

**Blurring Boundaries:
Waste as a Vehicle for a Social Metamorphosis**

by

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Dedicated to my parents for their love, support,
and the many sacrifices they've made in their
lives that have allowed me to
[live, love, and experiment] freely.
I am forever grateful.

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ABSTRACT

In 2001, Argentina suffered an economic collapse that almost wiped out the middle-class, leaving thousands homeless. This resulted in the growth of the informal settlements and informal sectors of employment in and around the formal city of Buenos Aires, the “Capital Federal.” The urgency for survival led to the rise of many waste-pickers or, as they became known the *cartoneros*. Today they are the primary recycling program in the city with many cooperatives helping their movement. The city has enforced a ‘zero waste’ policy for 2020 in dealing with their serious trash problem and the *cartoneros* will play a large role in this transformation. This thesis aims to address two complex social issues (disparity and waste) with a long-term architectural initiative which hopes to ultimately blur the social boundaries that exist in the “Paris of the South” via the *cartoneros*.

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- And Lebbeus Woods.

GLOSSARY

Barrio - Neighbourhood

Capital Federal - The capital city of Argentina, also known as the Ciudad Autónoma de Buenos Aires (CABA). Used by locals to distinguish between the city - *capital* - and the province of Buenos Aires outside its borders - *provincia*.

Cartoneros - Literally meaning 'cardboard people,' is used to refer to the urban recyclers in Argentina. They are a diverse group of workers who come from many different backgrounds but share the informal recycling sector of the city.

Fábricas Recuperadas - "Recovered factory" movement in Argentina after the 2001 economic crisis where workers took over the factories and resumed work. The most significant workers' self-management phenomenon in the world.

Feria - Market/Fair, generally a temporary fair that takes place on the weekends throughout Buenos Aires. Some in public plazas and others on streets that are closed off weekly. It is a common practice for local artisans to sell their goods and get some exposure. Some ferias are more formal where the stalls are rented by the artisans and controlled by an organization, while others are more informal and open to all.

Metamorphosis - A change of physical form, structure or substance usually accompanied by a change of habitat or behaviour. Generally refers to insects but in this thesis it is used to address a bottom-up social transformation.

Villa(s) - Pronounced *vee-sha*, Informal settlements or shanty towns in Argentina - in this thesis specifically in Buenos Aires.

CHAPTER 1: INTRODUCTION

Thesis Question

How can recycling/waste management and a phasic architectural initiative blur the social boundaries that exist between the richest and the poorest in the city of Buenos Aires, Argentina?

Approach

One of the toughest goals set for this thesis was to justify an architectural approach to a socio-economic issue which currently haunts many megacities in the world: the increasing gap between the rich and the poor. The behavioural aspect of this divide was the focus and the idea of designing a specific building with a predefined program was never the primary ambition especially when the site is a foreign city .

For this reason, the common architectural approaches were deliberately questioned and avoided from the start. This was not an act of rebellion but an act of hope; hoping for a deeper understanding of the issues without having any preconceptions regarding the culture and the city. Instead of beginning with a geographical site and mocking up the perfect design solution - which is far too common in today's global architecture, the *site* began with a condition. This condition was the social imbalance which was quite evident in Buenos Aires. The rich, the poor, and the constant psychological and often *invisible* battle between the two. Inspired by Lebbeus Woods, these projects are “envisioned as beginnings, not conclusions, as demonstrations of principles, not prescriptions” (Woods 2004, 21).

Social Contrast

Many of our cities are growing exponentially every year, getting denser and more complex with a multitude of layers. Many want to move to the city, to live the city life and experience the dynamism that it has to offer. These desires have subconsciously narrowed our visions down to the ultimate goals of *'making it'* in the city by any means necessary. We have become so caught up with accomplishing our individual



Photograph of the extreme contrast that exists between the luxury apartments and the favelas in Sao Paolo, Brazil (Vieira 2007)

goals that the idea of collective living has almost vanished from our everyday lives. This, of course, is a bold generalization of the current consumer culture addicted to working solely for consumption. This wasteful attitude has many implications but the focus here is its contribution to the increasing gap between the wealthy and the poor.



Intimidation - Early concept model

The contrast that exists within our society is not a secret. We all see it, experience it and are fully aware of it. It is not hard to spot someone homeless collecting change in the streets of any major city. What is troublesome is that we are generally okay with it, or have become immune to it. We have accepted the fact that some things are just a part of life no matter how unacceptable and unfair they seem. The essence of this thesis

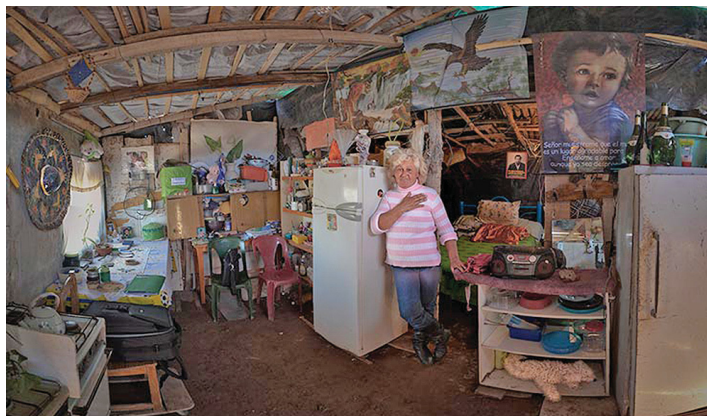
was to question this idea, the idea of accepting this contrast and considering it the *norm* and to question the consequences of our luxuries. Is it okay to put a blind eye to the issue? Is ignorance the right attitude in a civilized society? There is a common belief that this segregation will only get worse unless we change our behaviour. As Mike Davis mentions in his book *Planet of Slums*, the price of this new urban order that we are experiencing in our cities will be increasing inequality within and between cities (Davis 2006, 7).

Photograph of a family in their home in an informal settlement in Neuquen, Argentina. (Goldstein 2012)



The Argentine photographer, Andy Goldstein, recently published a second book about people in their homes called *Vivir en la Tierra [Living on the Earth]* (Goldstein 2012). It includes photos of various families living in the harshest informal settlements across South America. The photographs are a rare depiction of their humble homes, some with children, others alone. His idea was to stay true to the reality of their

Photograph of a woman living in an informal settlement in Neuquen, Argentina. (Goldstein 2012)



lives and just depict how they live without any theatrics. This is something powerful because they are not only beautiful photographs, but they are taking us into the lives of people that we rarely hear anything positive about.



Juan Zurraco, 31 years old, merchant
(Goldstein 1985)

After close examination of these photos, the focus is taken away from their house and its materiality, and more to their homes. The residents display a sense of humility but at the same time, a strong sense of identity and confidence. They have welcomed this photographer into their homes and have allowed him to photograph their lives without any filters or sensors. They have their televisions, their refrigerators, and their beds, just like the rest of us. This was an eye opener and a great influence on this thesis from the start. It was further evidence that the goal was not to change people's homes and how they live in the informal settlements, but to help with the building of their identity and confidence within the formal society.

Elena Zurraco, 45 years old, housewife
from Andy's earlier book *Gente en Su Casa - People in their Homes*. Depicting the Argentine middle-class in their homes
(Goldstein 1985)



Slums, Informal Settlements, Shantytowns or Villas

It is a mistake to think that slums are an unnecessary or extraneous part of the city, that slums are just for poor people or that they are all the same. (UN-HABITAT 2003, 32)

There are almost 1 billion people living in slums today and it is projected to double by 2030 according to the UN-HABITAT Global Report on Human Settlements. In this thorough report which is based on 29 city case studies, they have made a clear distinction between the different types of slums. The term '*slum*' is regarded as inner-city residential areas that were planned but over time became physically run-down and overcrowded and as a result became the homes of the many low-income groups. This thesis is a response to areas that have been defined as '*informal settlements*.' The focus is not on the physical or spatial characteristics of their built environment but on the positive social and behavioural aspects of their daily living.

Informal settlement refers to illegal or semi-legal urbanization processes, or unsanctioned subdivisions of land at the (then) urban periphery where land invasion took place - often by squatters, who erected housing units usually without formal permission of the land owner and often with materials and building standards not in line with the criteria of the local building code. (UN-HABITAT 2003, 196)

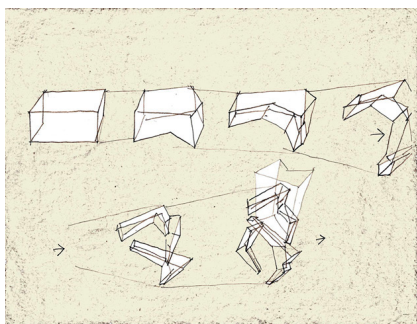
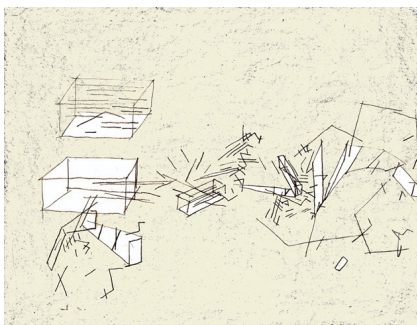


Villa 31 and 31 bis - One of the most controversial informal settlements in Buenos Aires. Across the tracks from Recoleta, the most expensive neighbourhood in the city. (Katz 2011)

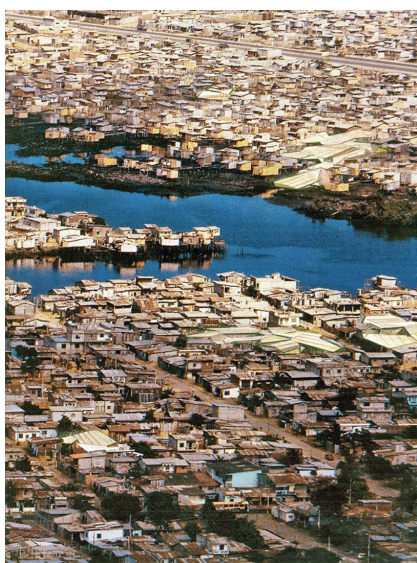
Differentiating between the terminologies used to address the '*poor*' is important because it is a very sensitive and highly controversial subject. This thesis is in no way attempting to solve the issues and is not blind to the many unaccountable forces being social, political, economical, or historical.

In Argentina, the term used to refer to these informal settlements is *villas miserias* - literally meaning towns of misery. Today they are often referred to as *villas* or *barrios* (meaning neighbourhoods). The many terms used to describe these

different settlements can have a negative psychological effect on the residents. The people living in these neighbourhoods are often stigmatized because of where they live and are faced with many difficulties when trying to fit into the formal city. Cynthia E. Smith, the curator of *Socially Responsible Design* at the Smithsonian Cooper-Hewitt National Design Museum said: “We’re talking about a billion people living in informal settlements today, you can see them as a billion problems or a billion solutions” (Kimmelman 2011). This ideology has been one of the guiding factors in this study and also trusting the creativity and potential of every person regardless of their home address.



