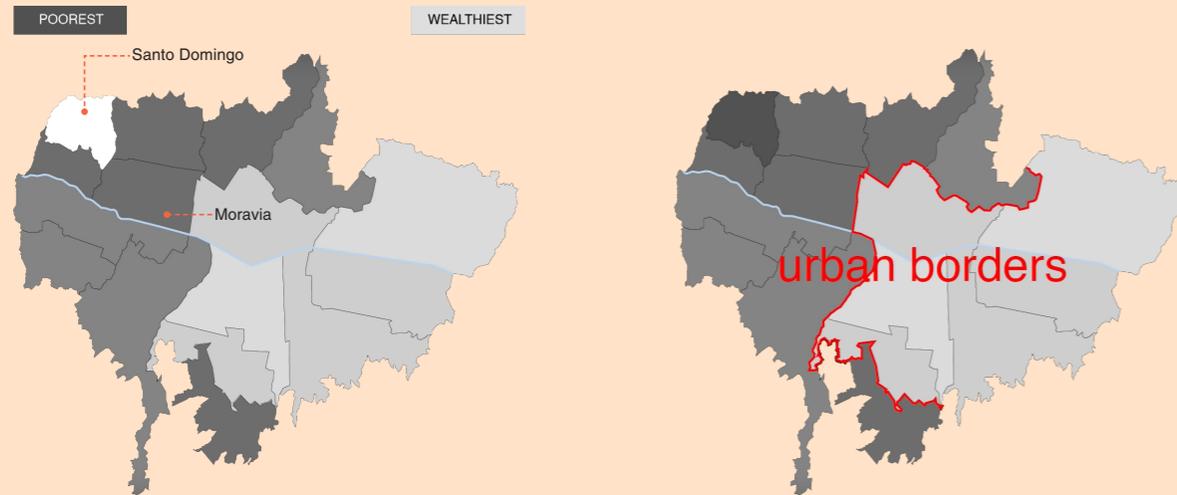


Small stalls provided to street vendors
Source: *Inclusive planning for the informal economy: Lessons from Durban*, Caroline Skinner, November 2007



Cooking and preparation equipments provided
Source: *Inclusive planning for the informal economy: Lessons from Durban*, Caroline Skinner, November 2007

4 Medellin Diagram

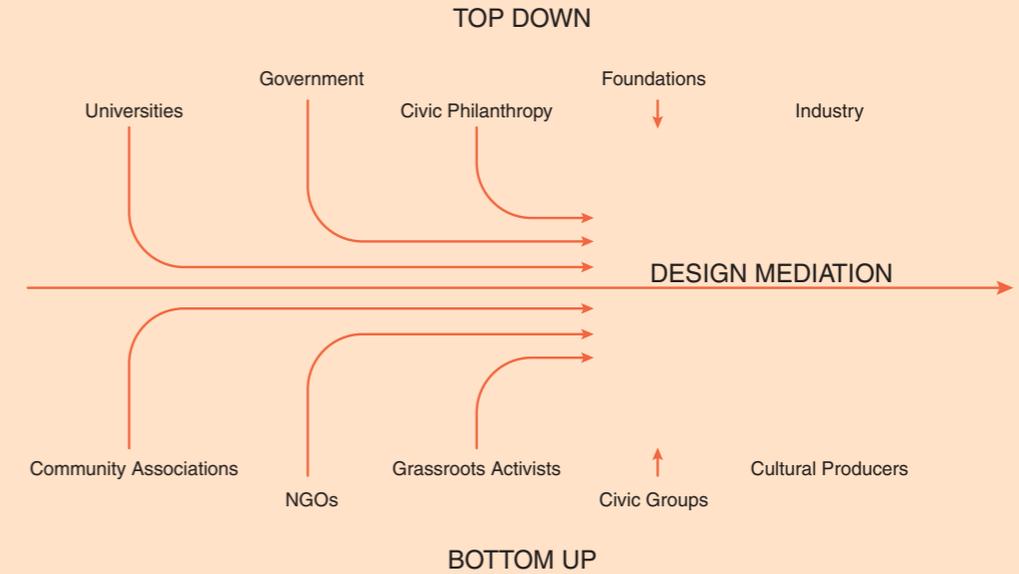


Medellin Diagram

The Medellin diagram was developed by Teddy Cruz and Fonna Forman for the informal settlement of Medellín, Colombia. The city of Medellín was considered to be one of the most dangerous, a battleground of drug lords and severe poverty and unemployment. But in just twenty years it became an egalitarian city with dramatic urban transformation.

They focused on two cities: Moravia and Santo Domingo to close or reduce the gap between wealthy and the poor. They selected the important sites of both wealthy and the poor and performed integration with these sites. The Medellin diagram was “a project of political and civic renewal through which institutions were transformed and cross-sector collaborations facilitated new interfaced between the top-down and bottom-up.”⁴

⁴ <https://www.e-flux.com/announcements/130228/teddy-cruz-and-fonna-formanvisualizing-citizenship/>



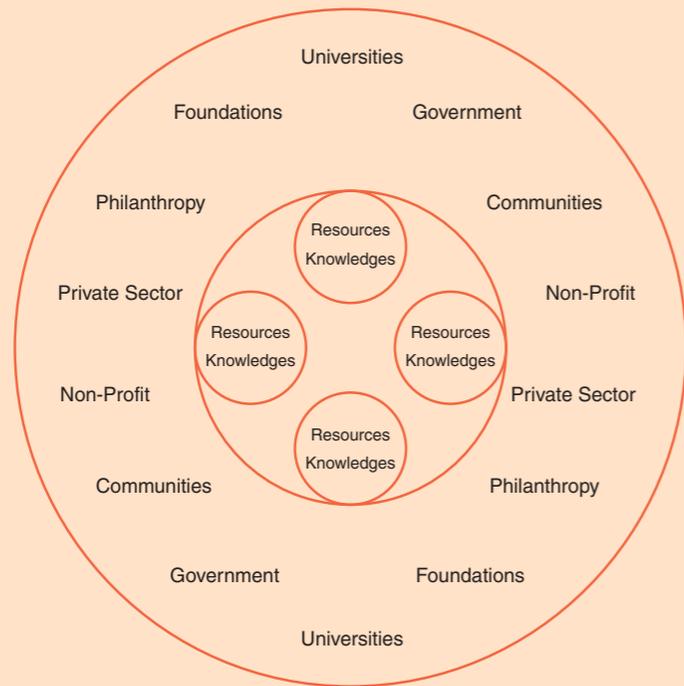
Few observations can be made with these approaches that lead to certain results or solutions which if integrated in the other informal sites can bring huge urban transformations.

- i. Fragmented institutions ultimately lead to the fragmentation of the city. Therefore, the collaboration of these institutions is of utmost importance.
- ii. Integration of knowledge and resources and their redistribution to different sites of poverty can lead to drastic results.
- iii. The most important part is to mediate the top-down and bottom-up using design strat

egies in order to achieve desirable results and dissipate inequality.

- iv. The meeting of formal and informal participants and their curation.
- iv. The co-production of public policies with the help and participation of communities.
- iv. The public spaces are a generator of knowledge and plays a huge role in threading the community. Hence, special attention needs to be paid to these areas.
- iv. And lastly, mobility including transportation is the most important tool that if used efficiently can produce great results.

Medellin Diagram: Design Mediation
Source: Yerba Buena Center for the Arts, 2017



Medellin Diagram: Integration of knowledge and resources
 Source: Yerba Buena Center for the Arts, 2017



Medellin Diagram: Shrink distance and expand access
 Source: Yerba Buena Center for the Arts, 2017

Comparison of the tools used for Designing

CASE STUDIES	Quinta Monroy, Chile	Empowered Shacks, S.A	Street Vendor Market, Durban	Medellin Diagram, Colombia
Participatory Planning	●	●	●	
Government Participation	●		●	●
Incremental Development	●	●		
Bottom up & Top down integration	●	●	●	●
Low Cost Materials	●	●		

Comparison of the Results

CASE STUDIES	Quinta Monroy, Chile	Empowered Shacks, S.A	Street Vendor Market, Durban	Medellin Diagram, Colombia
Increase in Social Interactions	●	●	●	
Inclusivity	●	●	●	●
Better Infrastructure	●	●	●	
Right to the Area	●	●	●	●

Conclusion

After looking deeply at the various real life projects that have tried to deal with similar situations as that of Dharavi, it can be concluded that their success was mostly because they focused on Participatory planning and the needs of the users. Also, one of the major aspects kept in mind while designing was how would the residents be able to build or construct in the future as their families expand with limited amount of funds. To take care of this, the designers keep in mind to use low cost materials that can be procured easily and would hence, ensure that the occupant doesn't sell the site and settles elsewhere in another slum or informal area.

It is because of the use of such tools that the designers were able to improve the existing conditions and hence, complete the project successfully. These solutions helped tackle problems like maintenance of the existing social fabric and sometimes improving it, inclusive designing as well as high improvement in the infrastructure and basic services of the area.

Part III

Design Strategies

Since Koliwada has been excluded from the Redevelopment Plan of 2004 and the people have been given the rights to the land though Koli Jamaat still plays a huge role when selling or reconstruction of the land is involved. But the Koli Jamaat officials have been looking to re-develop Koliwada as per their requirements as well as the requirements of the people.

Therefore, the design strategies consists of Koliwada to be developed as a prototype for the rest of Dharavi and deals with two aspects. The first one being the documentation of Mr. Ravi Kenny's residence in order to understand deeper how Koliwada works on a micro level and the relationship between renters and owners. And the second aspect is the design strategies that we have tried to work out in order to meet the needs of the residents or the users.

Requirements

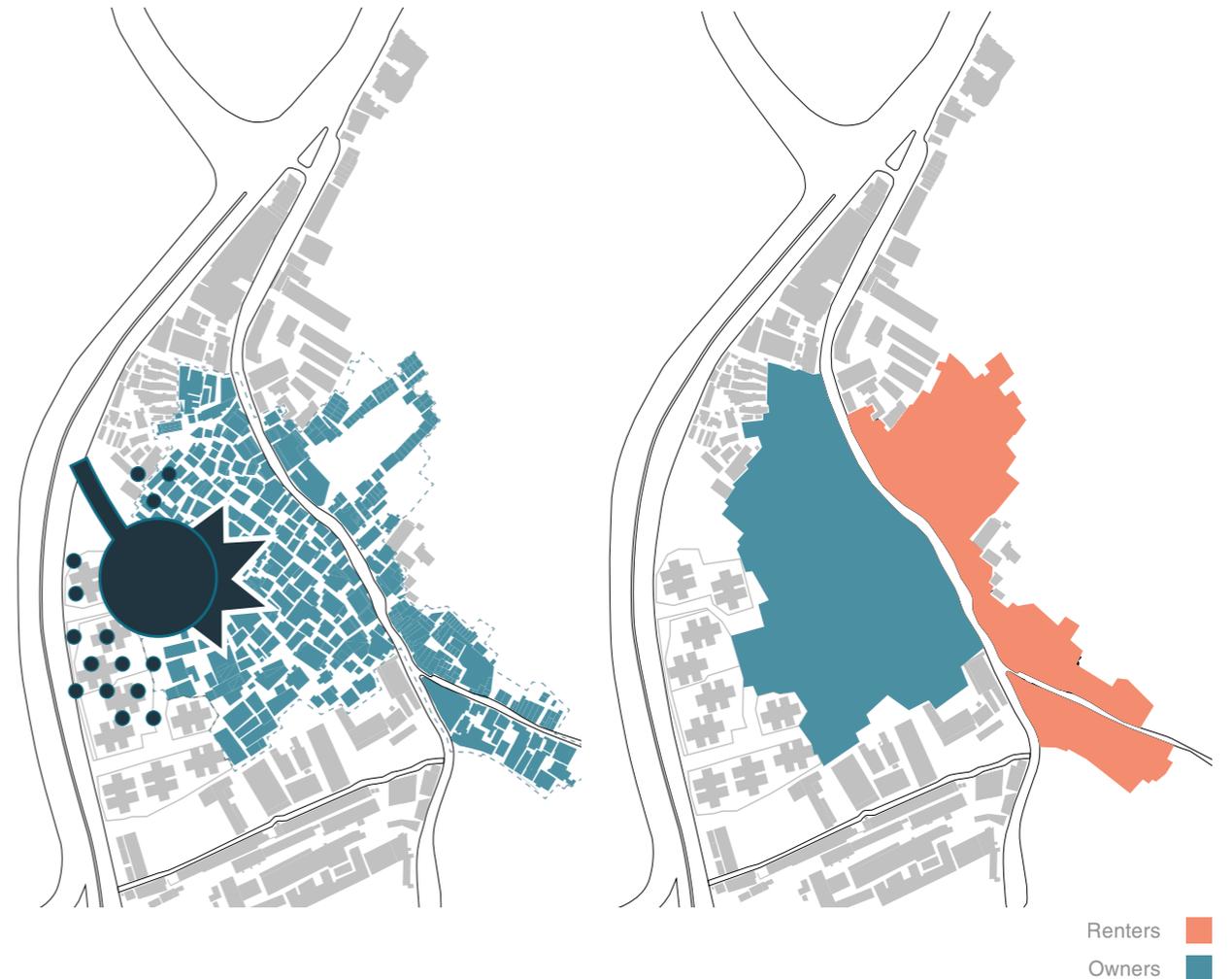
During our time in Dharavi we were fortunate enough to spend some time in Koliwada and understand it even deeper. And even more fortunate because while our stay, Urbz received a project of redesigning Mr. Kenny's residence whose documentation we have done below. We were also able to attend a few meetings with Mr. Ravi Kenny and Urbz regarding the redesign and the needs of the client which reflected in a way, the needs of the residents of Koliwada. Also, as Mr. Kenny was an ex member of Koli Jamaat and is very interested in the redevelopment of Koliwada since it has been exempted from the Redevelopment plan of 2004. So, Mr. Kenny's point of view was to reconstruct his residence as a prototype for the whole of Koliwada. Some of his main concerns were the sharing of spaces between the tenants and the owners and the parking area. His vision for Koliwada is to move the tenants on the other side of the Dharavi Main road while the owners would live on one side. He proposed the idea to

construct mid-high rise buildings on the other side of the road for the renters. This would lead to a segregation of spaces between owners and renters and would hence, provide a private space for just the Koliwada community.