Lebbeus Woods - Sketches of early 'capsule' concept for slums. Progressive growth within the communities based on what is needed (Woods 2012)



Lebbeus Woods' rendering of the capsule idea on existing slums (Woods 2012)

Lebbeus Woods wrote a few articles regarding 'slums' and the practice of “slum clearance” and “urban renewal” as being a failed practice in almost all cases. Bulldozing these neighbourhoods and forcefully moving the residents or building large-scale housing projects in their place are only complicating the larger issues. A way to tackle the reformation of slums is to create a change from within and not a top-down urban plan (Woods 2012). Of course it is much simpler to start from scratch and to design an ideal neighbourhood but the thousands involved should be taken into account. Unfortunately the settlements in Buenos Aires have experienced these tactics as well. In 1967, the government instituted the Plan de Erradicacion de Villas de Emergencia (P.E.V.E.) which was a plan to resolve the rapid growth of the *villas miserias*. This short-lived plan was supposed to include a few phases by moving the residents to ‘temporary’ housing for one year and building new residences outside the city over the course of 7 years. It was meant to accommodate 56,000 families with 8,000 new units (Gaité 2006). However, in 1976 during the military dictatorship, 94% of the “illegal” informal



Children in Los Piletones - A smaller informal settlement in Buenos Aires.

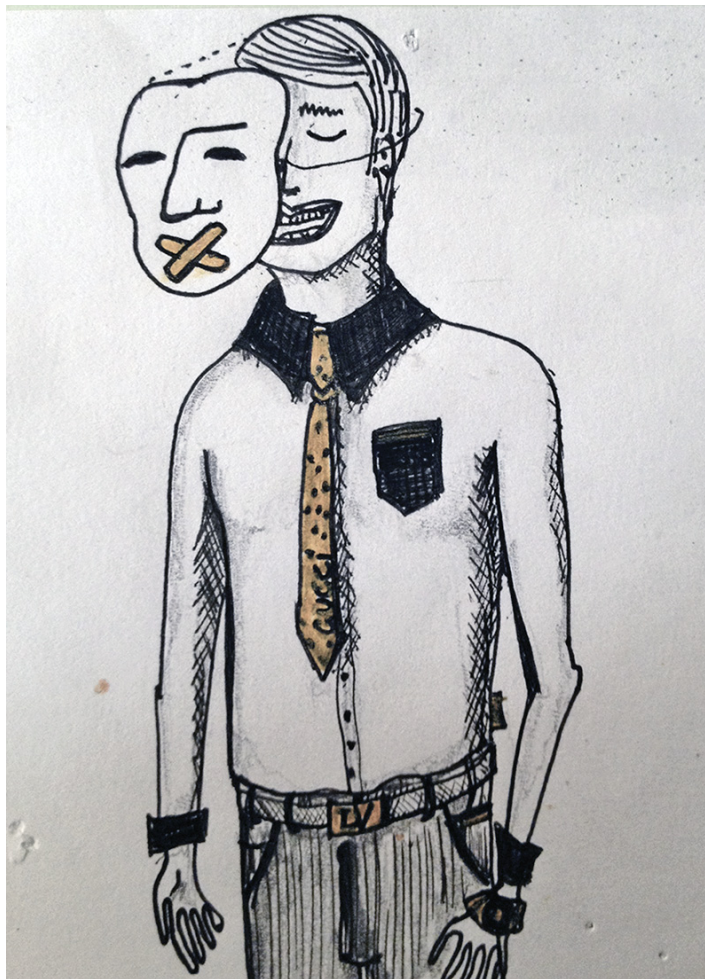
settlements in Buenos Aires were demolished leaving 270,000 residents homeless (Davis 2006, 109). Fortunately, the formal city has finally recognized that eradicating these *villas* is not the solution and in 2010 *Law 3.343* was passed to call for the urbanization of one of the largest informal settlements in the city of Buenos Aires - *Villa 31* and *31 bis*.

It has been shown by many tragic examples that simply replacing slums with planners' ideas of what people should be living in destroys much of human value that can never be replaced, and causes untold human misery. Slums are inhabited by human beings, many of whom, even at the desperate edge of survival, have invested themselves in their families and communities, and want a better life for themselves and their children. (Woods 2012)



Los Piletones, Buenos Aires - Contrasting 'planned' urban renewal attempt with the informal settlement above. Failing to formalize the informal. (Google 2013)

This thesis seeks to address this social contrast while considering both opposing sides, the formal and the informal. Not forcing a concept on either side that would undermine their identity or self-worth, but to simply allow for a more collective growth.



The problem is evident, it is there because it has no other way of being.
 The problem is reality. It is not something that tacks itself onto reality.
 The problem is one with reality.
 So, reality is a problem?

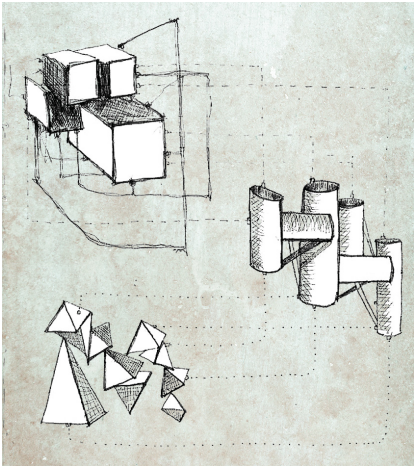
Once we think of problems as being part of the larger picture of reality,
 Then we can sit down and think about how we can resolve them.
 Every problem has its roots, its beginnings, its variables.
 Only with a deeper understanding of these variables we can begin to resolve.
 In fact the resolutions will be extremely miniscule,
 But over time these mini-resolutions will collectively separate reality from
 problems, we hope....but of course not completely.

The goal here is not to put on a 'poor-boy' mask and pretend that everything is
 understood by proposing a magical solution.

The goal is to simply look at the problems from a different angle, through a
 different lens.

This is a distortion of reality.

CHAPTER 2: ABSTRACTING THE COMPLEXITIES



Early sketch that initiated the abstract study of the coexistence of different geometric elements.

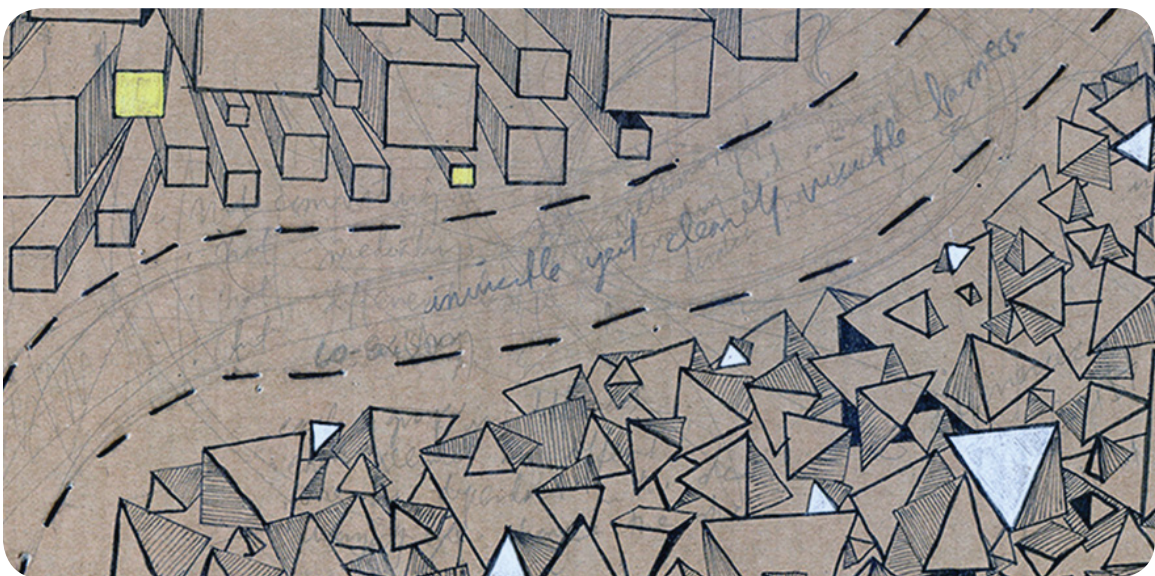
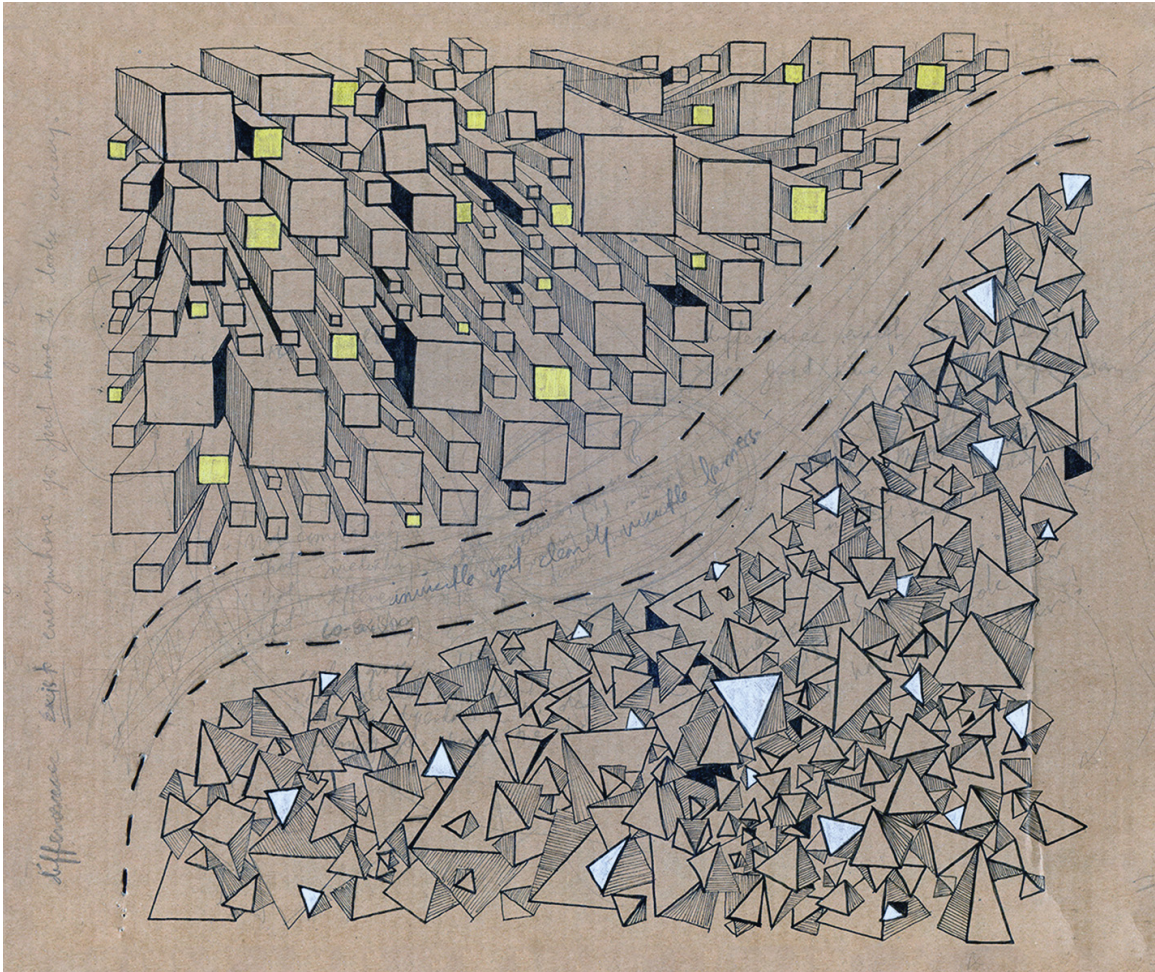
To initiate this thesis, the two opposing sides were first abstracted into geometric forms - the formal being squares, and the informal being triangles. This was to allow a non-biased point of view and to consider them as just two different elements with varying parameters and needs.

When two different elements exist, how do you initiate a dialogue between the two? What if they tend to avoid each other and are generally clustered together? Is one element meant to take the form of the other? Would there have to be some sort of a hybrid element? Or is a different third element necessary for any viable communication between the two?

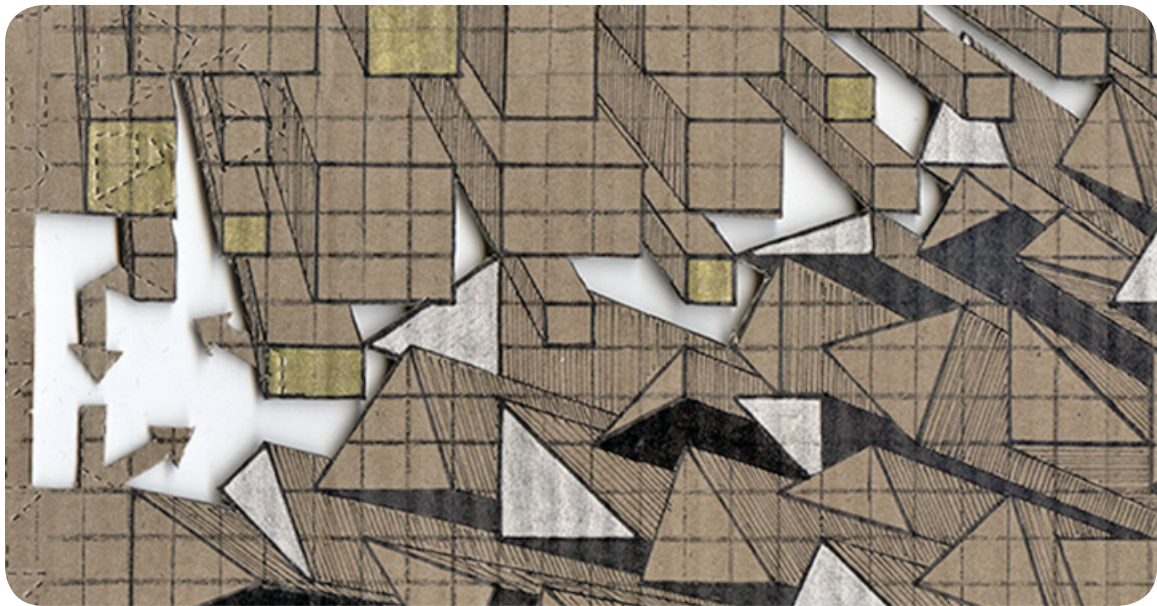
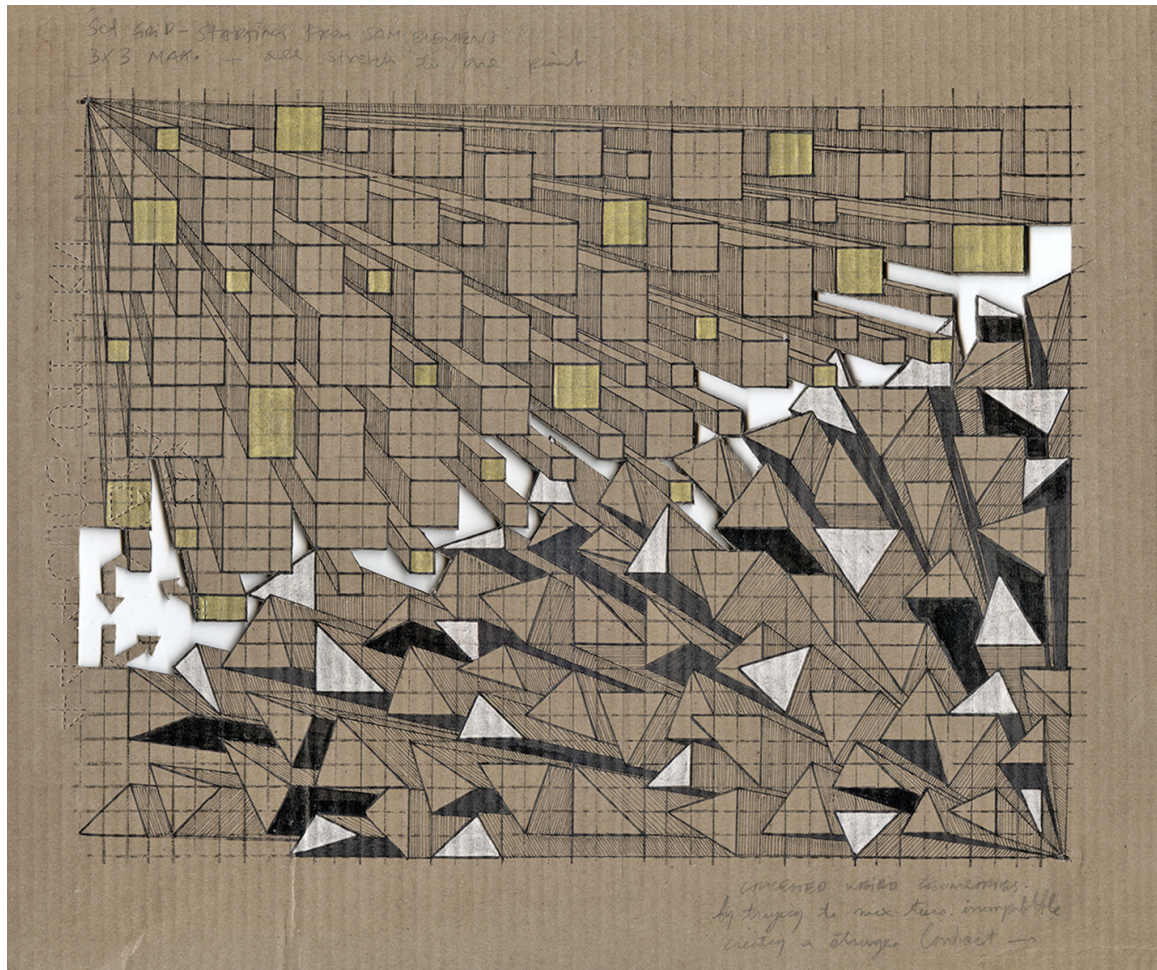
Dialogue

Abstracting this complex social issue that existed in Buenos Aires resulted in different possible points of departure. A series of drawings and models were used to determine the position of this thesis. They were not only influential but also a way to tap into the subconscious for intuitive inspiration. The order in which the experiments were executed is as follows:

1. If there are two different elements, and there are no parameters set, then the result will be chaotic and unresolved.
2. If there are two elements and there are certain strategic parameters set, then the result could be more controlled while allowing the freedom for growth on both sides.
3. If there are set parameters, and a third element is introduced to blur the boundaries between the two elements, then overtime the differences would become invisible.

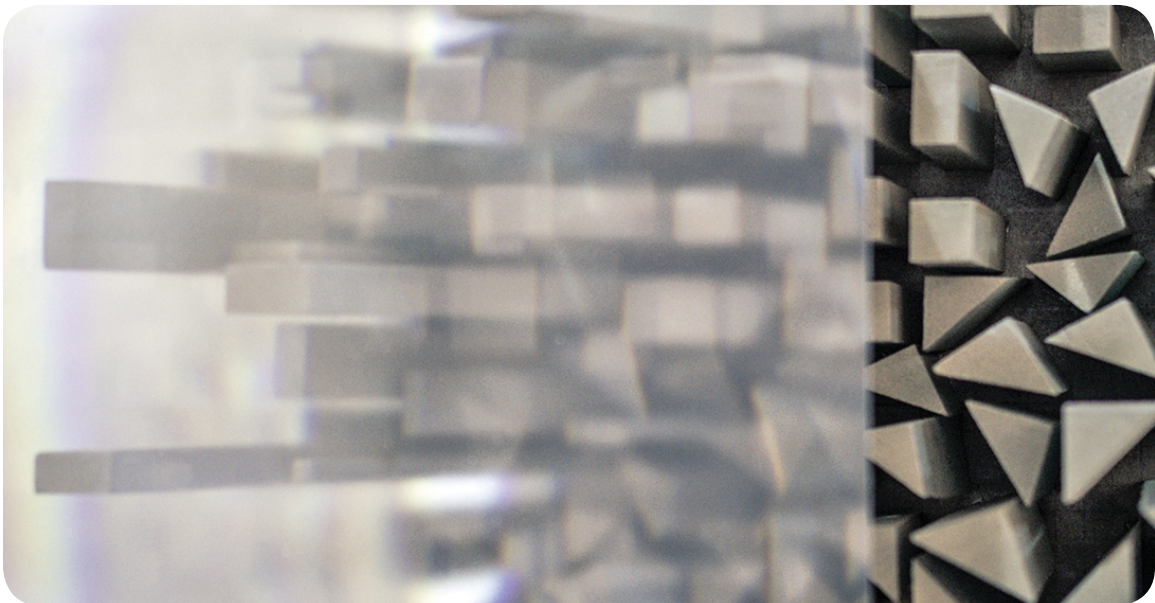
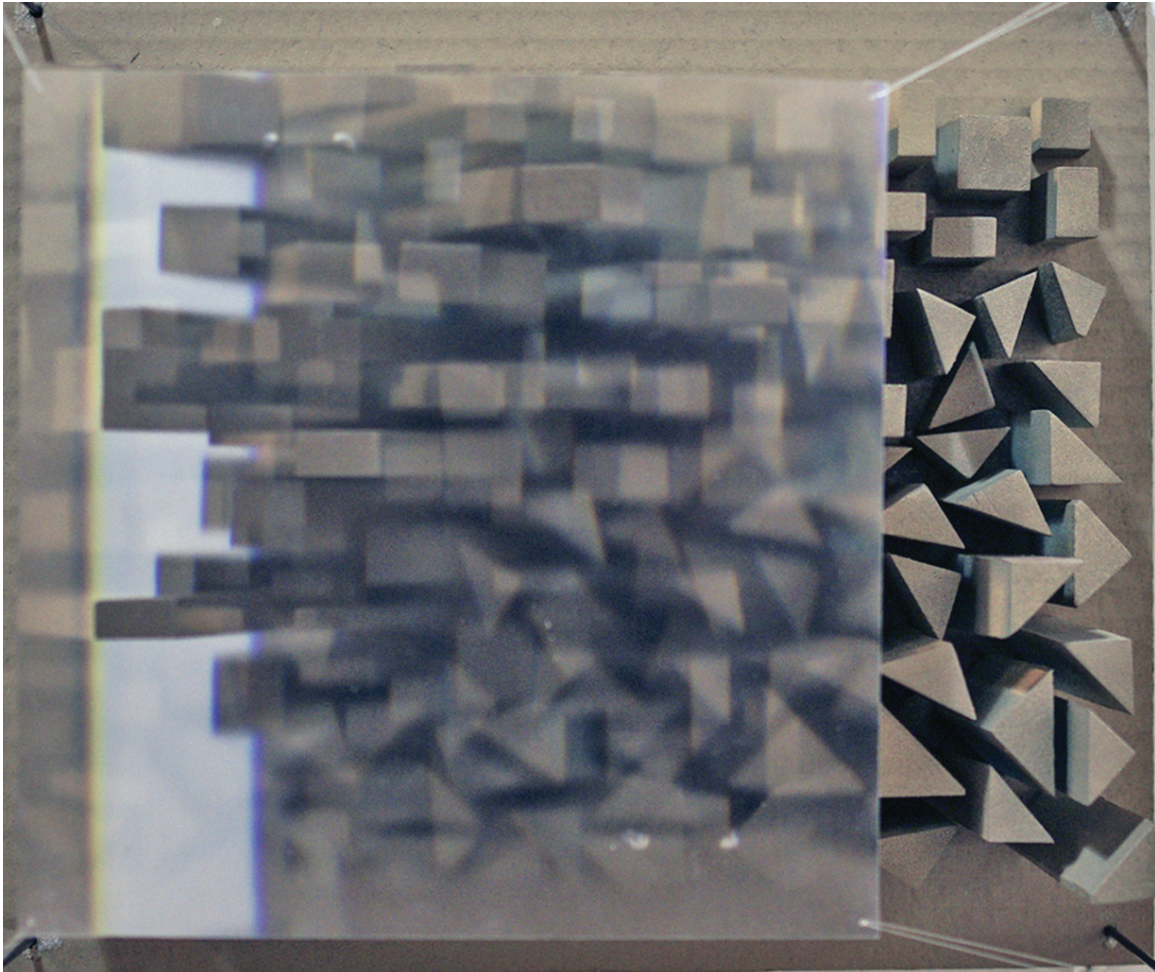


Experiment 1 : Based on the first principles mentioned, two different elements were drawn from each corner of the board in a random fashion. The only set parameter was the geometric nature of the elements. The aim was to allow the subconscious to influence the drawing. After many hours, the gap in the middle was not resolved. It seemed like an impossible and frightening task to continue, therefore it remained unresolved.