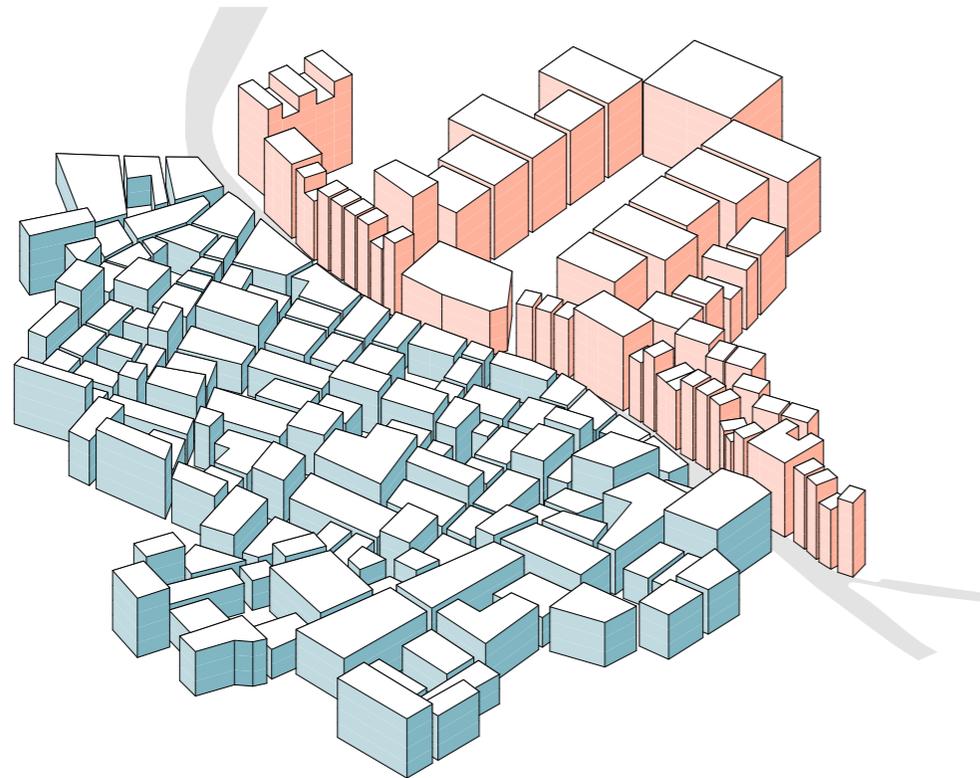
But after this discussion we realized that this would ultimately create the same kind of segregation that the Dharavi Redevelopment Plan is trying to do. The poorer will be moved to the high rise structures without any maintenance and would lead to the vertical slums.

Also, with another discussion with Urbz and Koliwada tenants, we understood that there is a problem of open spaces and their use as there exists a power dynamics between the renters and owners and renters don't feel that they have the right to use the open spaces for storage or social purposes and hence, are reluctant to use them.

So after our research and analyzation of Dharavi and Koliwada, we now understand better how these spaces work. And we completely understand the concerns of Mr. Kenny and the others involved but we feel that a better strategy can be worked out that would fulfill the needs of the residents.



The idea of Mr. Kenny and Koli Jamaat to demolish everything and reconstruct making a segregation between owners and renters



The idea of Mr. Kenny and Koli Jamaat to construct high-rise for the renters whereas to maintain the existing fabric for the owners

Does Dharavi needs an Architect?

After looking at both the situations i.e. the Incremental development as well as the Redevelopment proposals, it is very clear that an architect is required to strategize and plan according to the needs of the people as well as for the fulfillment of the basic requirements.

This is majorly because the people like Mr. Kenny as well as other members of Koli Jamaat who have the power, money and the political standing to carry out the redevelopment of the area, though they have good intentions but do not understand how spaces work. And it is because of this that a proposal like the one discussed above is being talked about and is being circulated around the users.

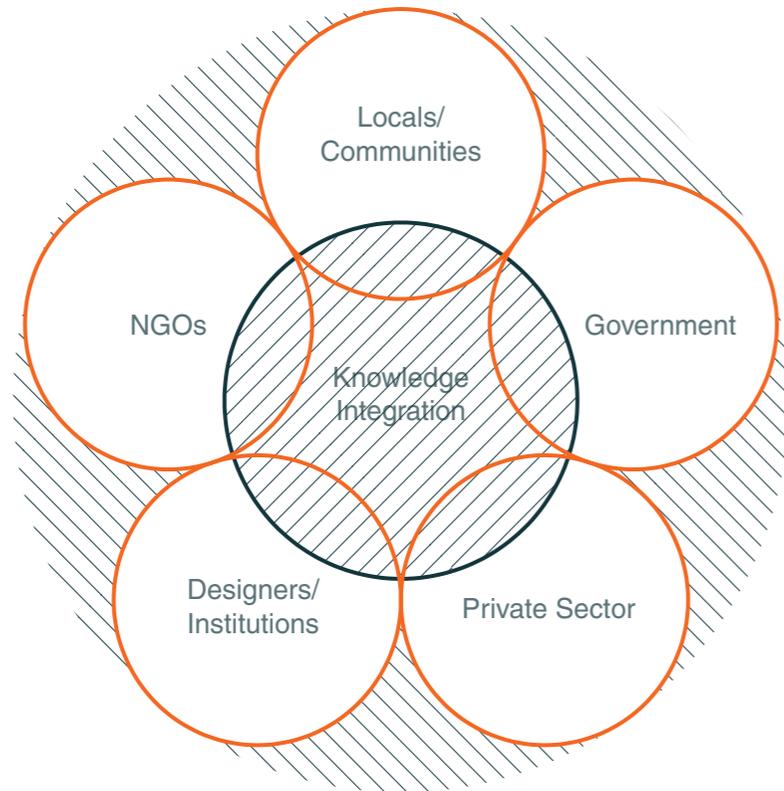
And this proposal could be taken into effect since the residence of Mr. Kenny which has been documented below is being reconstructed by Mr. Kenny as a prototype for the rest of the Koliwada.

So, we feel with the current land ownership pattern that exists in Koliwada, it would be very easy for the Koli Jamaat to redevelop the area as they please as the renters would have no say in it and the owners can also reconstruct

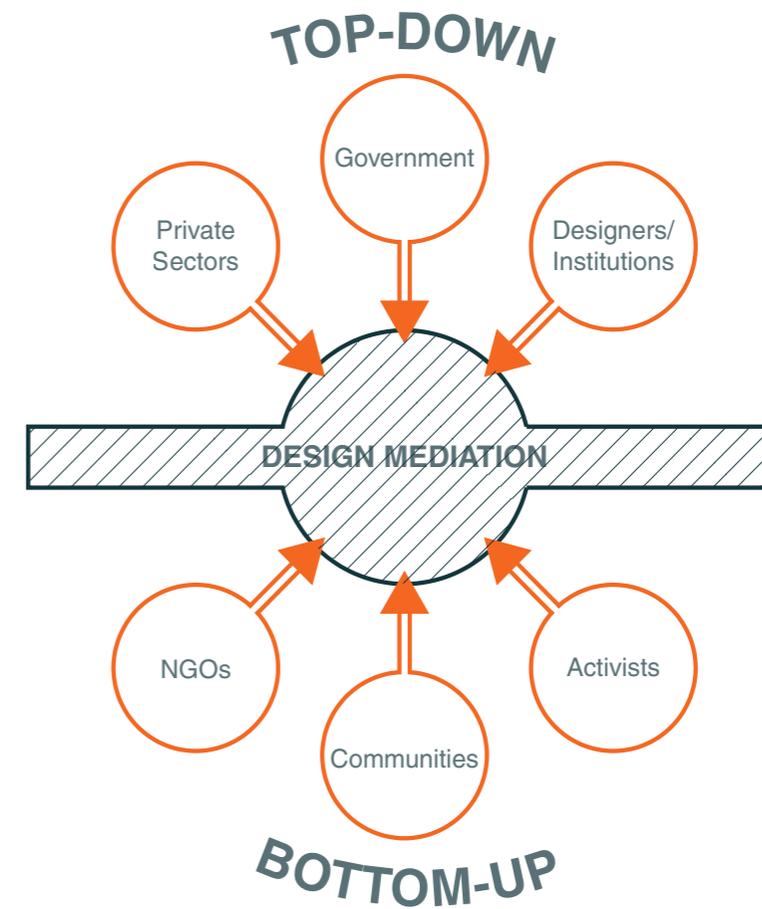
their home after a consultation with Koli Jamaat. So after all the discussions, we realized that we need to develop a strategy for Koliwada that would meet the demands of the owners and renters without creating a segregation between the two. But these strategies can only work if they are well combined with both the approaches, leading to the most appropriate solution.

This is because a proper organization and space distribution is required in an area like Dharavi, but care must be taken so that the people living there can still maintain their habitat and the culture and values. This can be done through:

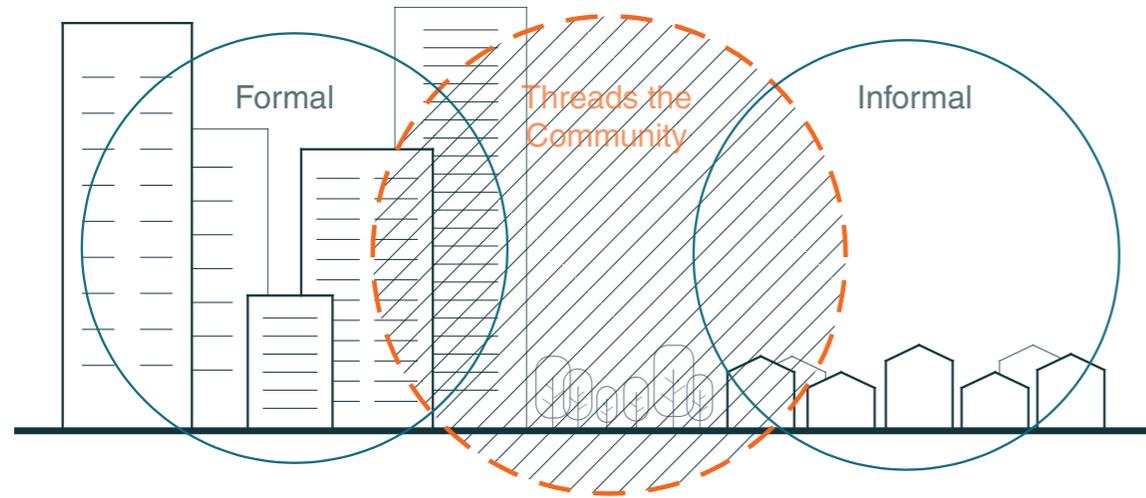
- Integrating the knowledge and resources of various institutions and redistribute to the sites of poverty.
- Mediation of top-down and bottom-up through design.
- Curate the meeting of formal and informal participants
- Public policy co-production with communities.
- Special attention on public spaces as they are the generator of knowledge and threads the community.
- Mobility is the most important tools to be used efficiently in these situations.



Integration of knowledge and resources of various institutions



Mediation of Top-down and Bottom-up approaches



Public spaces threads the community

Mobility as a tool to be used efficiently
Public spaces as generator of knowledge
Knowledge and resources integration
Public policy co-production
Bottom-up and top-down mediation
Knowledge redistribution to sites of poverty
Public spaces threads the community

**Ravi Kenny's Residence,
Koliwada**



07

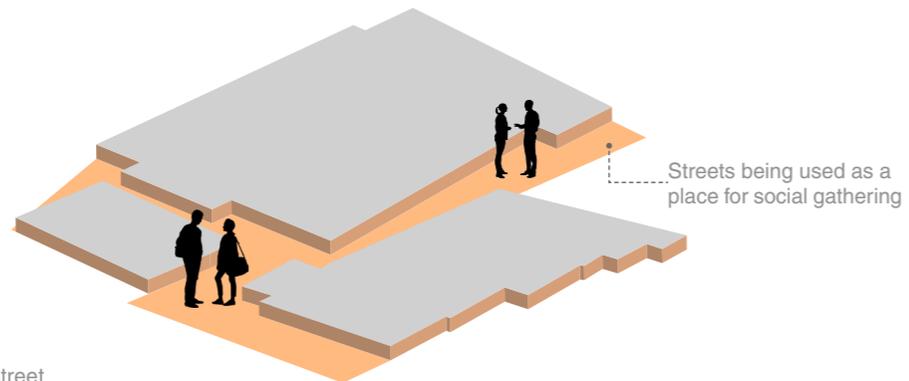
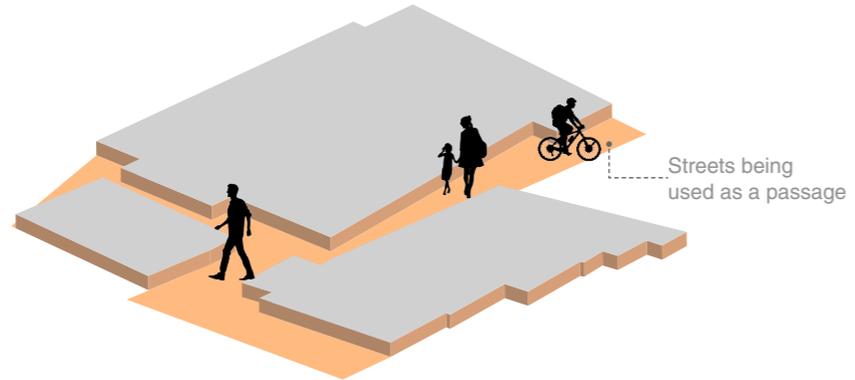
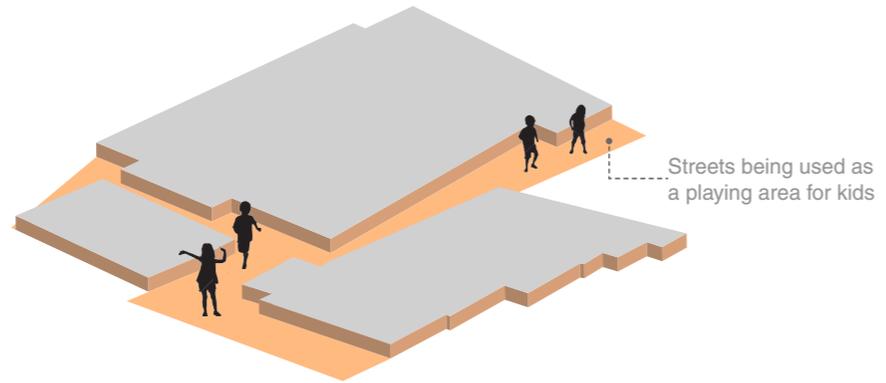
Mr. Ravi Kenny's Residence

A documentation of Mr. Ravi Kenny's house was done with the help of Urbz in order to explain in detail the working and arrangement of Koliwada. The drawings were drafted by Urbz office and they were kind enough to share them with us so that we can understand in depth how in the fabric of Koliwada, different functions intertwine and what are some of the problems that needs to be addressed.