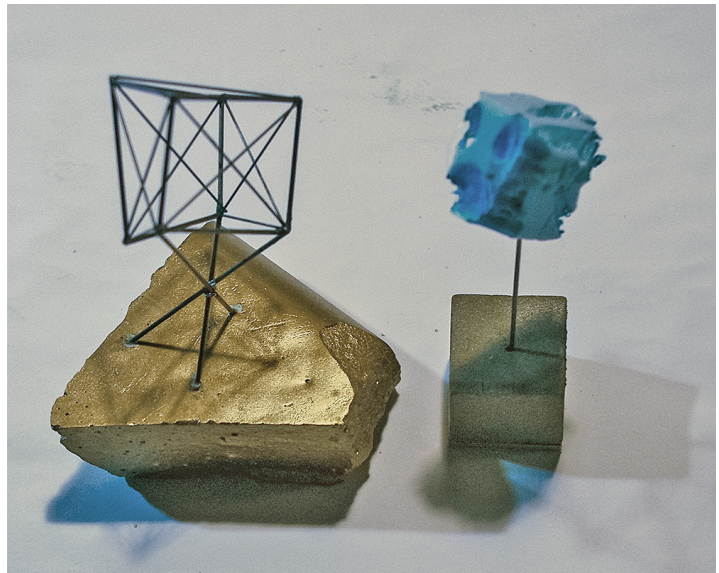
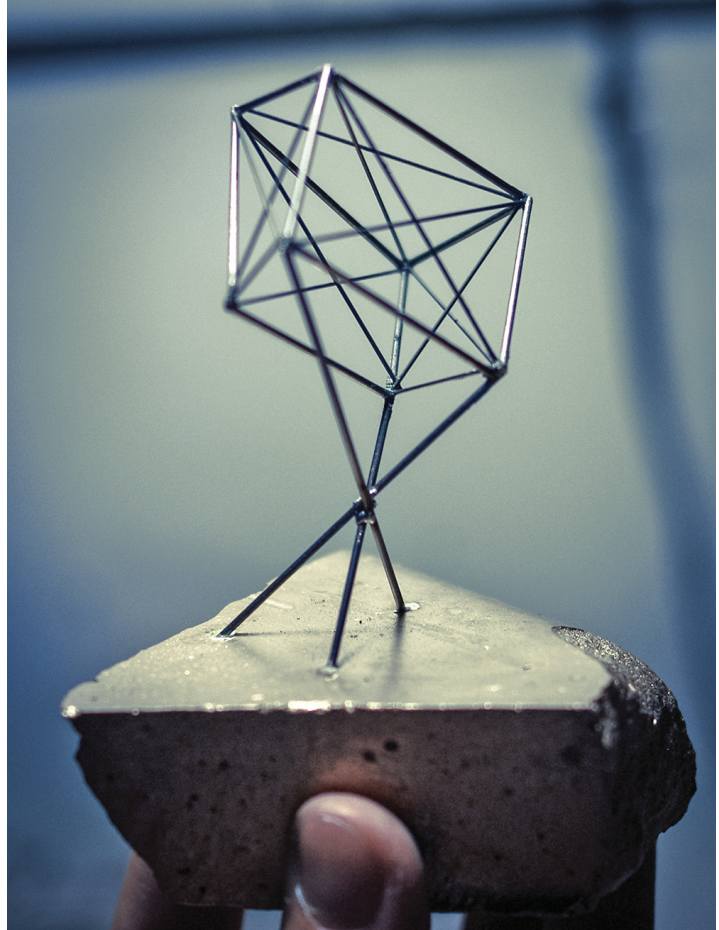


Experiment 2 : A set of parameters were introduced: a grid, a maximum and minimum size for each element, and two vanishing points. The process became a lot simpler. The set boundaries allowed for a quicker execution of the drawing as well as the revealing of the 'invisible' in-between.

(Note: recycling and waste management were not yet part of the thesis study at this point)



Experiment 3 : The previous experiment was constructed into a 3-D physical model to allow for a spatial examination of the concept. In addition to the set parameters, a third element was introduced (refractive plastic). This external force was applied to both elements and the result was the 'blurring' of the boundaries between the two.

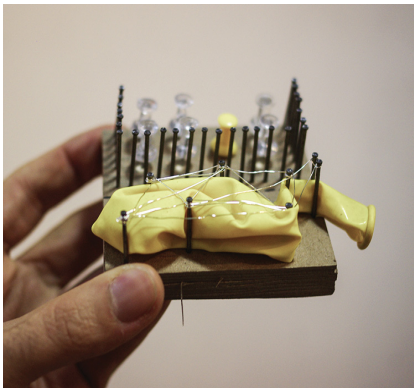
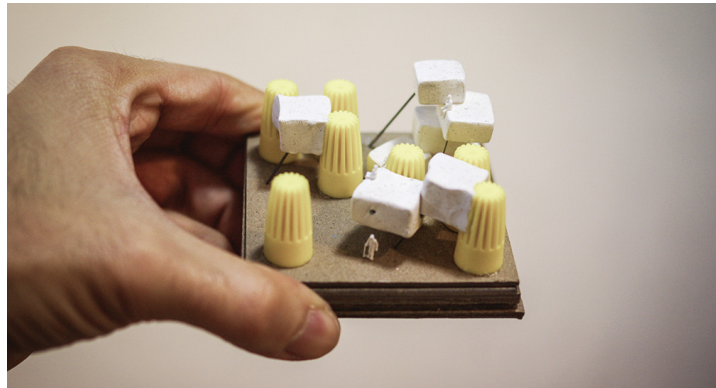


Experiment 4 : A follow-up of the previous series, in this experiment the idea of morphing was explored. Morphing one shape into another and exploring what the in-between space would reveal. The idea of visibility was also revealed with the invisible scaffolding (foam) that was necessary to build the visible.

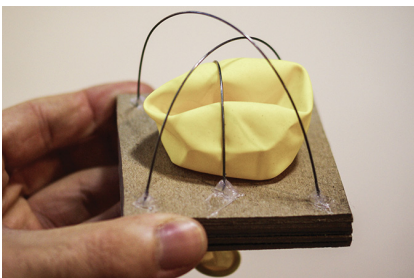
These experiments not only allowed for the exploration of the unknown, but were also a meditative process for allowing a deeper understanding of the issues. The goals of the thesis were becoming more clear and the idea of morphing or transforming either side were discarded for the adoption of a third element that could possibly blur the boundaries between the two (rich and the poor).

But how could architecture play with the social dynamics of a cultured society?

Model showing the growth of an organic element around the infrastructure. Built with the informal settlements in mind.



Formal vs. Informal - growth around existing infrastructure



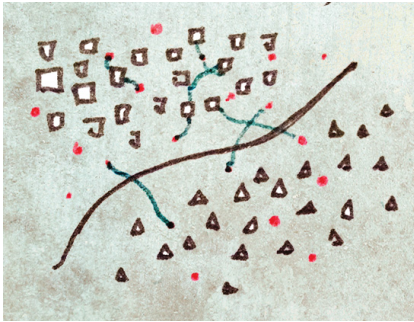
Set of boundaries placed on 'organic' object

Infrastructural Boundaries

Boundaries could either promote or prevent growth within a given space. It depends on location and timing. Most informal settlements grow around existing infrastructure. This is not only because of location but also the sense of urgency and efficiency. Many informal settlements develop within abandoned spaces, or warehouses simply because it is easier to add to something existing as opposed to starting from scratch. This concept was studied through a series of early conceptual models in order to understand the pros and cons of boundaries. Is it possible to control an organic element that wants to grow with a set of boundaries?

In this series of models, the growth was controlled through a systematic addition of limitations (i.e. wires and nails). The

results simply indicated that abrupt boundaries were not able to control the organic object. Relating to the growth of the informal settlements, building walls or forcefully formalizing these neighbourhoods are not solutions and will usually have negative outcomes.



Early concept sketch of a third 'alien' yet common element (red dots) which is dispersed within both sides. This element grows differently according to its local environment and overtime will form an identity which will be shared by the opposing sides.

Results

The result of these experiments were as follows:

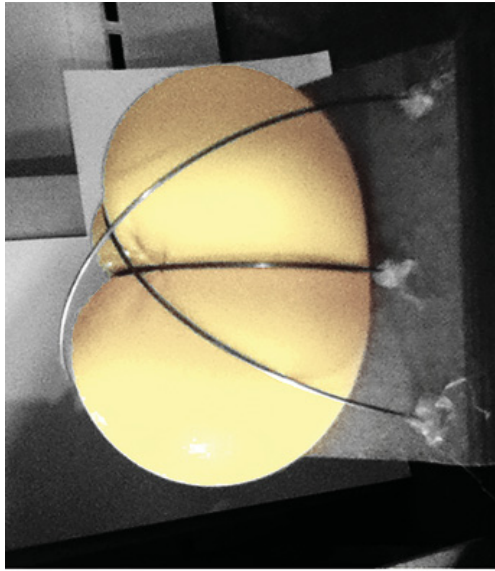
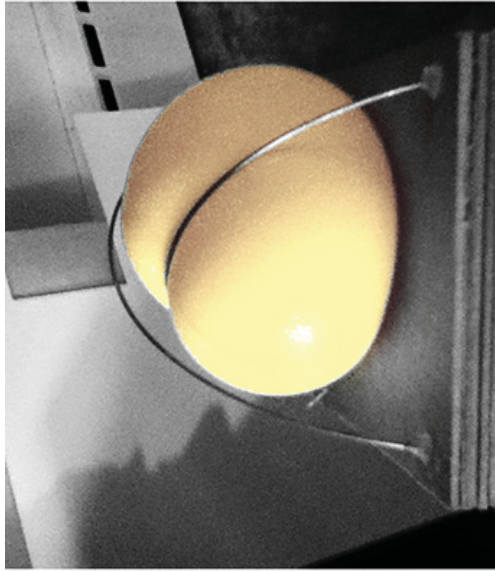
- When faced with two opposing elements:

- Forcing one to be like the other is not a lasting solution
- Having a few set parameters can slowly build on the dialogue necessary for coexistence
- Introducing a third element, *alien* to both sides can grow independently and slowly transform the dynamics and blur the boundaries

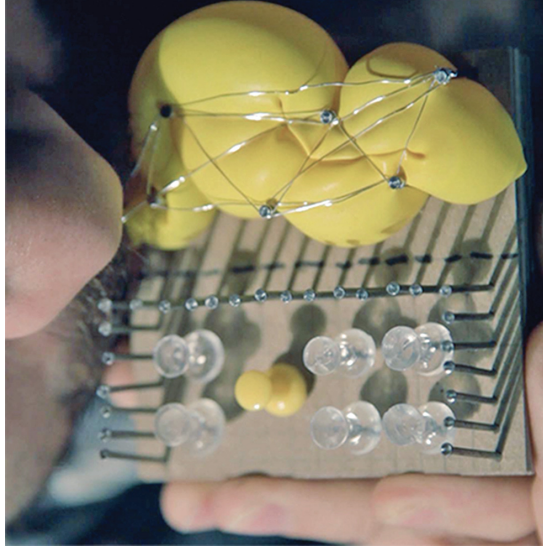
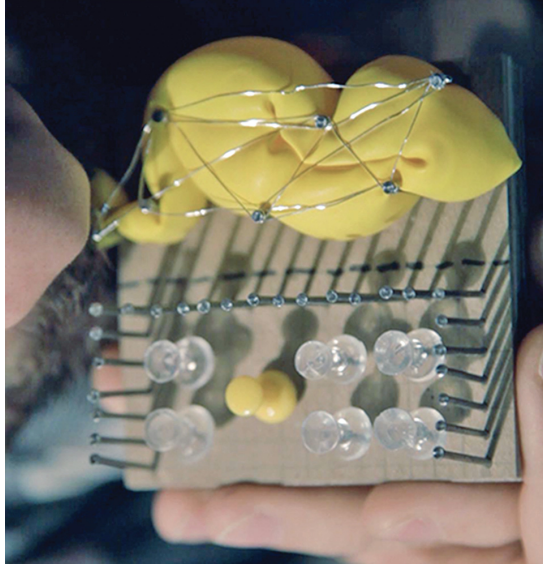
- When faced with an organic element:

- Harsh limitations will only aggravate and encourage further growth
- A progressive set of boundaries can slowly shape the growth to a more desirable dialogue between the two opposing sides.

These experiments were simply the precursor to the more architectural approaches and site specific studies. They were not treated as definite 'scientific' findings but a starting point for this complex reality.



Concept model studying the effects of different boundaries set on an 'organic' object. It started from the tightest boundaries to the largest. The reverse order would be more effective and is the conceptual idea behind the thesis (for the related video, see Moghaddarnik 2013)



Concept model showing the formal on the left, and the informal growth around the infrastructure on the right. By placing different strategic formal structures, the informal growth can be guided and controlled in a more effective manner while leaving room for expansion (for the related video, see Moghaddamnik 2013)

CHAPTER 3: BUENOS AIRES

Visible social contrast on Florida Street, a shopping district in Buenos Aires (Barland 2012)



The social contrast is very clear in the city of Buenos Aires. The rapid growth of the city combined with economic turmoil has resulted in an interesting juxtaposition of the rich and the poor. The population has jumped from 4.6 million in 1950 to 13.6 million in 2010 and is still growing rapidly making Buenos Aires a third world megacity. There are 864 *villas* in metropolitan Buenos Aires, some of which are built directly across from the wealthiest neighbourhoods in the city (Davis 2006, 4). This anomaly was a starting point in the research and findings of this thesis.

Collapse of the Economy & the Rise of the Informal

The economic collapse in 2001 placed more than half the population of the country below the poverty line. Institutions, banks and factories closed their doors on the people of Argentina. Many riots broke out in the historic streets of *capital federal* demanding answers and solutions from the government. However, they were faced with oppressive reactions from the federal police where many were injured and some killed. The country was in turmoil and the result was a sudden drop in the number of middle-class families and the dramatic growth in social inequality.



December 2001 riots in the capital city (Koesnadi 2001)



Photos of the civil unrest in December 2001 in Buenos Aires. The top photo showing the oppressive forces while the photo below shows the angry residents. (Astrada 2001)



December 2001 protests against the banks that blocked access to all funds. (The Telegraph 2012)

The aftermath of the economic collapse affected the lives of thousands who were left unemployed with no homes. However, instead of giving up, the residents fought back. They fought for their right to have a home, their right to work and their right to be a productive member of society. This battle resulted in the rapid growth of the many informal settlements as well as the informal sectors of the economy. Many residents lost their trust for the establishments and the government and began to informally decentralize the powers by forming different cooperatives that were run for the people, by the people.



Graphic representation of the 'recovered factories' movement. (El Abasto 2013)

One of the most significant of these movements was the *fábricas recuperadas*. This was an initiative by the workers of the many bankrupt factories in Buenos Aires who took charge of their lives and the future of the country by 'taking over' the factories and resuming work without any management but their own. This movement influenced many people in the country who woke up from the devastating blow and took charge of their situation. Cooperatives rapidly grew in every sector of the economy and the residents slowly got back on their feet.

The informal settlements in and around the city of Buenos Aires increased with the growth of the informal employment sectors. The hundreds of existing *villas* densified and expanded significantly after the 2001 crisis. Many middle-class families that never imagined living in a neighbourhood referred to as a 'slum' had no choice but to adapt and build themselves a home. Although most of these settlements were outside the *capital* borders, there are a few significantly populated ones within the city as well. The following maps display the growth of these 'interior' neighbourhoods over time.



Province of Buenos Aires showing the hundreds of informal settlements in and around the *Capital Federal* (showing in white) and two of the largest *villas* within the city borders, Villa 31 and Villa 21-24 (base map from Slums Map 2012)

Growth of villa 21-24
(Google 2012)

1978



2004



2009



Growth of villa 31 - 31 bis
(Google 2012)