With the help of the drawings, various factors can be easily understood. Some of them are the ownership of different areas of the residence by the different members of the family, the percentage of area used for renting and the haphazard arrangement of the rooms. Also, how the common spaces are used for various functions and therefore, it would give us a glance of how the whole of Koliwada works.



Location of Mr. Kenny's Residence



Intertwining of functions in a street



Ground Floor Plan



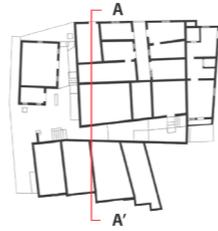
Mr. P. Rang Kenny 68 m²
 Mr. Mahadev Kenny 20 m²
 Mr. R.K Kenny 21 m²
 Mr. Ravi Kenny 22 m²

Ground Floor Plan: Ownership between the family

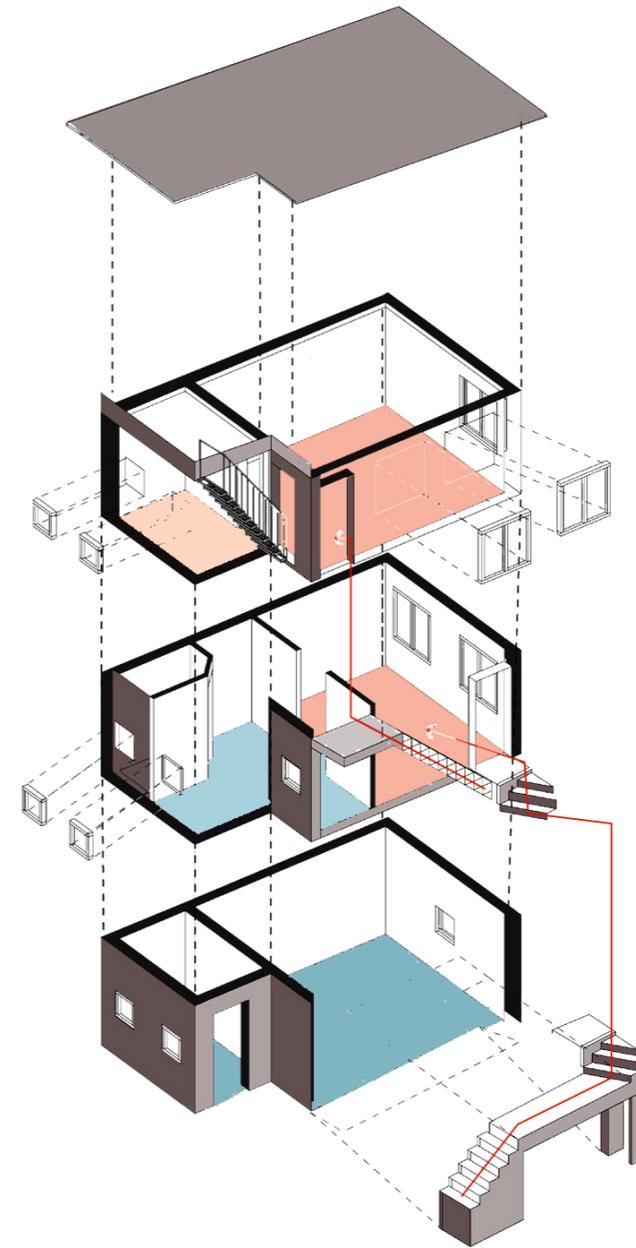


Mr. P. Rang Kenny 22 m²
 Mr. Mahadev Kenny 45 m²
 Mr. R.K Kenny 20 m²
 Mr. Ravi Kenny 110 m²

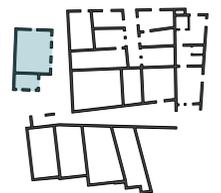
First Floor Plan: Ownership between the family

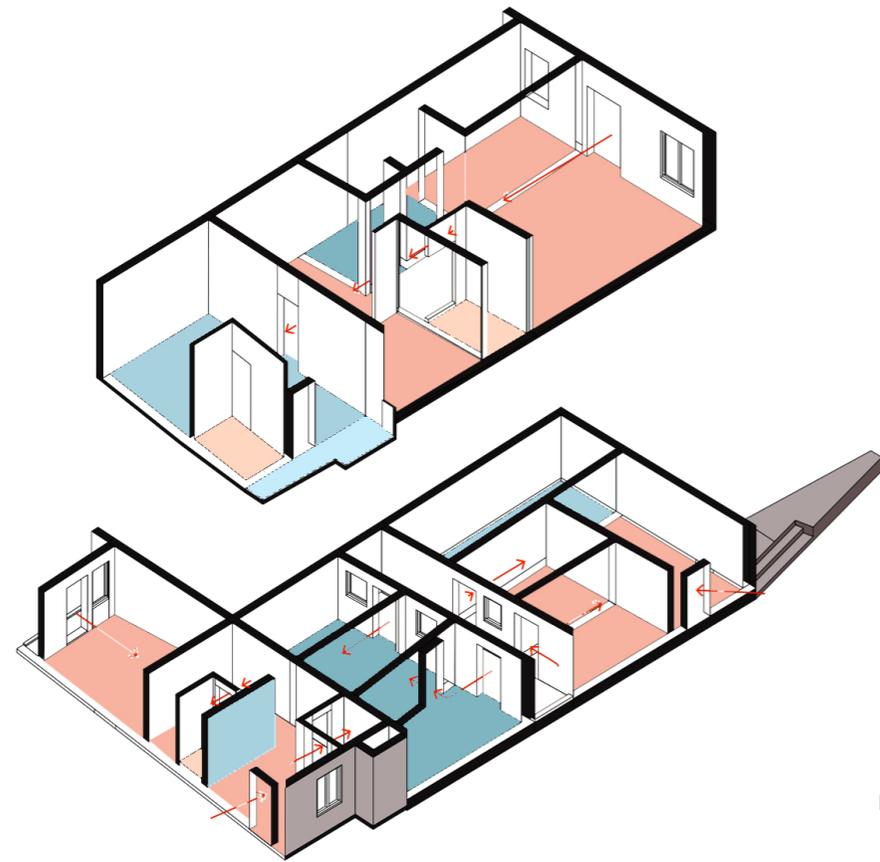


Section AA'

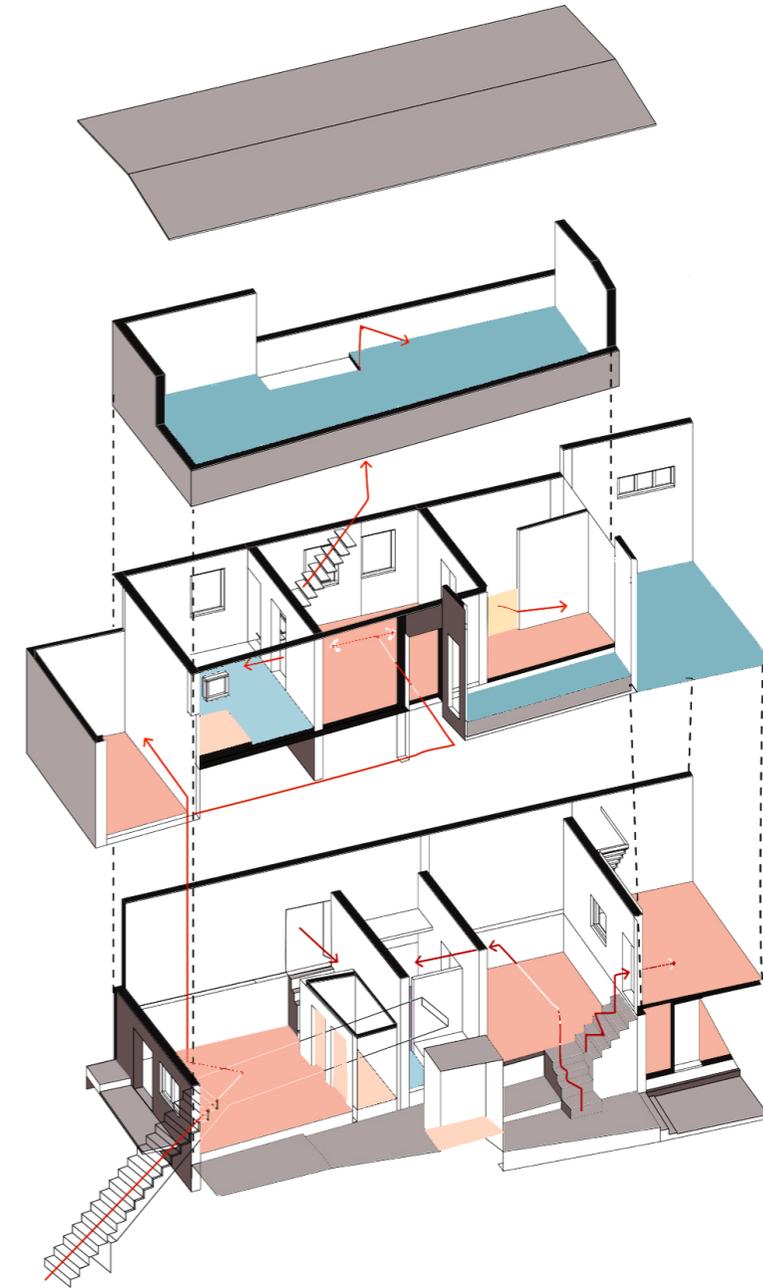
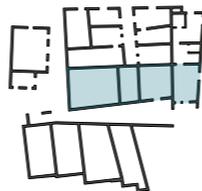


- Store Room ■
- Kitchen ■
- Toilet ■
- Multi-utility space ■

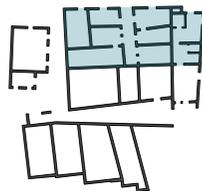




- Balcony ■
- Store Room ■
- Kitchen ■
- Toilet ■
- Multi-utility space ■

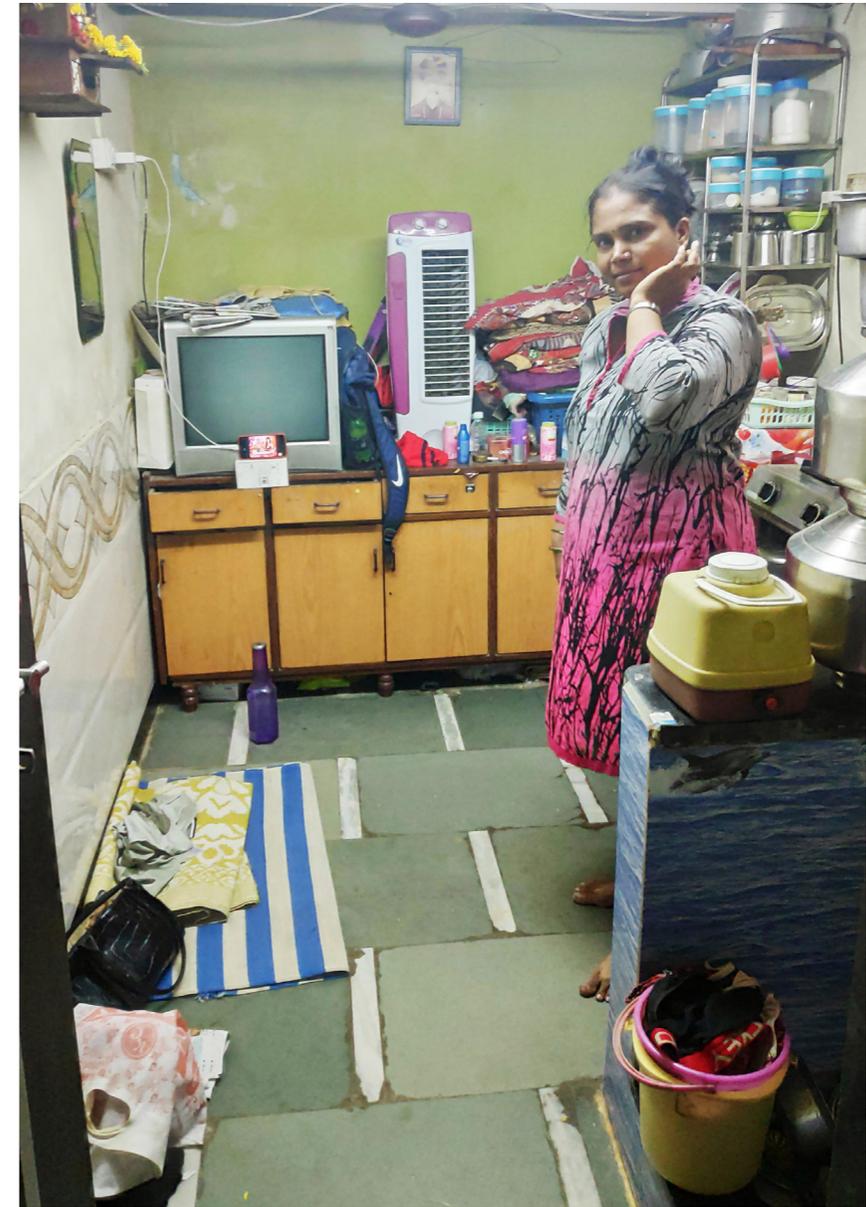


- Praying Area ■
- Store Room ■
- Kitchen ■
- Toilet ■
- Multi-utility space ■





Dharavi Main Road in front of Mr. Kenny's residence
Photograph by: Anil and Niharika



A couple (cousins of Mr. Kenny) living in a rented home
Photograph by: Anil and Niharika



Street behind Mr. Kenny's residence
Photograph by: Anil and Niharika

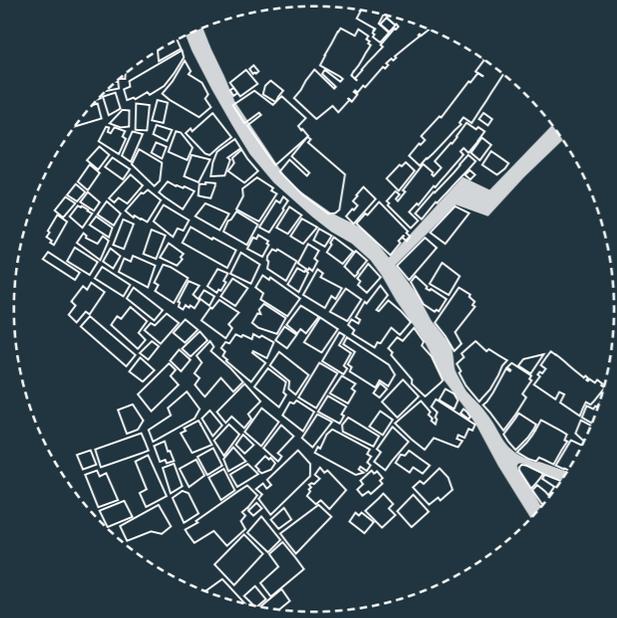
An Inference

After looking at Mr. Kenny's residence one can clearly understand how the owners as well as renters live together in Koliwada. Every house has most of its area rented and the owners live on the Ground floor in just the amount of area required. The rest of the rented area is divided into small rooms, majorly of sizes 20 square meters approximately where an immigrant family lives. If the property is on the main road then it is rented out as shops and the owners are able to receive a higher rent compared to the residence. But in most of the cases other than the shop areas, the owners prefer to live on the ground floor while the upper floors are rented out. This is because of the availability of open spaces (even though in small amounts) that can be used by the owners for storages, social interactions and a playing area for children. The renters on the other hand are deprived of the use of open space as most of them live on the upper floors or the ones on the ground floors don't prefer to use these spaces as they are being used by the owners.