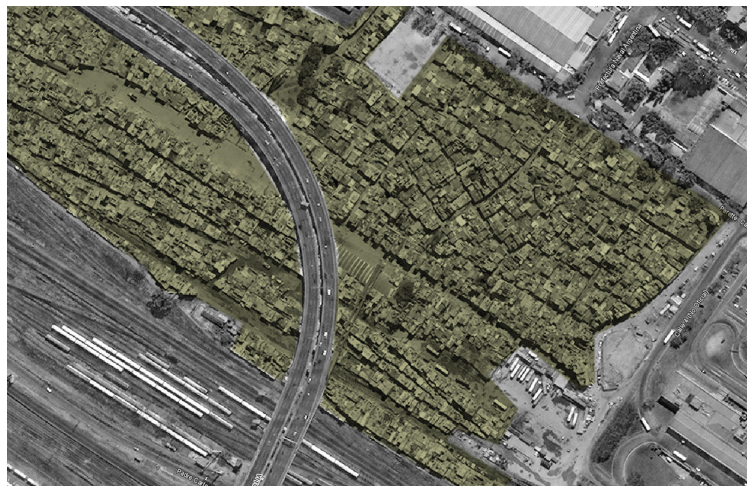
1978

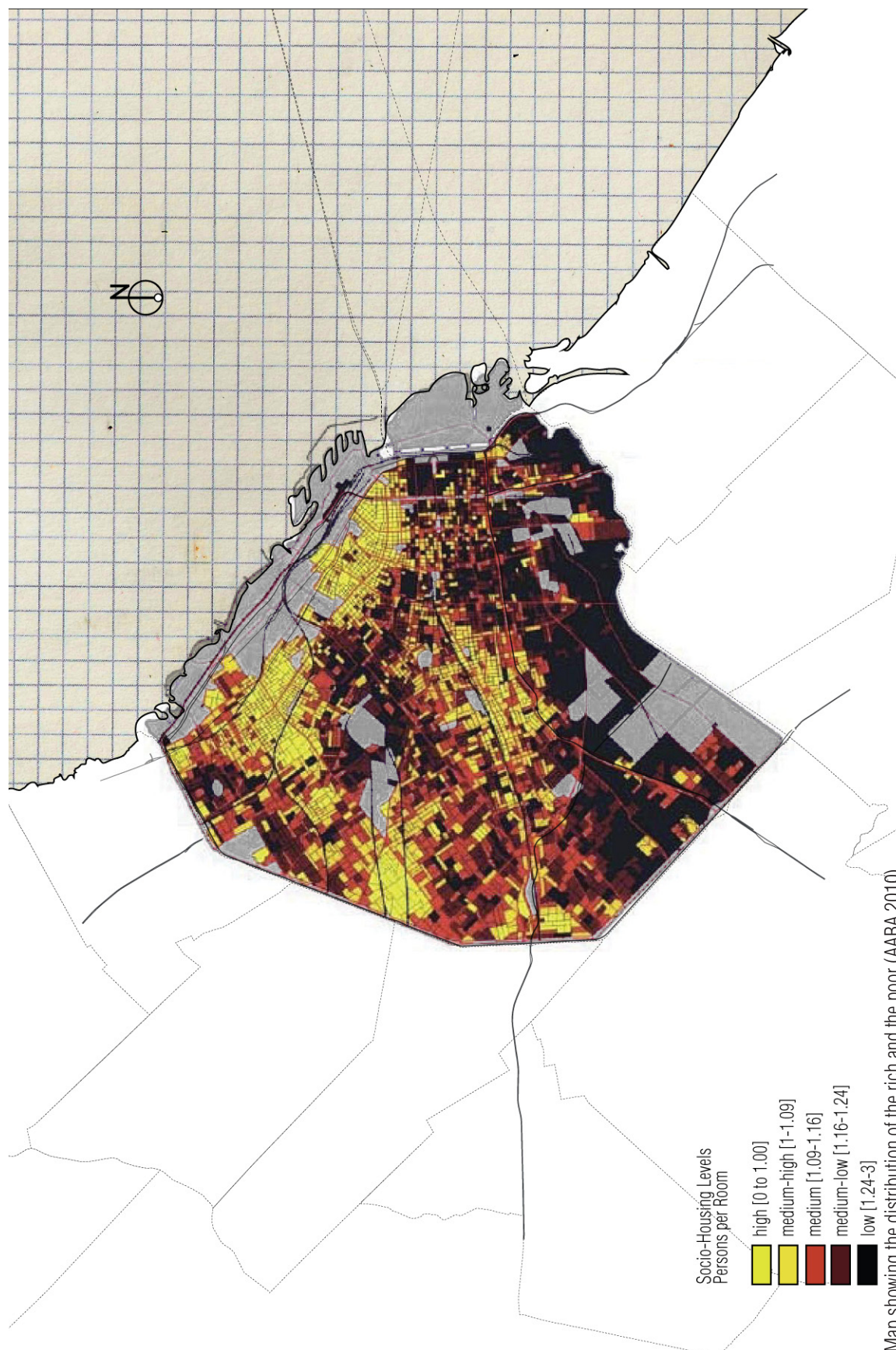


2004

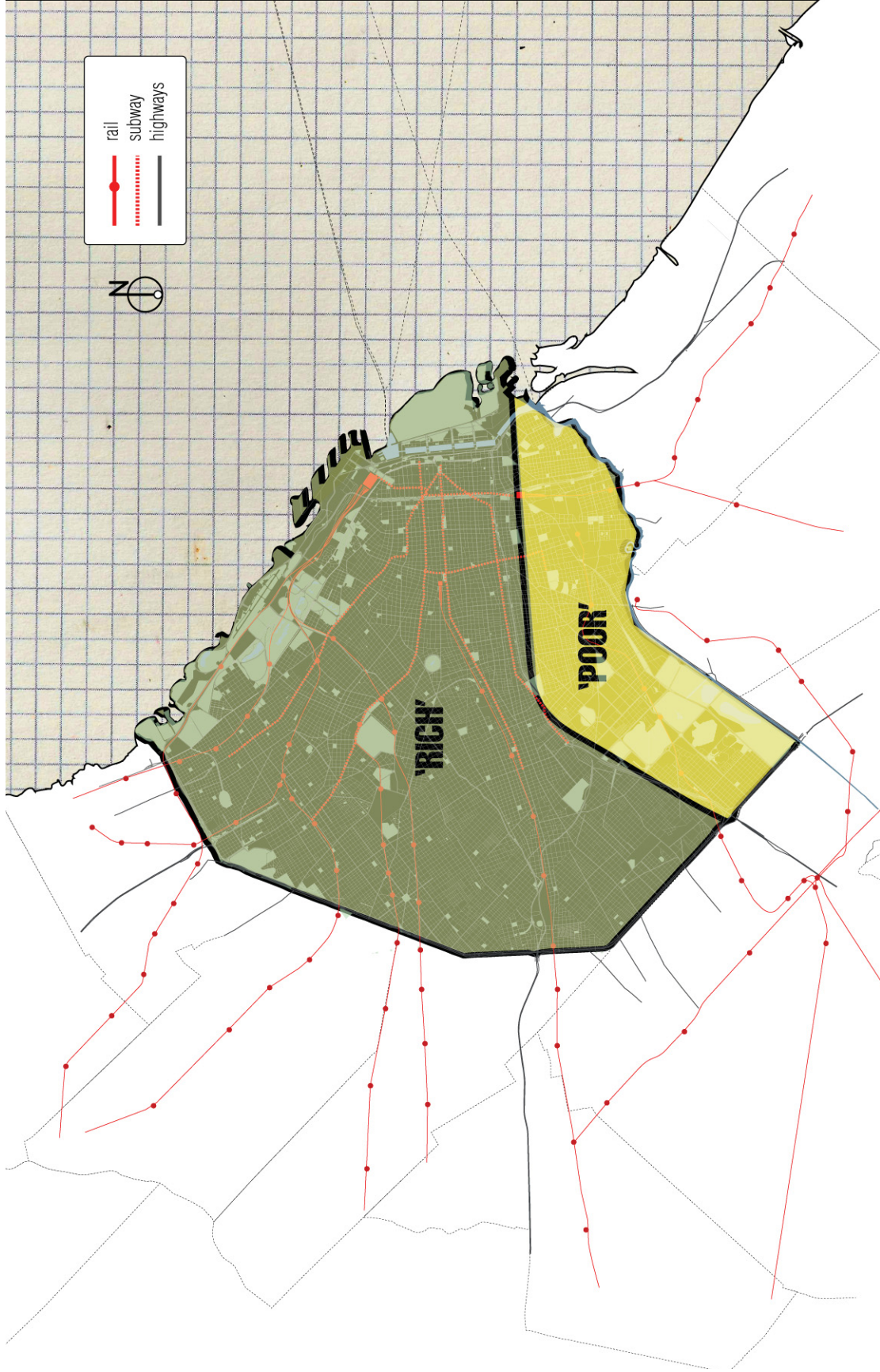


2009





Map showing the distribution of the rich and the poor (AABA 2010)



An interpretation of the city's wealth distribution based on first hand experiences in the city and an examination of the previous map

The Visible Waste

A typical scene in Buenos Aires. This one taken during a garbage strike in 2012 (Entre Tanto Tango 2013)



The city of Buenos Aires suffers a great deal from a lack of an efficient waste management system. The high density of the city and a non-official recycling program has led to a high visibility of trash throughout many neighbourhoods, wealthy and poor. According to statistics, the city produces 5000 tons of trash daily (AABA 2010).

The daily trash produced in Buenos Aires is equivalent to the weight of 5000 VW Beetles.



The city has set a goal to significantly reduce the amount of waste with the passing of *Law 1.854* named *basura cero* [zero waste] in 2007. According to the governmental website, in 2004 the city transported almost 1.5 million tons of waste to the nearby landfills. They want to exponentially reduce this amount by 2020 with a full recycling plan that prohibits the burying of recyclables with the trash (AABA 2010). This initial step plays an important role in the future of the city since the government has acknowledged the seriousness of this matter and the immediate need for action.



New recycling bins throughout the city

Over the recent years, there have been more recycling bins

popping up in different public spaces and venues with not much success. These formal attempts have generally failed

Example of inaccessible large recycling bins in the city, in the wealthy neighbourhood of Recoleta. These are placed next to an 8 lane avenue away from the residences. The location was almost humorous to witness.

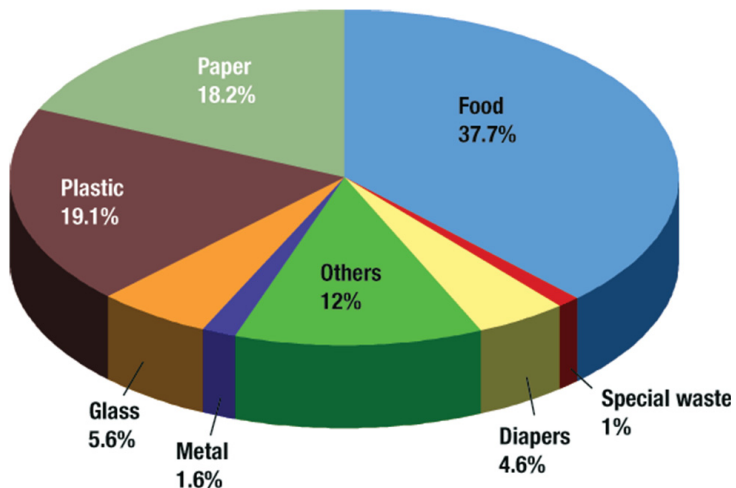


because of the lack of promotion and education in regards to its benefits. The trash bins are still overflowing with recyclables even when they are footsteps away from the new colorful recycling bins. This failure is caused by a couple of reasons. One, this is only addressing the few public spaces that the bins are placed in and the residents are not encouraged to recycle and separate their trash from their homes. This is not to criticize the residents of Buenos Aires; it is a global issue happening in many cities. And two, because the process of waste and recycling is something that we barely know anything about. Therefore, there is a high chance that you are unaware of the benefits of placing that soda bottle in the yellow bin as opposed to the trash bin. This should be a shared responsibility between the city and its residents. The



Typical trash bin. This one located in the highly touristic site of "Recoleta Cemetery"

strategies highlighted in this thesis are to slowly educate the public and to solve an immediate problem with the help of everyone in the city.



Composition of waste in Buenos Aires (Savino 2012)

According to official statistics as shown above, about 40% of the waste produced in Buenos Aires are recyclables and 37.7% food waste. Therefore, it is safe to assume that if these two components of trash are addressed strategically, the city-wide problem with visible trash should decrease significantly.

There are also studies that have shown the correlation between the amount of trash or Municipal Solid Waste (MSW) and the Gross Domestic Product of the city. The results show that

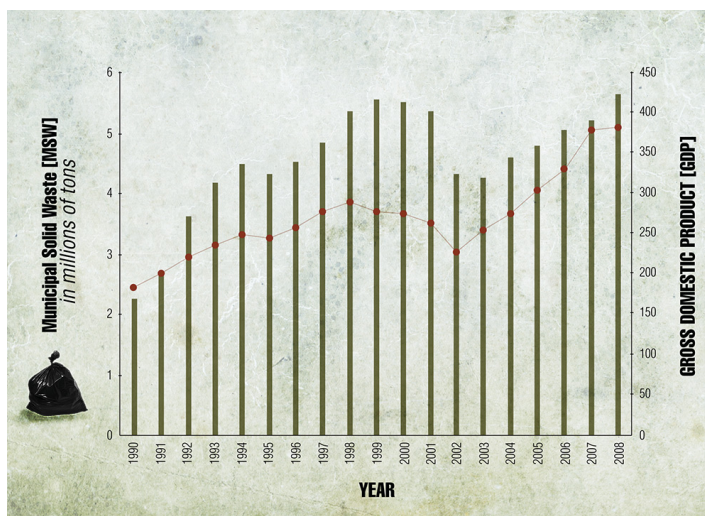


Chart showing the correlation between GDP and the amount of waste produced (data from AABA 2010)

the more money there is, the more trash is produced, which seems like a logical verdict. It is an interesting cycle which involves everyone in the city regardless of social or financial status. The majority of the waste is produced by the wealthiest residents of the city, making their neighbourhoods the highest

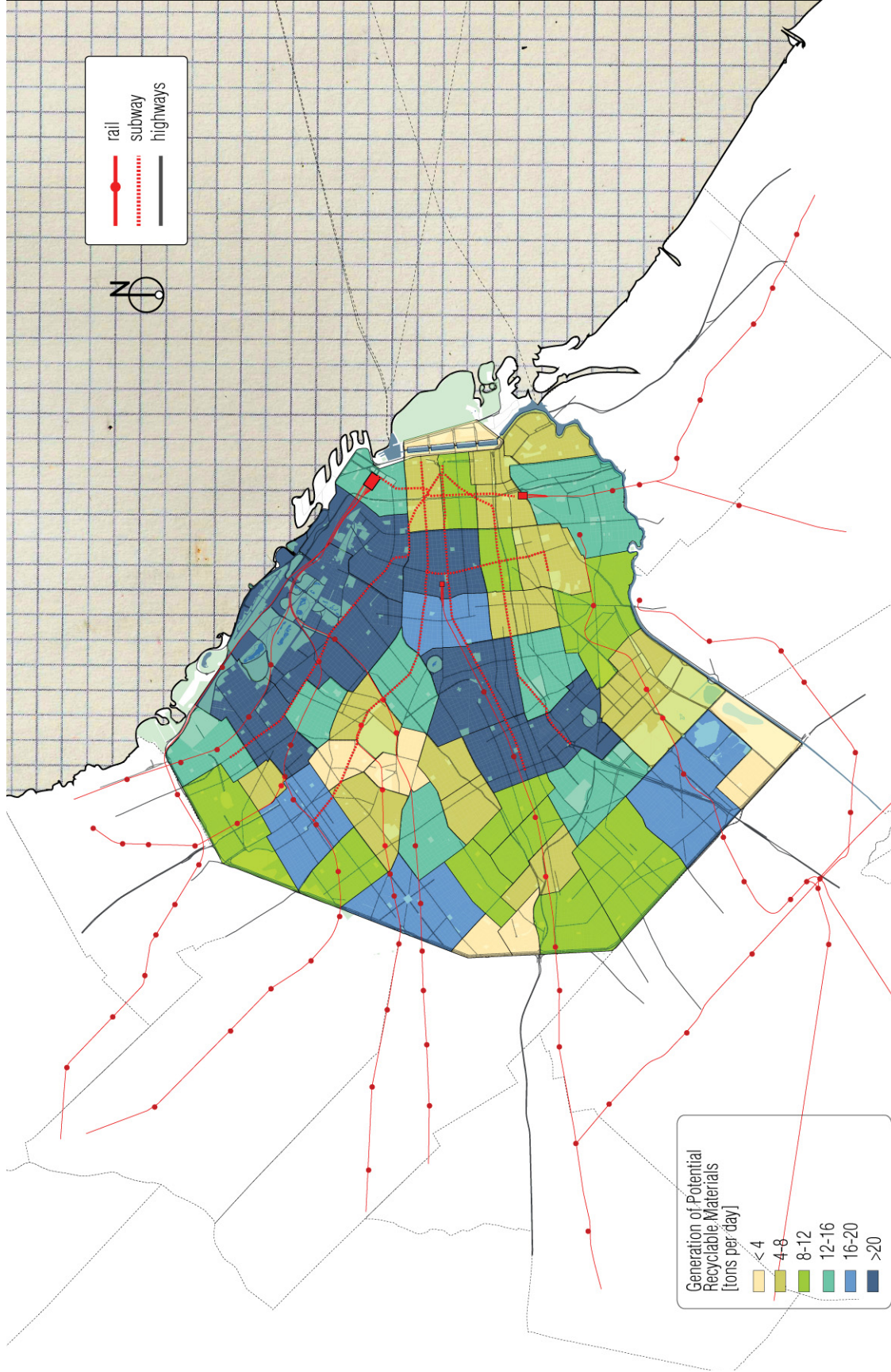
Screen capture from documentary, *Waste Land*, in regards to the waste pickers in the largest landfill in Brazil. The origin of the waste is typically assumed based on its size and the smallest bags are generally associated with the poor (Walker 2010)



producers of recyclable materials as well. As the map on the following page shows, the northern part of the city of Buenos Aires, which includes the wealthiest *barrios*, are producers of more than 20 tons of potential recyclables per day. Therefore, education is not only necessary for the less fortunate but also the large wealthy and middle-class population in the city. The waste pickers or urban recyclers in the city can share their knowledge of recycling and its benefits to the rich. Everyone produces trash and knowing how to deal with it is important not only for the sanitation of the city but also the environment.

Informal Recycling

Contrary to the failure of the provincial recycling programs, the informal recycling sectors of Buenos Aires have been making a difference, especially after the 2001 economic collapse. The high unemployment rate throughout the country resulted in the rise of urban recyclers who became known as the *cartoneros* (cardboard people). After being prosecuted by the police and the government for years, they have slowly



The darkest areas in the North are known as the wealthiest and most expensive neighbourhoods in the city of Buenos Aires (data from CEAMSE and UBA 2011)

proved their legitimacy to the authorities and what started as a means of survival, has become the only successful recycling program in the city. They are no longer getting arrested for picking through the trash in hopes of collecting recyclables. The government started an official registry of the *cartoneros* by calling them *Recuperadores Urbano* [Urban Recyclers] with all the legalities as written in *Law 992/02* in 2003 which would entitle them to uniforms and gloves as well. This was an important step in the progression of these individuals who were simply trying to work in times of financial uncertainty. However, the *cartoneros* are highly discriminated against and are generally ignored by society.

Facebook group with almost 500 members used to ridicule the cartoneros and their work. Comments such as: “haha, forget school, this is my future” is a common trend. The hard work is often disregarded. (Cartoneros Facebook Page 2013)



Similar to the *villas*, this informal system which seems unplanned and unorganized from an outside perspective, is indeed extremely complex and ordered. The *cartoneros* have devised a system which highlights their creativity and ability to work with any given condition. They should be acknowledged and rewarded for this. They come from a variety of backgrounds, professions and families. It is a common misconception that they have always been poor, or they are just being “lazy” and not finding a “real” job. This attitude is not only hurting the individuals involved, but also the city as a whole. Who are these *cartoneros*?

The Invisible Cartoneros

A cartonero on a typical day
(Global Odyssey Travel Blog 2012)



There are an estimated 20,000 *cartoneros* that spend countless hours in Buenos Aires today. They travel from many different parts of the province by truck, train, bike or on foot into the city to collect recyclables. Most of them work everyday starting from dusk picking through the unsorted trash on city streets. They each have a unique story but they all share the fact that they started collecting recyclables strictly for financial reasons and as a means of survival. This informal system can be broken down further into the formal (cooperatives) and the informal (working independently). This chapter will briefly describe their work as well as the important cooperatives that are making a difference for the city and the urban recyclers.

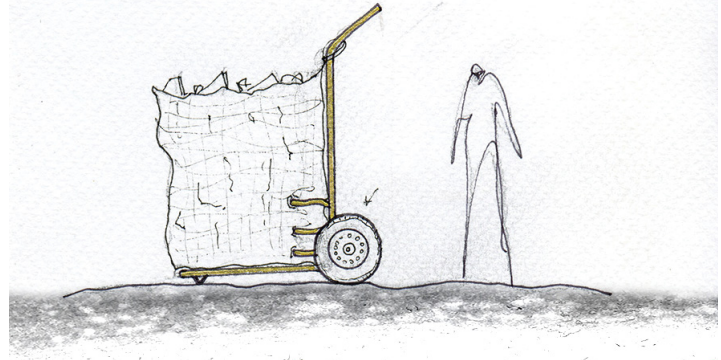
A Day in the Life of



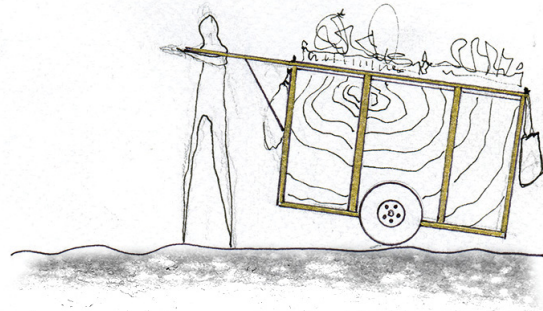
The bags used by most *cartoneros* to carry their recyclables (Verhaert 2012)

The *cartoneros* basic tools include a bag and a wheeled device. The variety depends on the formality and experience of the individual. Their tools can be categorized into two different types: the cart (including subcategories when used with bikes, or horses), and the dolly. Upon close examination, one can immediately see the amount of creativity used to prepare each vehicle. No two are alike and this is not because of a desire to

HAND TRUCKS / DOLLY

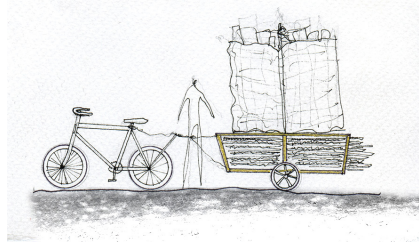


WHEEL CARTS



A study of the typology of the *cartoneros'* tools. They could be narrowed down to variations of these five types: carts, shopping carts, bike carts, hand trucks or dollies and horse wagons.

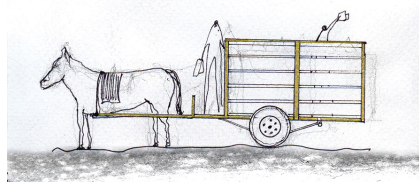
BIKE CARTS

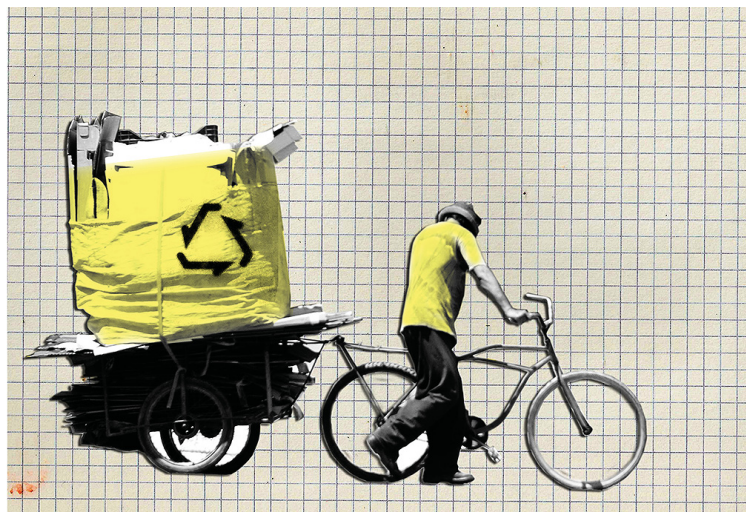


SHOPPING CARTS



HORSE WAGON





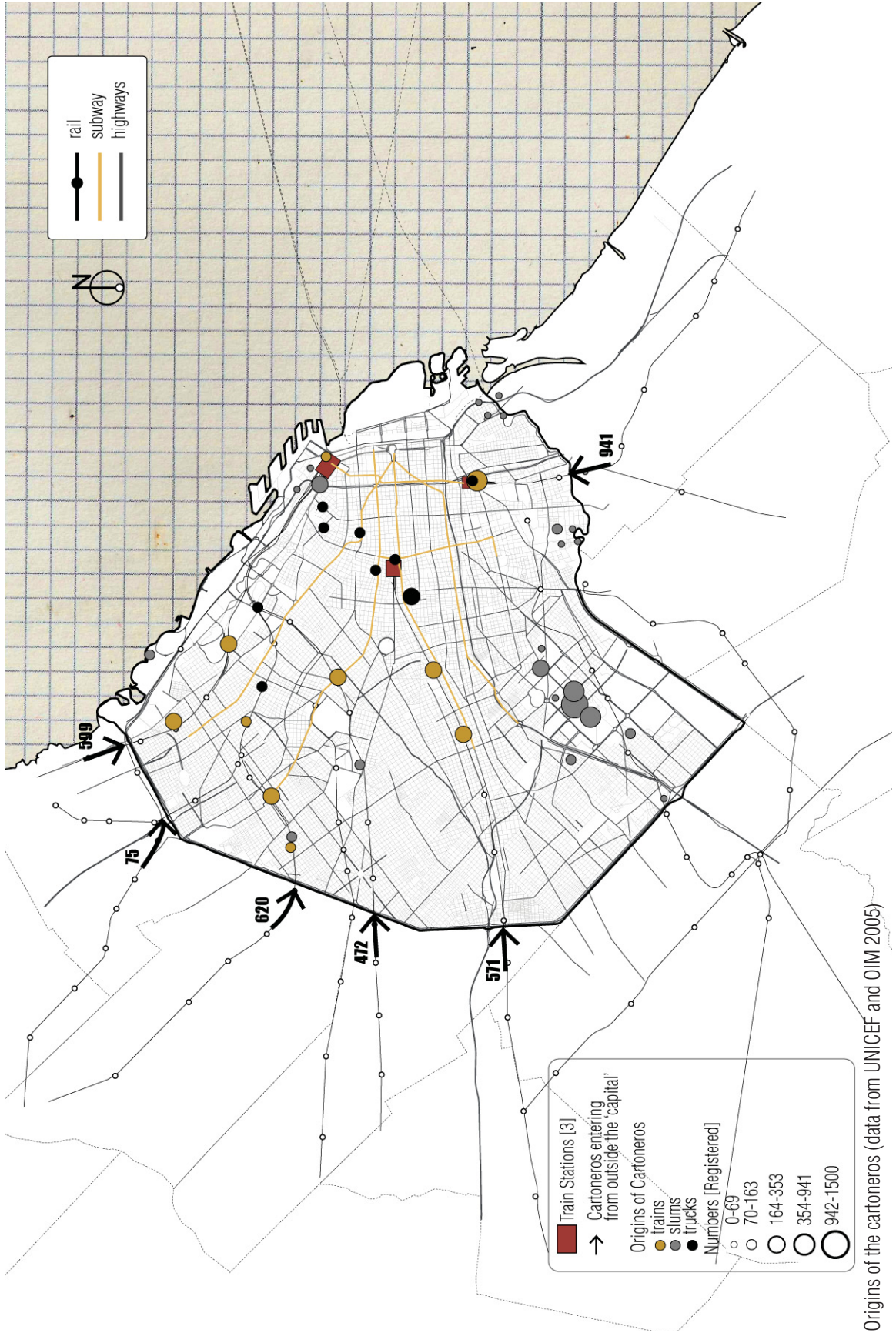
The various means of transport for *cartoneros* in Buenos Aires

be original, but because they are constructed from whatever means possible. This was quite influential in this thesis and the idea that “anything can be something” was explored in the process of the design by using only scraps and found objects for the various models.