Also, one of the most peculiar features of Koliwada is that the fabric is quite different from the

rest of Dharavi and most of the houses are permanent structures built a long time ago with accessible roofs in a lot of houses and some architectural features like the colorful painted houses which are worth preserving.

Design Interventions: Strategies for Koliwada



08

Strategies

The main idea for Koliwada is to use the process of Incremental development with small interventions that can be carried out over time by the people with the help of Koli Jamaat. It involves a segregation of owners and renters through floors and the provision of community spaces in Koliwada.

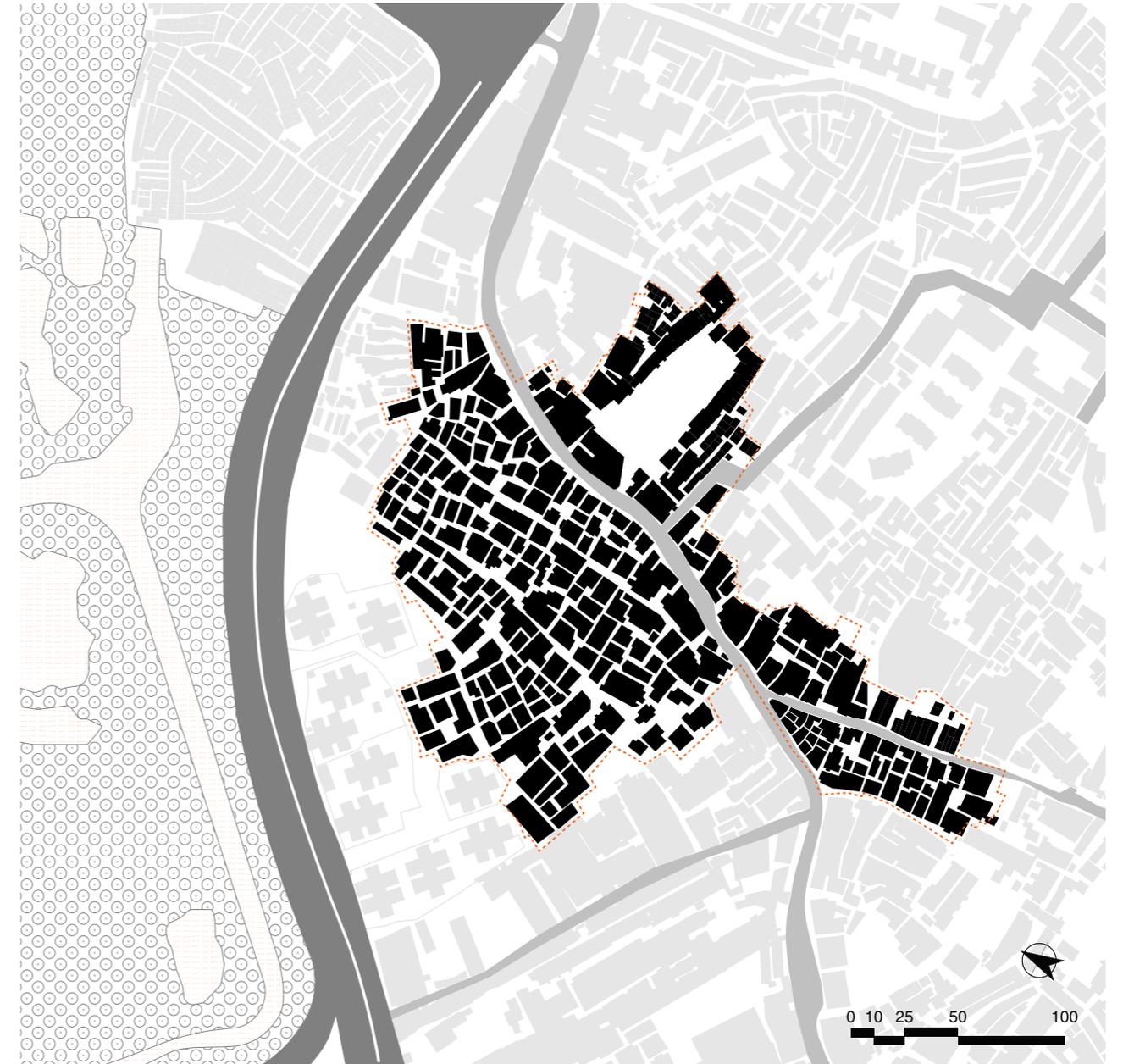
This can be achieved in the following ways:

- Using the existing fabric in order to maintain the identity and culture of Koliwada.
- Decongestion of the area.
- Provision of combined community spaces for owners and renters
- Provision of separate community spaces for both owners and renters in order to increase a sense of privacy for both, while still providing pockets for communication.

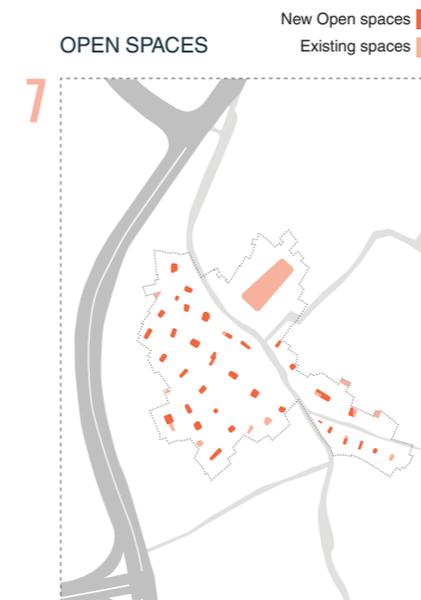
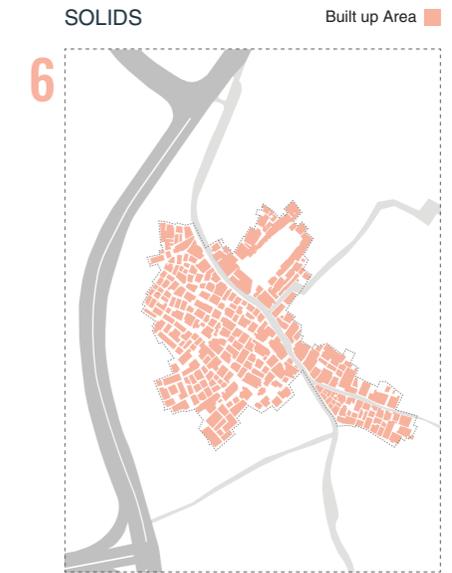
An approach like this will help in the development based on the comfort of the residents as well as the availability of funds. The fact that the process can be carried out over a period of few years gives the possibility of flexibility to some extent to the owners as well as renters.

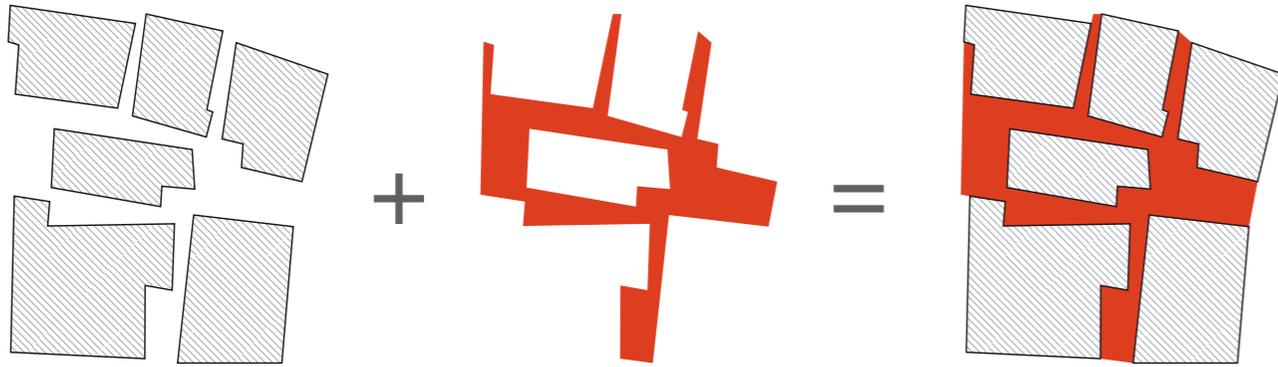
Existing Plan of Koliwada

From the existing plan of Koliwada one can easily imagine the urban fabric. The small streets with houses on both the sides, one can imagine the lack of light and ventilation and the congestion that exists. Though there is one big open space and some small open areas occasionally, Koliwada remains dense with low-rise structures ranging from two to three floors maximum. Also, the big open space is used just occasionally for the community events like marriages and festivals. The rest of the time, the space just serves as a parking area for the people or a playing area for kids. The big area gives the opportunity of organizing cricket matches between the local teams. Hence, it serves a big part in the community and if utilized to its whole potential, the space can be made even more useful.



Existing Plan showing built up and open spaces





Current situation in Koliwada: Congestion due to small streets and very less open space for activities



After looking at all the problems and majorly the problem of segregation as well as shared open spaces, we realized that to achieve the goal we first need to look at the existing open spaces and analyze the spaces and the activities that take place in these areas.

Also, after looking at the fabric of Koliwada, one can easily make out that it needs better open spaces for light and ventilation, in order to improve the condition of the areas.

So our first strategy was to divide the whole of Koliwada into virtual clusters and proposing open spaces in each of the cluster in a way that every building in Koliwada could get an open space attached to it. This would lead to decongestion and better light and ventilation in each building with at least one facade exposed to direct light. Also, these open spaces would further help in creating an atmosphere for social gatherings in the evenings and betterment of the social culture.

But how could one achieve that? How would it be possible to just create an open space out of nowhere?

This, we thought, could be done if we were somehow able to eliminate a building from the cluster and convert that space into an open courtyard or a green area.

To do this, our first strategy was to create the virtual clusters in a way that the building in the center could be demolished and the people living in those buildings could be compensated by the construction of additional floors on the existing buildings.

This can be done in two ways. The first one will be in order to reduce the stress

on the existing buildings, we would have to check the structural stability of the buildings and then build additional floors on the ones that are able to take the load.

The steps to achieve this would be as follows:
 Step 1: Construction of a new floor above the existing building to substitute for the open space
 Step 2: The existing house will be demolished once the new construction is complete and the people are ready to move in.

Step 3: The open space will be used as a social and community area by the residents.

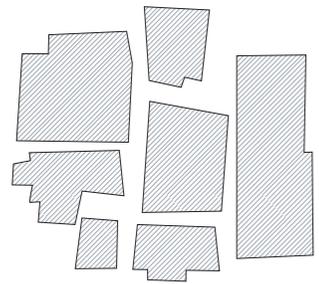
The second one could be to identify a building in the cluster that is really old and is structurally weak or unstable and reconstructing it. The steps for this process would be as follows:

Step 1: Identifying the structurally weak building in the cluster and demolishing it.

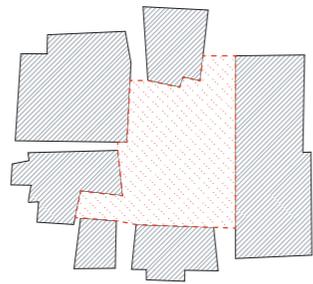
Step 2: Reconstruction of the demolished building in a more regularized manner while also substituting for the open space.

Step 3: Once the building is constructed completely and the people are ready to move in, the central building is demolished for open space and converted to a space that can be used as a social and community area by the residents.

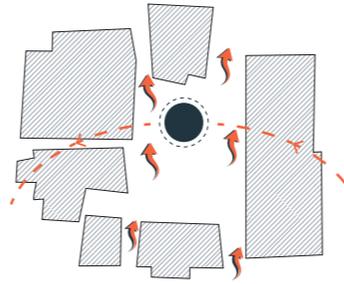
WHY



Congestion of the area due to high density of buildings leading to a decrease in the quality of life



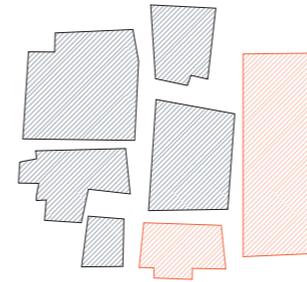
De-congestion by proposing a courtyard



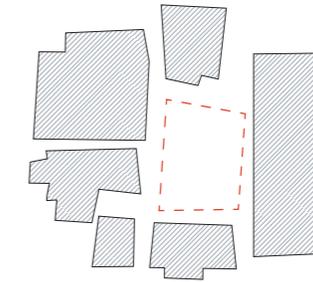
Improvement in the access of light and ventilation for each household

HOW

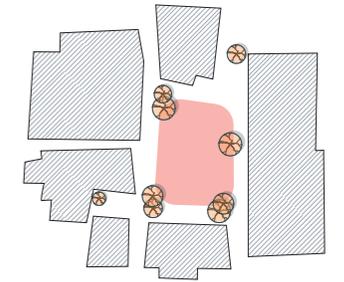
Solution I



Step 1: Construction of a new floor above the existing building to substitute for the open space

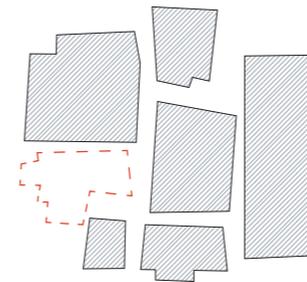


Step 2: Demolition of the existing house after new construction

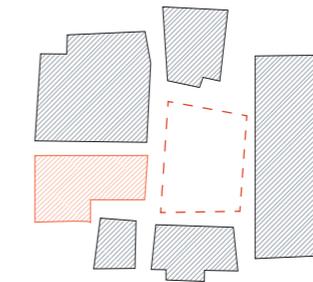


Step 3: Space being used as a social and community area by the residents.

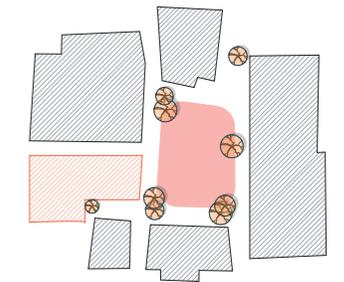
Solution II



Step 1: Identifying the structurally weak building and demolishing it



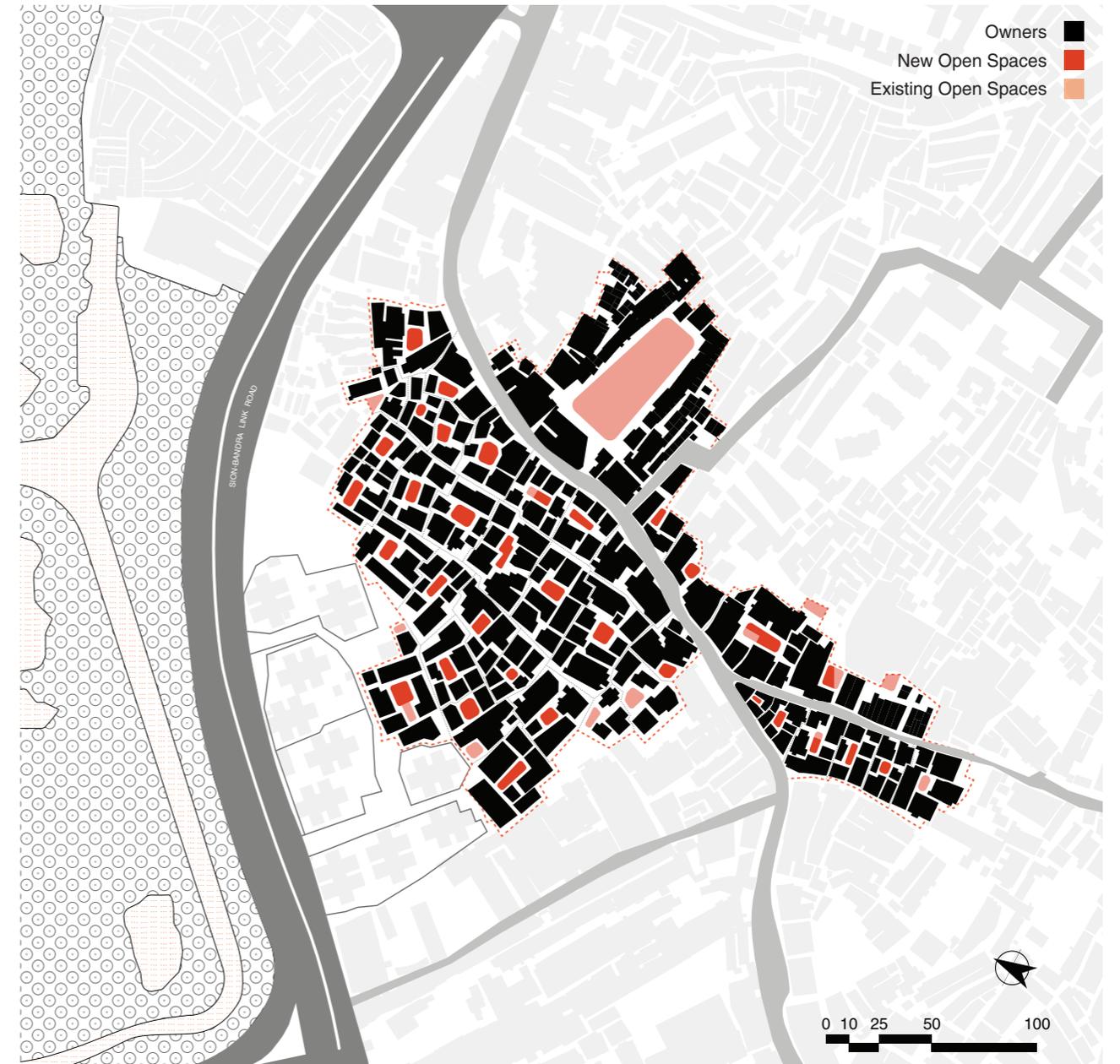
Step 2: Reconstruction of the demolished building while also substituting for the open space & demolition of the existing house



Step 3: Space being used as a social and community area by the residents.

Reuse The Existing

The proposed plan is derived from the concept mentioned above i.e. the proposal of open spaces in each of the virtual clusters. But we have retained the existing structures to the maximum in order to maintain the unique fabric of Koliwada and to design a self-sustaining and self-regenerating community. This would give people the flexibility to use the open spaces to their comfort but also continue the incremental development over time without the fear of congestion. Also it would reduce the overall cost of the project and the money that will be saved can be reserved for future maintenance of the whole of Koliwada and the services required for the area.



Proposed Plan with Open Spaces

As mentioned earlier that according to the vision of Mr. Kenny as well as some other residents of Koliwada, segregation between the owners and tenants is required and the client wanted to do this by moving the renters on the other side of the road. Not only that, the other problem is the usage of the open spaces, where a power dynamic exists and therefore, the renters are hesitant to use these spaces as they belong to the owners.

So our second strategy focuses on finding a solution to the above mentioned problems without a very hard segregation between the owners and the renters.

We are proposing different levels of open spaces along with the one big open space for the whole cluster. The big open space on the ground floor will serve as a community space for social events as well as for relaxing. Also, the kids can use these spaces to play rather than playing on the streets.

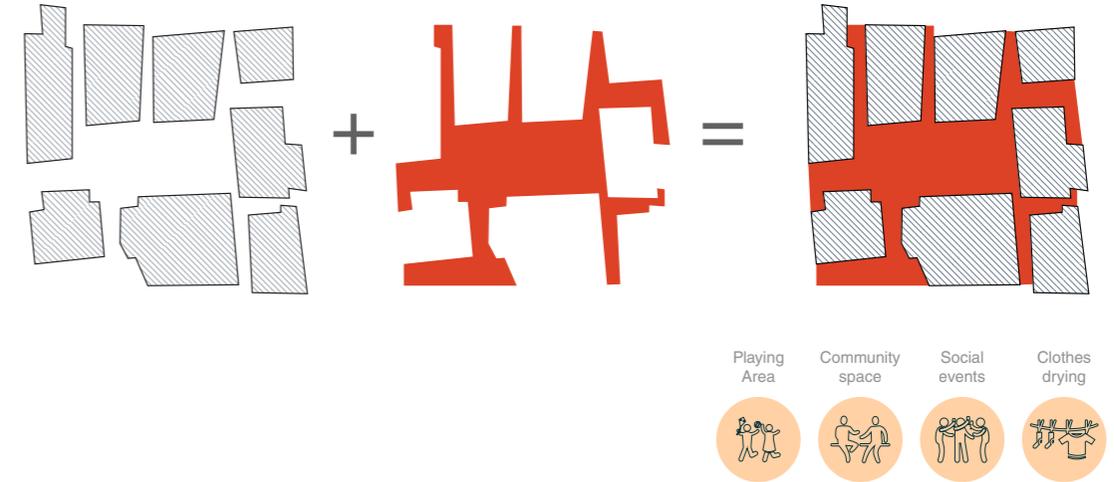
But along with this, we are proposing open spaces at different levels. This is based on the fact that the owners prefer to live on the lower floors i.e. the ground floor and the first floor due to the easy access as well as the access to the open space or streets currently present in Koliwada.

So, we decided to provide streets on the upper levels as well, which would connect the houses in a cluster and would also serve the purpose of open spaces to the owners and tenants.

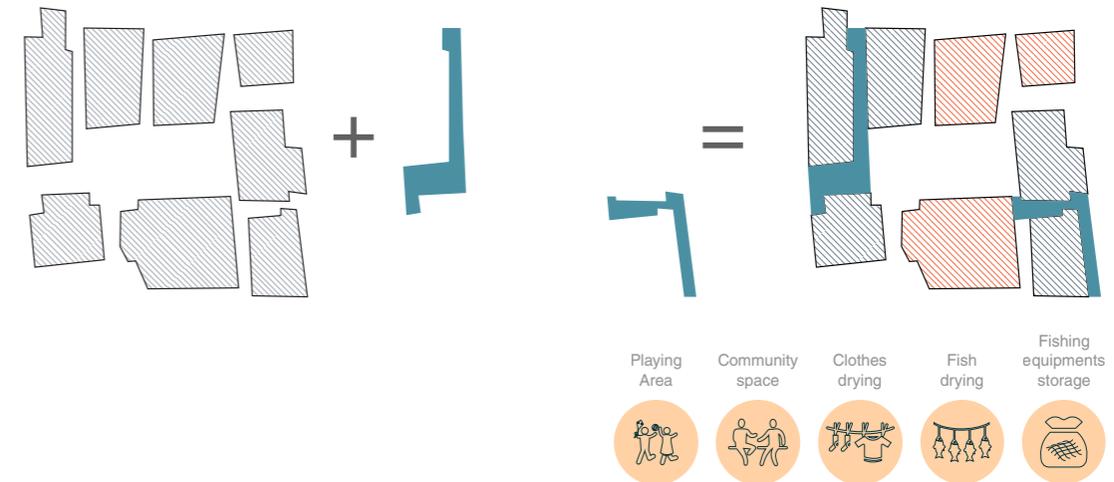
This will be done by providing private connections on the first floor, only accessible by the owners for their storage needs as well as privacy. And the connections will also be provided on the second and third floors with access to the terraces so that the tenants can also use the open spaces without any hesitation and will meet their needs of storage as well as socialization. These connections will also be accessible from the ground floor through stairs and hence provide easy access to the renters as well.

This would create segregation in terms of floors and hence, the owners would not feel interrupted by the renters and the renters would have ample open space to their disposal. Also, as we know that the existing open space holds huge importance in Koliwada, we decided to use it to much more extent and have proposed an underground parking in the area so that the open space can be used even more freely, even when there isn't a festival or an event and this would help solve the problem of parking in Koliwada, making the streets traffic free.

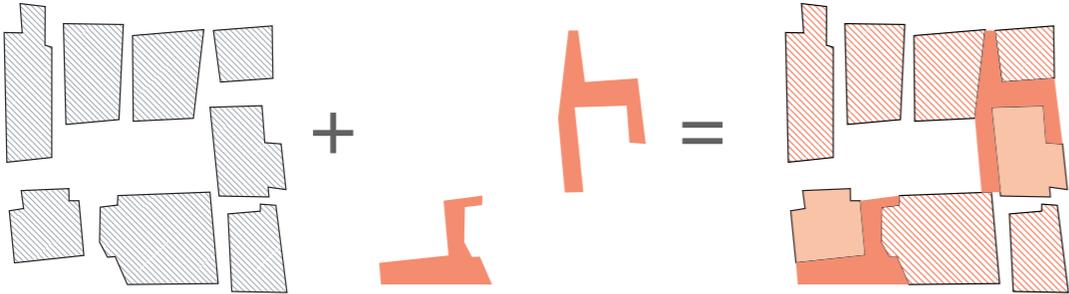
Ground Floor



First Floor

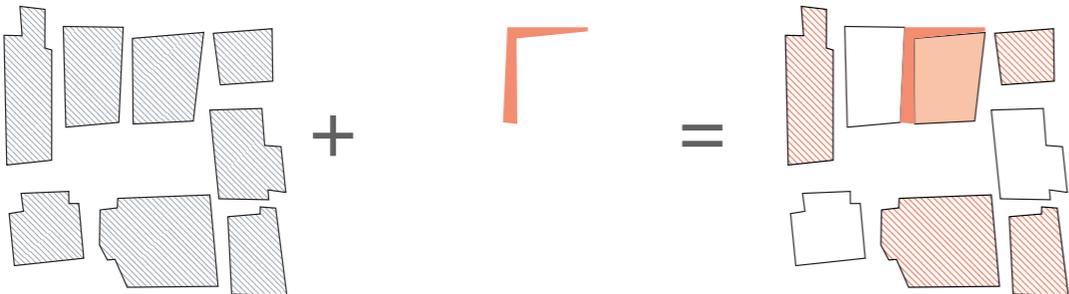


Second Floor



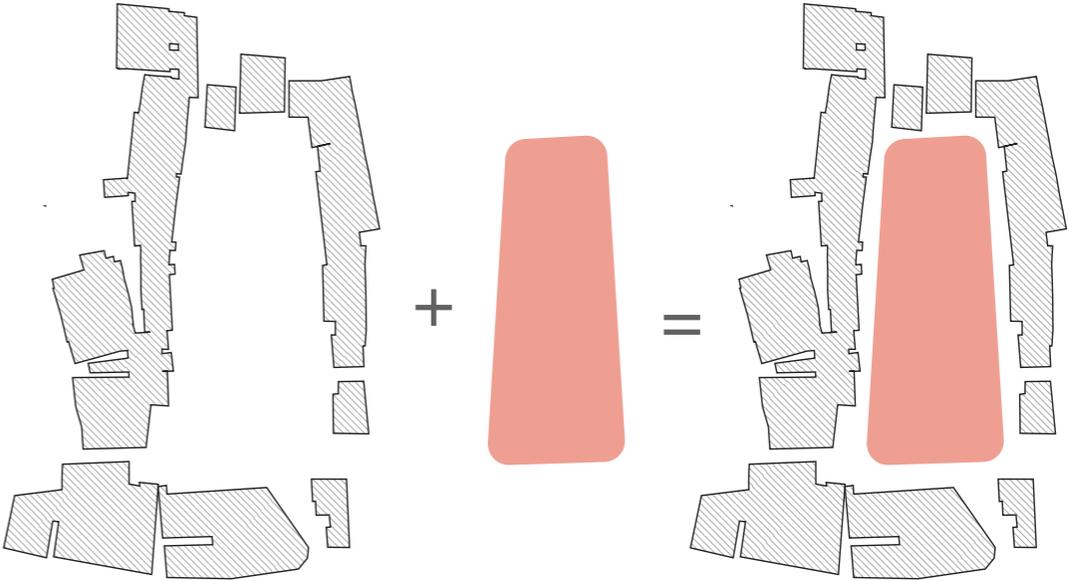
- Playing Area
- Community space
- Clothes drying
- Washing
- Leather Work
- Broom making
- Papad drying

Third Floor



- Playing Area
- Community space
- Clothes drying
- Washing
- Leather Work
- Broom making
- Papad drying

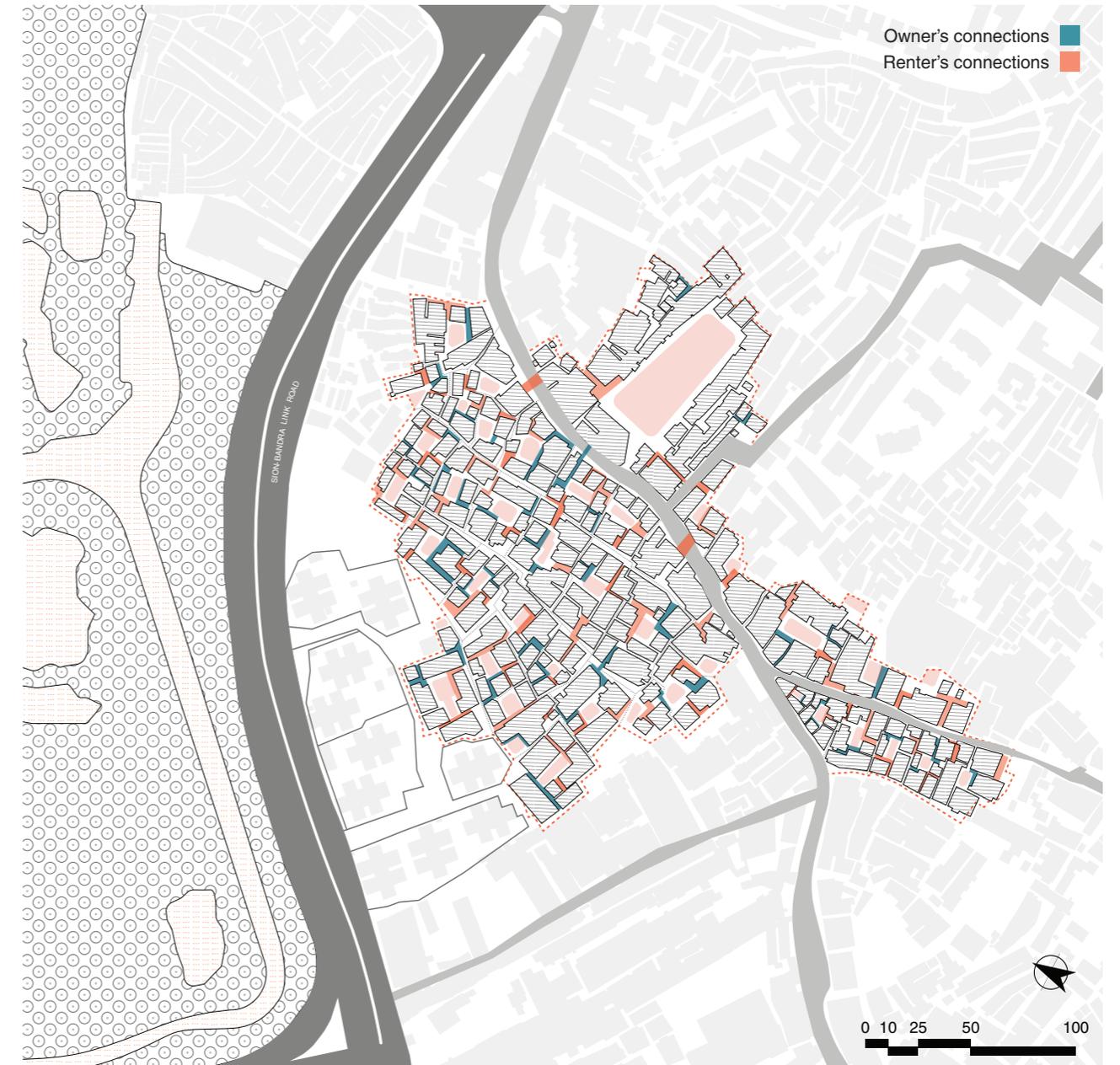
Existing Open Space



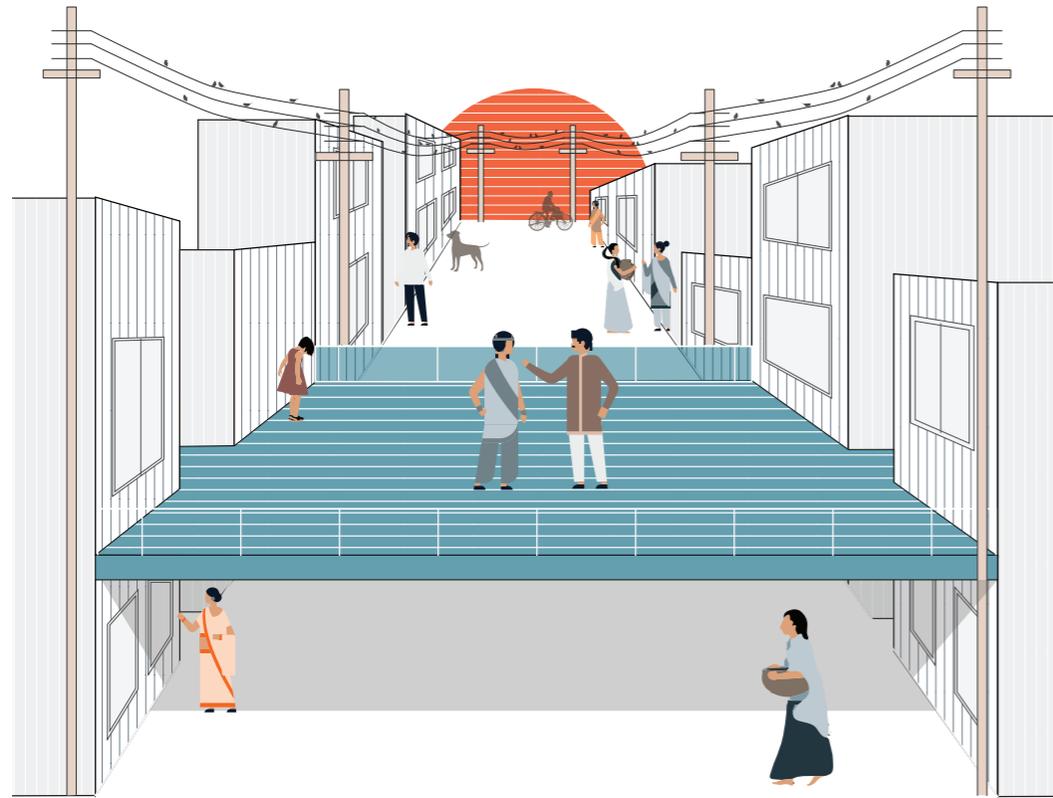
- Playing Area
- Parking
- Wedding space
- Community space
- Festival Celebration

Plan with Connections

The plan shows the proposed connections for owners as well as renters on different levels with the open spaces in between. These connections would not only solve the problem of open spaces and segregation but the area underneath would also provide shaded spaces that could be used during the day. And as the streets are narrow, it would always ensure a flow of cold air with no direct sun hence, making it a great social space to be used majorly by women during the day as the men of the family are out working.



Plan showing the proposed connections for owners & renters



Connections made above the streets to connect the houses and serve as a community space for renters to work and for children to play as well as provide shaded spaces underneath to serve as momentary interaction areas



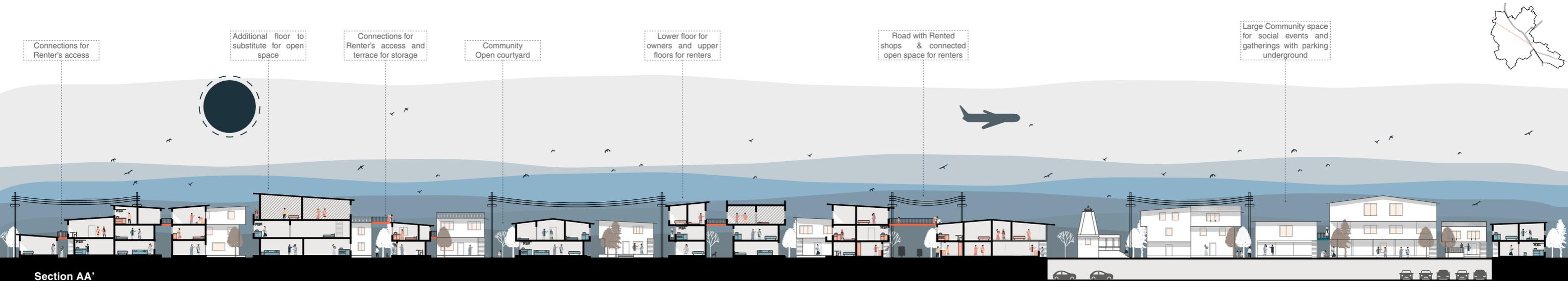
Streets and other open areas being used as Community Spaces for interactions and social gatherings.

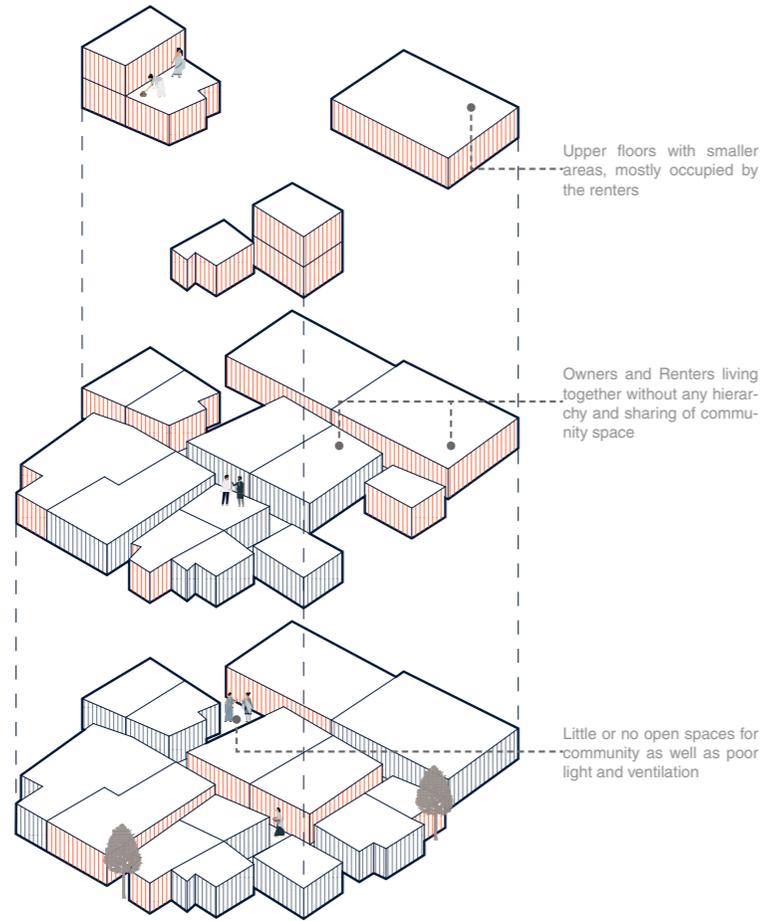
The Sections are drawn to give an idea of how the fabric of Koliwada would look like after the implementation of the open spaces and connections as well as the additional floors that will be constructed to accommodate the residents whose houses will be demolished in order to

provide open spaces. Also, now we can see and understand how the terraces along with the connections for the renters will work as storage spaces and even as community spaces in case of structurally accessible terraces & how these spaces can be accessed from the ground floor.

And in the case of owner's connections which are private, it is clearly visible how they can be accessed only by the people living in the houses and thus, can create a private space for social interactions among the Koli community who are also the owners.

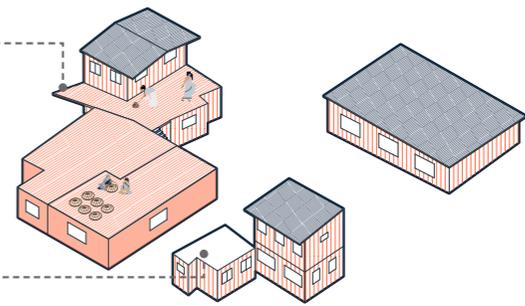
The open spaces on the ground floor serve as a space of social interactions between the owners and the renters as well as a playing area for kids. The large open space with the underground parking continues to serve as a playing area and a space for events



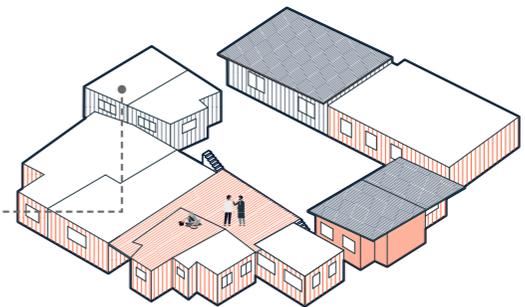


Owner's Residence
 Renter's Residence

Introduction of connections between the houses as private open spaces for renters with access to roofs for terraces

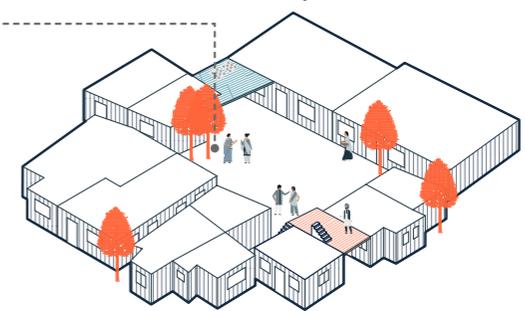


Renters living on the upper floors with access to roof and terrace spaces

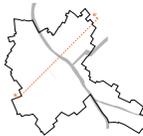
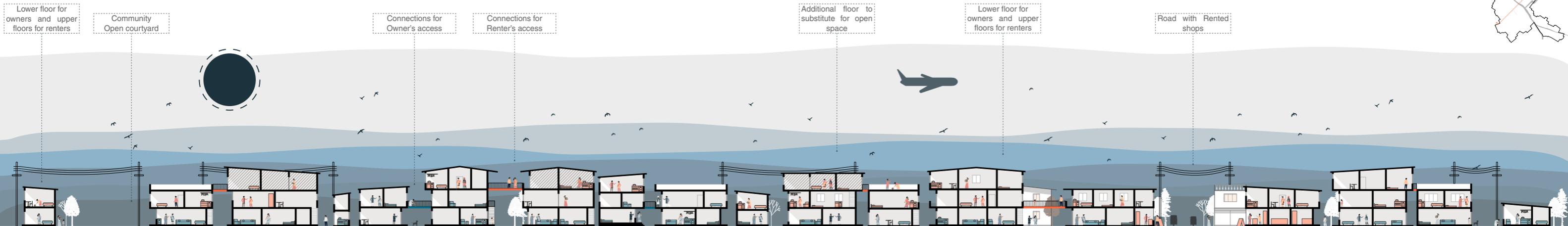


Owners living on the lower floors with large open spaces

Introduction of open spaces to improve light and ventilation and interaction areas for the residents



Owner's Residence
 Renter's Residence
 Proposed Blocks
 Renter's Connections
 Owner's Connections



FORMAL

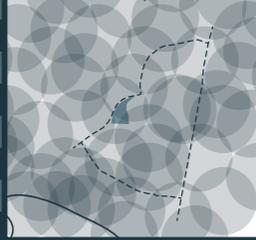
This represents the ideas as proposed by Mr. Kenny and other officials of Koli Jamaat for the future KOLIWADA.



Proposal

The Connectivity of Koliwada with the rest of the Dharavi as well as Mumbai is shown.

Haphazard connectivity with no proper distinction between different ways of movement



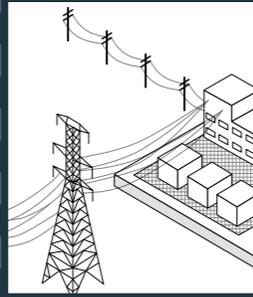
Connectivity

Majorly medium to high rise apartments for the renters and owners to live in low rise.



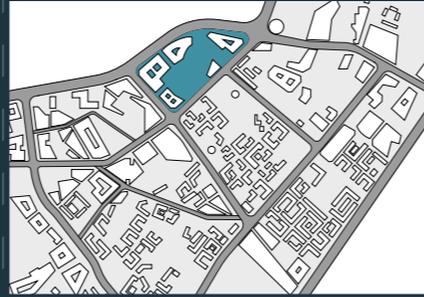
Identity

No sustainable approaches were discussed during the meetings.



Sustainability

The whole infrastructure to be built again in a more regularized manner.



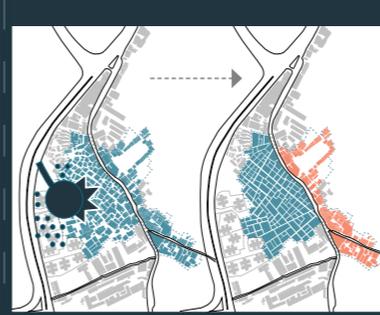
Infrastructure

Segregation by moving the renters to the other side while keeping the owners on one side, endangering the social structure.



Community

The whole area to be razed and constructed again



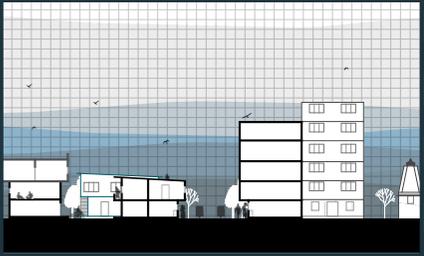
Process

The main actors tend to be the Koli Jamaat officials working with designers and with the owners having less power than the officials and the renters are not a part of the discussion.



Actors

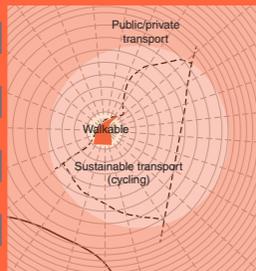
The owners and renters are divided by a main road that cuts Koliwada in 2 parts. This creates a loss of diversity & social isolation. Also, moving the renters into high rise apartments can destroy the social fabric.



Diversity & Living

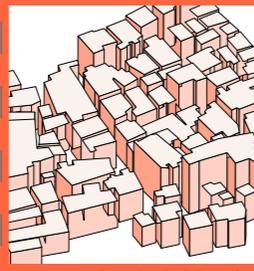


This represents our ideas as per the requirements of the clients while still following an incremental approach.

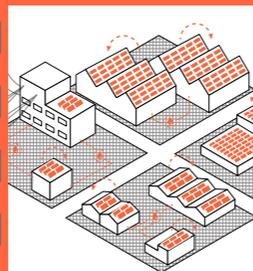


The Connectivity of Koliwada with the rest of the Dharavi as well as Mumbai classified on the basis of walking, sustainable modes of transport like cycling and other public and private transports.

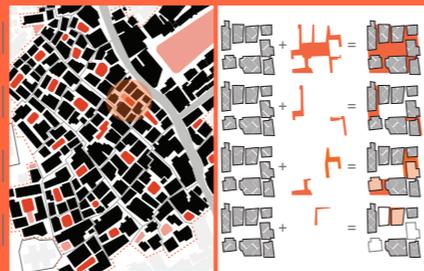
INCREMENTAL



Low to medium rise buildings for both owners as well as renters.



Sustainable methods of energy like solar panels and recycled water to be used for cost reduction.



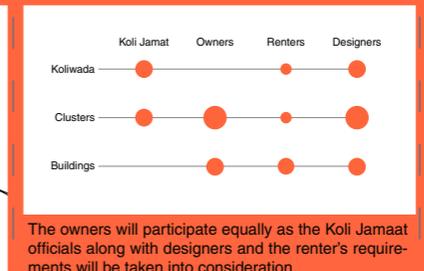
Provision of more open spaces to be provided in order to decongest and improve light and ventilation. Also connections proposed at the upper levels for better walk-ability and connectivity among the clusters.



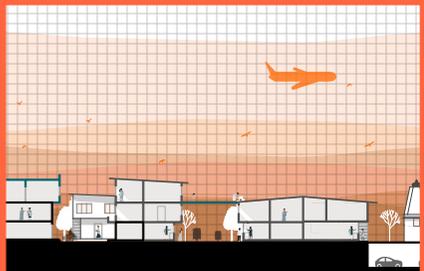
Courtyards & open spaces provided (especially for women) to improve and support the social structure of the area.



Retaining the existing buildings as much as possible while decongesting and providing open spaces along with private open space spaces for renters and owners



The owners will participate equally as the Koli Jamaat officials along with designers and the renter's requirements will be taken into consideration.

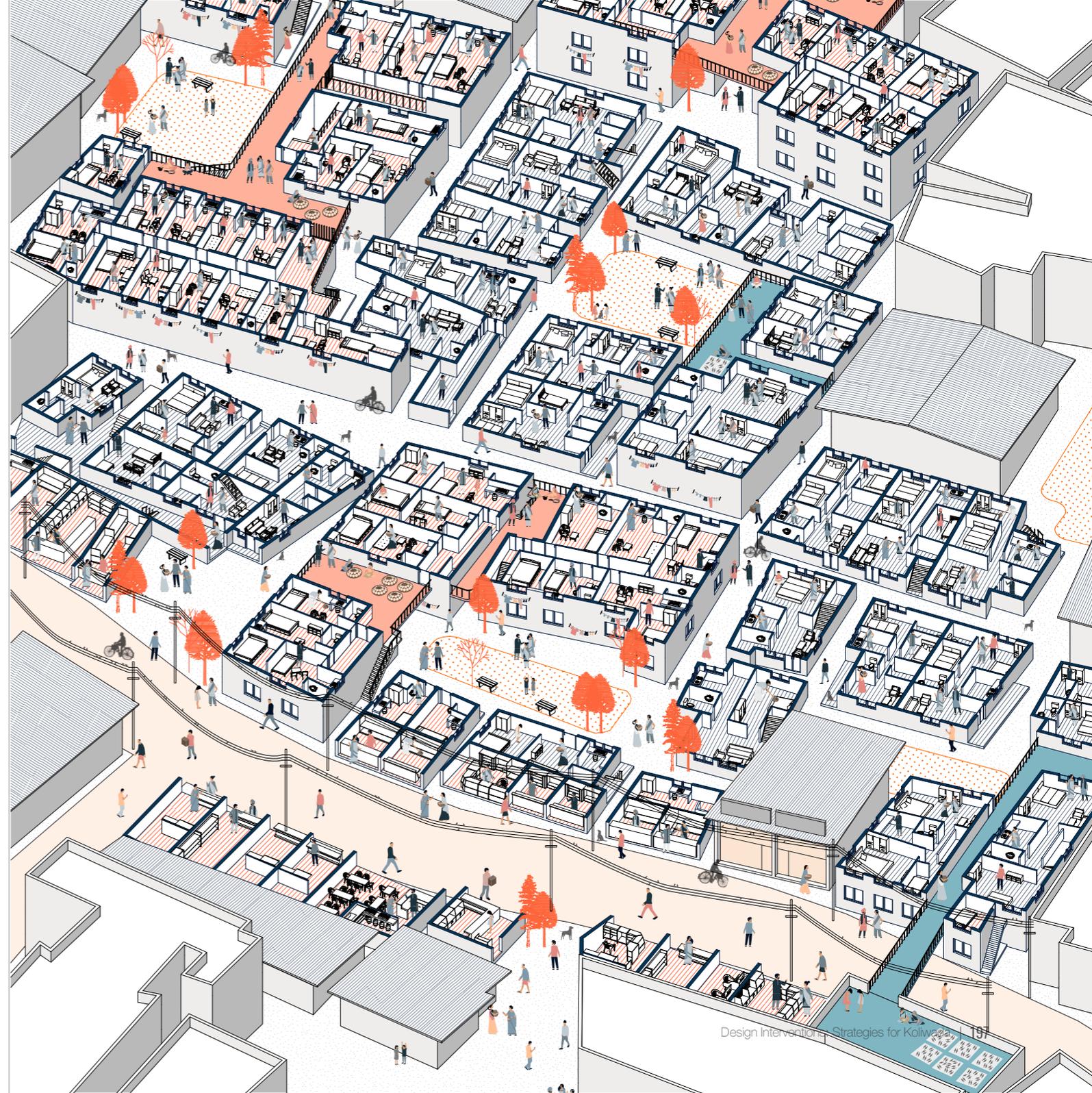


The owners & renters are divided floor wise instead of segregating them while moving the renter's to another part of the village. Also, each owners and renters get private community spaces and shared spaces.

Additional floor proposed to substitute the buildings demolished for open spaces

Main street: the open space shared by every resident of Koliwada

Connections between buildings to provide private community spaces to the renters & owners



Conclusion



09

While we were researching on Dharavi at the beginning of our thesis, we came across a huge number of proposals for Dharavi and how incremental development can help Dharavi if done intelligently.

We were very hesitant at that time thinking what is it that we can possibly do that will express our concern and how would we represent a community that has been struggling since last so many years to improve its condition. Clueless we did our research and went to Dharavi nonetheless, to understand it better. To understand what Dharavi undergoes everyday and why is it so

unique. Urbz was kind enough to hold our hand and take us forward and deeper into the area. And it was while taking a walk in Dharavi that we came across Koliwada. We had read a lot of material by Urbz about Koliwada but we did not know what was it that made Koliwada so special for Urbz. We received the answer as soon as we entered there. There was a very different ambience about the place. The colored houses, the women sitting on their doorsteps in the afternoon making garlands, the cats roaming around and the narrow streets that were so clean. One could get lost in Koliwada walking around as if it was a small peaceful village in the hustle bustle of Dharavi. It is a place that would grab your attention immediately. And we started looking deeper into the history to understand why is that. The history of Koliwada intrigued us and it was at this point that we were sure that we had something that had never been tapped into before. A place that exists quietly in Dharavi and yet stands out. After deeper research we found that Koliwada had been exempted of the Dharavi Redevelopment Plan of 2004 due to its history and the community was looking forward to redevelop their village according to their needs and requirements. This was like an icing on the cake.

We had finally found a place that was being thought of as a redevelopment area but according to the residents. This was a perfect opportunity for us to show how incremental development and redevelopment ideas can be merged together in this scenario where very complicated land ownership patterns exist, not only in Koliwada but the whole of Dharavi. Also, as Koliwada is exempted from the Redevelopment, and people are thing of developing the area themselves, we were lucky enough to understand their requirements and the problems that they face. And after understanding the point of view of the residents, we were able to develop some strategies to tackle the problems using the least invasive methods. By the introduction of connections to provide access to open spaces for everyone and the proposal of open space to counter the decongestion in the area but with minimum demolitions and with the aim of using the existing structures to the maximum in order to retain the fabric and feel of the area that makes it so unique.

This thesis therefore, can be looked at as a way to merge the redevelopment and incremental approaches and shows how it is possible to do so not just in Koliwada but in the whole of Dharavi.

To redevelop the area does not always signifies that one needs to demolish everything and start from ground zero. It is also possible to move from what we have to what can we achieve if the officials and the intellectuals decide to work in the benefit of the people and not just look at the monetary benefits of land development.

The strategies proposed in the thesis can be used by the people if they like but can also be completely rejected if they don't seem to fit the purpose. One can always go ahead and look for new and innovative ways to work in an environment like that of Koliwada or Dharavi. But the point of this thesis was just to show that development doesn't always has to be invasive, the monetary benefits can still be looked at while the incremental development happens with the help of professionals.

Acknowledgements

This thesis would not have been possible without the support of a lot of people who helped us and encouraged us during our journey. But first and foremost, we would like to thank and express our gratitude to our thesis supervisor Professor Valeria Federighi for her continuous support, patience, motivation and guidance. We wouldn't have been able to achieve the results that we did without her excellent knowledge. She was very welcoming and always available to answer our questions and always believed in us and our proposal. We couldn't have imagined having a better mentor and advisor for our thesis.

We also owe a huge thanks to Urbz for their unwavering support not only during our visit to Dharavi but also even after we came back. They were kind enough to provide us all the information that we needed and were readily available to clear our doubts about the area. They also helped us document Mr. Kenny's house in Dharavi which helped us a lot in moving forward in our thesis. A special thanks to Samidha Patil and Bharat Gangurde who were there to guide us in the absence of Rahul and helped us understand Dharavi better while we were on site. And our visit would have been incomplete if we

wouldn't have met Bhau Korde who introduced us to the ground realities of Dharavi as they were since independence. Bhau was very patient with us and welcomed us into his home and explained everything in detail.

Also we would like to thank Professor Miriam Bodini who was kind enough to look at our work offer us her advice. Her experience and advice really helped us a lot in improving our project.

Our acknowledgments would be incomplete if we don't thank our parents who always believed in us and supported us during the last two years of our studies. And a huge thanks to Politecnico Di Torino for the flexible curriculum that allowed us to work on this topic as well as for the great quality of services that they offer to the students. We would also like to thank our friends and classmates with whose help we learned a lot in the last two years and were a part of our growth. For the discussions that we had with them and the arguments that helped us improve the quality of our work.

Bibliography

Books

1. *Saskia Sassen, The Informal Economy: Studies in Advanced and Less Developed Countries, The Johns Hopkins University Press (1989)*
2. *Charles Correa, Kenneth Frampton, Charles Correa, Thames and Hudson (1997)*
3. *Kalpana Sharma, Rediscovering Dharavi, Penguin India (2000)*
4. *Rahul Mehrotra, Sharada Dwivedi, Bombay: The Cities Within, Eminence Design Pvt. Ltd. (2001)*
5. *Vinit Mukhija, Squatters as Developers?: Slum Redevelopment in Mumbai, Ashgate Publishing (2003)*
6. *Royal University College of Fine Arts - Arts and Architecture, Dharavi: Documenting Informalities, Fäth & Hässler (2008)*
7. *Darshini Mahadevia, Rutul Joshi, Trishna Gogoi, Land Tenure for Slum Free cities, CEPT University (2010)*
8. *Miriam Dossal, Mumbai: Mumbai 1660 to Present Times, Oxford University Press (2010)*
9. *Ananya Roy, Poverty Capital: Microfinance and the Making of Development, Routledge (2010)*
10. *Nishat Awan, Tatjana Schnieder, Jeremy Till, Spatial Agency: Other Ways of Doing Architecture, Routledge (2011)*
11. *Jon Goodbun, Jeremy Till, Deljana Iossifova, Scarcity: Architecture in an Age of Depleting Resources, Academy Press (2012)*
12. *Marcos L. Rosa, Ute Weiland, Richard Sennett, Handmade Urbanism: From Community Initiatives to Participatory Models, JOVIS Verlag (2013)*

13. *Joseph Campana, Dharavi: The City Within, Harper (2013)*
14. *Camillo Boano, William Hunter, Caroline Newton, Contested Urbanism, The Bartlett Development Planning Unit (2013)*
15. *Rahul Srivastava, Matias Echanove, The Slum Outside, Strelka Press (2014)*
16. *Lisa Weinstein, The Durable Slum, University of Minnesota Press (2014)*
17. *Gyan Prakash, Mumbai Fables, Harper Collin Publishers (2015)*
18. *Peter Mörtenböck, Helge Mooshammer, Teddy Cruz, Fonna Forman, Informal Market Worlds, Nai010 Publishers (2015)*
19. *Marie-Caroline Saglio-Yatzimirsky, Dharavi: From Mega Slum to Urban Paradigm, Routledge India (2016)*
20. *Alejandro Aravena, Elemental: Incremental Housing and Participatory Design Manual, Thames and Hudon (2016)*
21. *Ananya Roy, Encountering Poverty – Thinking and Acting in an Unequal World, University of California Press (2016)*
22. *Rashmi Bansal, Poor Little Rich Slum: What we saw in Dharavi and Why it Matters, Unabridged edition (2017)*
23. *Valeria Federighi, The Informal Stance, Oro Editions (2018)*

Articles and Essays

1. *Rahul Mehrotra, Bombay City: One Space, Two Worlds, Architecture+Design (1991)*
2. *Akhtar Chauhan, Learning From Slums, Habitat II World Conference on Human Settlements (1996)*
3. *Arjun Appadurai, Deep Democracy, (2001)*
4. *Rahul Mehrotra, Remaking Mumbai, Urban Age (2007)*
5. *Rahul Mehrotra, Negotiating the Static and Kinetic cities, (2008)*
6. *Urbz, Koliwada: Urban Typhoon Workshop Report, (2008)*
7. *Serena Alcamo, Daniela Bosco, Valeria Federighi, Incremental Open Spaces: The Case of Dharavi, India, The Journal of Design Strategies (2013)*
8. *Vandana Baweja, Dharavi Redevelopment Plan: Contested Architecture and Urbanism, University of Florida (2015)*
9. *Rahul Mehrotra, Kinetic City: Emerging Urbanism in India, (2016)*
10. *Rahul Mehrotra, Mumbai: Planning Challenges for the Compact City*

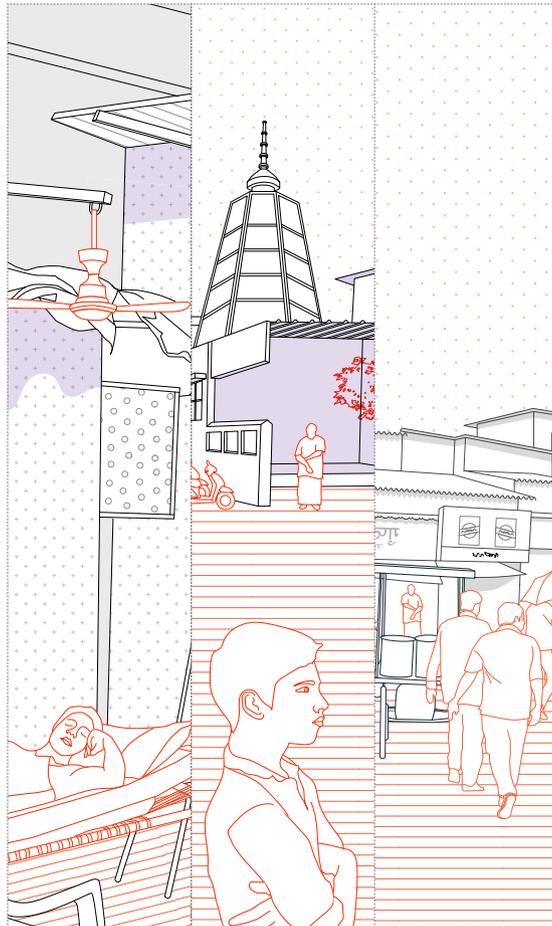
Thesis

1. *Colombia University Graduate school of Architecture, Dharavi: Scenarios for Development, (2008)*
2. *J. Warren Borg, Dharavi: Unleashing its Hidden Potential, (2010)*
3. *Francesco Strocchio, New Transit camp Social Club, Politecnico Di Torino, (2010)*
4. *Serena Alcamo, Daniela Bosco, Valeria Federighi, Increasing Open Space in Dharavi: processo di progettazione Incrementale in uno slum di Mumbai, Politecnico Di Torino, (2011)*
5. *Sapana Doshi, Michael J Watts, The Right to the Slum? Redevelopment, Rule and the Politics of Difference in Mumbai, Berkeley University of California (2011)*
6. *Miriam Bodino, Fabio Colucci, New Transit Camp: Un processo di riqualificazione in Dharavi, India, Politecnico Di Torino, (2011)*
7. *Marion Chamontin, An other way: Alternative social housing for the slum upgrading. Research and analysis. Dharavi - Mumbai, Arkitektskolen Aarhus Denmark, (2013)*
8. *Ernesto Fava, Design Practices in Dharavi: Redefinition of the role of the Architect in the user generated city, Politecnico Di Torino, (2016)*
9. *Kritika Shah, An Informal Frame, Delft University of Technology, (2017)*
10. *Jovana Liscevic, Balancing between informality and official planning policies in Podgorica, Montenegro, Politecnico Di Torino, (20)*

Web References

1. *Rahul Mehrotra, Essays by Rahul Mehrotra, RMA Architects*
<http://rmaarchitects.com/category/essays/>
2. *WEIGO, Five Case Studies that Illustrate Steps Toward an Inclusive City*
<https://www.wiego.org/blog/five-case-studies-illustrate-steps-toward-inclusive-city>
3. *Smita Dalvi, When Dharavi Grows up, it does not want to be Shanghai, First Post (2009)*
<https://www.firstpost.com/blogs/when-dharavi-grows-up-it-does-not-want-to-be-shanghai-174578.html>
4. *An Industrial Slum at the Heart of Mumbai, The New York Times Archive (2011)*
<https://archive.nytimes.com/www.nytimes.com/interactive/2011/12/28/world/asia/an-industrial-slum-at-the-heart-of-mumbai.html?ref=asia>
5. *Neha Thirani, A Conversation With : Urban Planner Rahul Mehrotra, (2012)*
<https://india.blogs.nytimes.com/2012/05/17/a-conversation-with-urban-planner-rahul-mehrotra/>
6. *Joseph Grima, URBZ: Crowdsourcing the city, Domus (2012)*
<https://www.domusweb.it/en/architecture/2012/02/13/urbz-crowdsourcing-the-city.html>
7. *Elizabeth Gudrais, A Conversation with Rahul Mehrotra, Harvard Magazine (2012)*
<https://harvardmagazine.com/2012/04/conversation-with-rahul-mehrotra>
8. *Rahul Srivastava, Matias Echanove, 'Slum' is a loaded term. They are homegrown neighbourhoods, The Guardian (2014)*
<https://www.theguardian.com/cities/2014/nov/28/slum-loaded-term-homegrown-neighbourhoods-mumbai-dharavi>
9. *Matias Echanove, Dharavi Mashup, Urbz (2015)*
<http://www.urbz.net/articles/dharavi-mashup>

10. Carlin Carr, *The best idea to redevelop Dharavi slum? Scrap the plans and start again*, *The Guardian* (2015)
<https://www.theguardian.com/cities/2015/feb/18/best-ideas-redevelop-dharavi-slum-developers-india>
11. Yue Zhang, *Building a Slum-Free Mumbai*, *Wilson Center* (2015)
<https://www.wilsoncenter.org/article/building-slum-free-mumbai>
12. Matthew Niederhauser, *Mumbai's Smart Slum*, *Pulitzer Center* (2015)
<https://pulitzercenter.org/reporting/mumbais-smart-slum#slideshow-7>
13. Nina Tory-Henderson, *Empower Shack*, *Arcspace* (2016)
<https://arcspace.com/feature/empower-shack/>
14. Rahul Srivastava, Matias Echanove, 'Our lives are 50-50', *Urbz* (2017)
<http://www.urbz.net/articles/our-lives-are-50-50>
15. Manasi Phadke, *For Dharavi's Leather Industry troubles are more than skin deep*, *The Print* (2017)
<https://theprint.in/economy/dharavis-leather-industry-troubles/12316/>
16. Matias, Jai, Bharat, Samidha, Rahul, Marius, Manou, Yanyang, *The Design comes as we Build*, *Urbz* (2017)
<https://urbz.net/projects/design-comes-we-build>
17. India Block, *Urban-Think Tank develops low-cost housing for South African slum*, *Dezeen* (2017)
<https://www.dezeen.com/2017/12/28/empower-shack-urban-think-tank-low-cost-housing-khayelitsha-south-africa/>
18. Cameron, Krisha, *Kumbharwada - incremental innovation to reduce pollution*, *Urbz* (2018)
<http://www.urbz.net/articles/kumbharwada-incremental-innovation-reduce-pollution>
19. Cameron, *Kumbharwada - a pottery village*, *Urbz* (2018)
<http://www.urbz.net/articles/kumbharwada-pottery-village>
20. *The Dharavi Paradox*, *Urbz* (2018)
<https://urbz.net/articles/dharavi-paradox>
21. Rahul Srivastava, Matias Echanove, *The chawl's close cousins*, *The Hindu* (2018)
<https://www.thehindu.com/society/the-chawls-close-cousins/article22634195.ece>
22. Nirtika Pandita, *Hues of Koliwada*, *Urbz* (2019)
<https://urbz.net/pdf/urbz-news-1>
23. Darleen Ramos, *Scenes from an Urban Village*, *Midday* (2019)
<https://urbz.net/pdf/urbz-news-0>
24. Anushka, Riddhi, *Colours of Koliwada*, *Urbz* (2019)
<https://urbz.net/index.php/articles/colours-koliwada>
25. Rahul Srivastava, Matias Echanove, *Architectural practice for the living present*, *Archifutures* (2019)
<http://archifutures.futurearchitectureplatform.org/volum-3-the-site/no-future/>
26. *Urban Think Tank, Empower Shacks*
<http://u-tt.com/project/empower-shack/>
27. *Empower Shack low-cost housing project nominated for UK design prize*, *Brand South Africa* (2018)
<https://www.brandsouthafrica.com/investments-immigration/empower-shack-low-cost-housing-project-nominated-uk-design-prize>
28. *Urban think tank introduces the empower shack to the slums of western cape*, *Designboom*
<https://www.designboom.com/architecture/urban-think-tank-empowershack-slums-western-cape-382014/>



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