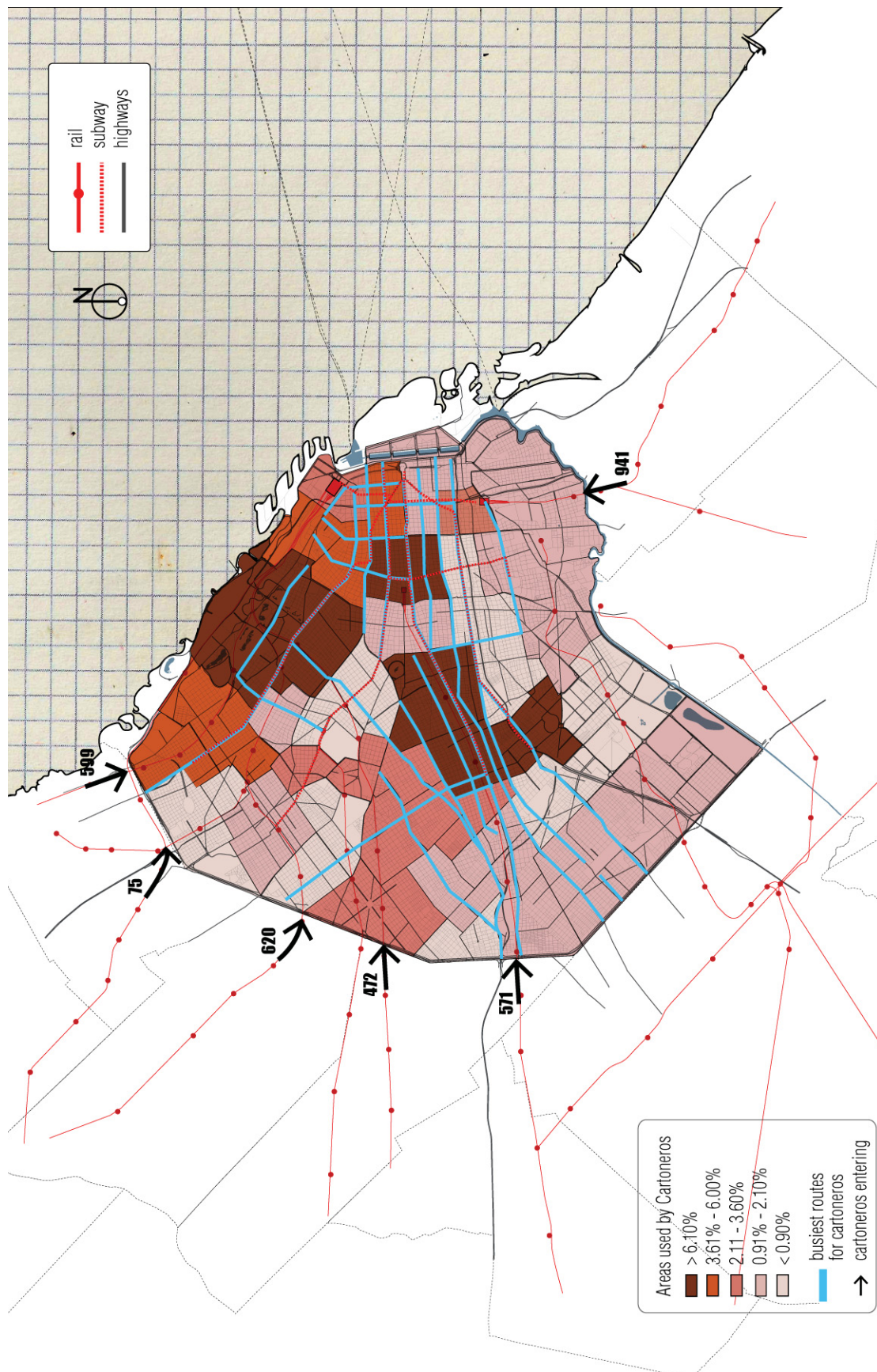


A *cartonero* on a typical day with a bicycle cart made from shopping cart remains (Global Odyssey Travel Blog 2012)

Many of the *cartoneros* live outside the city boundaries and travel back and forth almost everyday, while others live in the various informal settlements scattered throughout Buenos Aires. As shown in the maps on the following pages, the numbers are in the thousands and this is only looking at 25% of the possible *cartoneros* currently working in the city. The rest of the 15,000 unregistered are generally entering from the nearby informal settlements in the surrounding Greater Buenos Aires. The most popular neighbourhoods are where the wealthy reside due to the higher number of recyclables.



Origins of the cartoneros (data from UNICEF and OIM 2005)

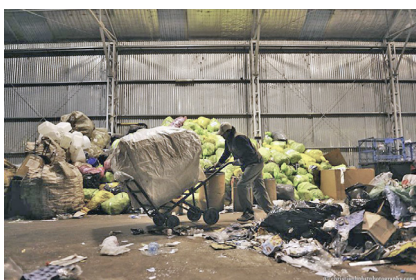


Coinciding with previous map of potential recyclables, the wealthiest areas being the most popular routes for the cartoner (data from Perelman and Boy 2010)

El Ceibo- One of the co-ops where sorting, compacting and shipping takes place (Economia 2012)



Cristina Lescano - Co-founder of El Ceibo Cooperative and forerunner in the legitimization of the informal sector by the formal city (Livon-Grosman 2007)



Inside El Ceibo, the oldest co-op in Buenos Aires (Bobst 2012)

Formalizing the Informal (The Co-ops)

Following the economic collapse in Argentina, many cooperatives were founded due to the lack of trust for the government and establishments that closed their doors on their people. This was also the case in the informal recycling sector. Prior to the forming of the 12 existing cooperatives, many *cartoneros* worked independently earning between \$130 to \$480 Argentine Pesos per Month (\$25-\$100 CAD). When working independently, the recyclables are sold to small collectors who generally do not pay their fair share to the *cartoneros*. However, with the municipal recognition of these *Cooperativas de Recuperadores Urbanos*, the urban recyclers make a steady paycheck of around \$1000 to \$1500 ARG (\$200-300 CAD). Even though it is still not much income, it has made a significant impact on the *cartoneros* who choose to work together. Each co-op has their own centres where storing, sorting, compacting and shipping takes place.

One of the forerunners of these co-ops is *El Ceibo* located in the upscale Palermo neighbourhood of Buenos Aires. It was founded by Cristina Lescano who started work as a *cartonera* but wanted a change for herself and her fellow *cartoneros*.



Cartonero inside El Tren Blanco [the White train] used for transporting them and their findings to/from Retiro 'main' train station (Livon-Grosman 2007)

According to Cristina, it all began in 1989 during yet another financial crisis that hit Argentina. Along with a few women, she founded *El Ceibo* to be able to make a living. This humble co-op is now one of four official *Centro Verdes* [Green Centres] as designated by the municipality in the 2005 Bylaw 1.854/05. As seen in the following maps, the other centres are scattered throughout the city with the largest one being the official "Recycling Plant of the city of Buenos Aires" (AABA 2010).

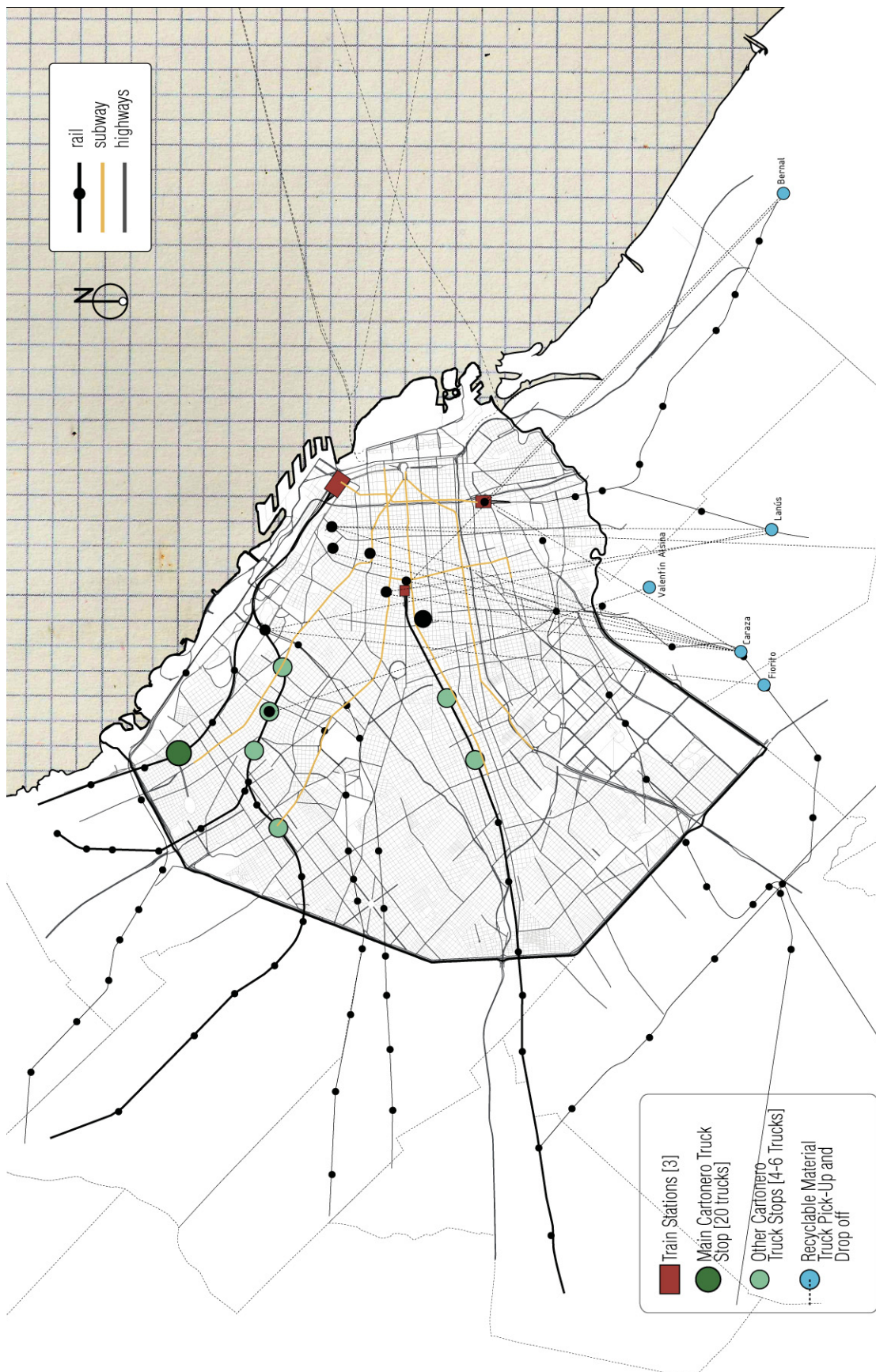
After the collection process by the *cartoneros* and the sorting and compacting within the various green centres or cooperatives, the majority of the recyclables are transported by trucks or trains to the recycling centres if not shipped overseas.



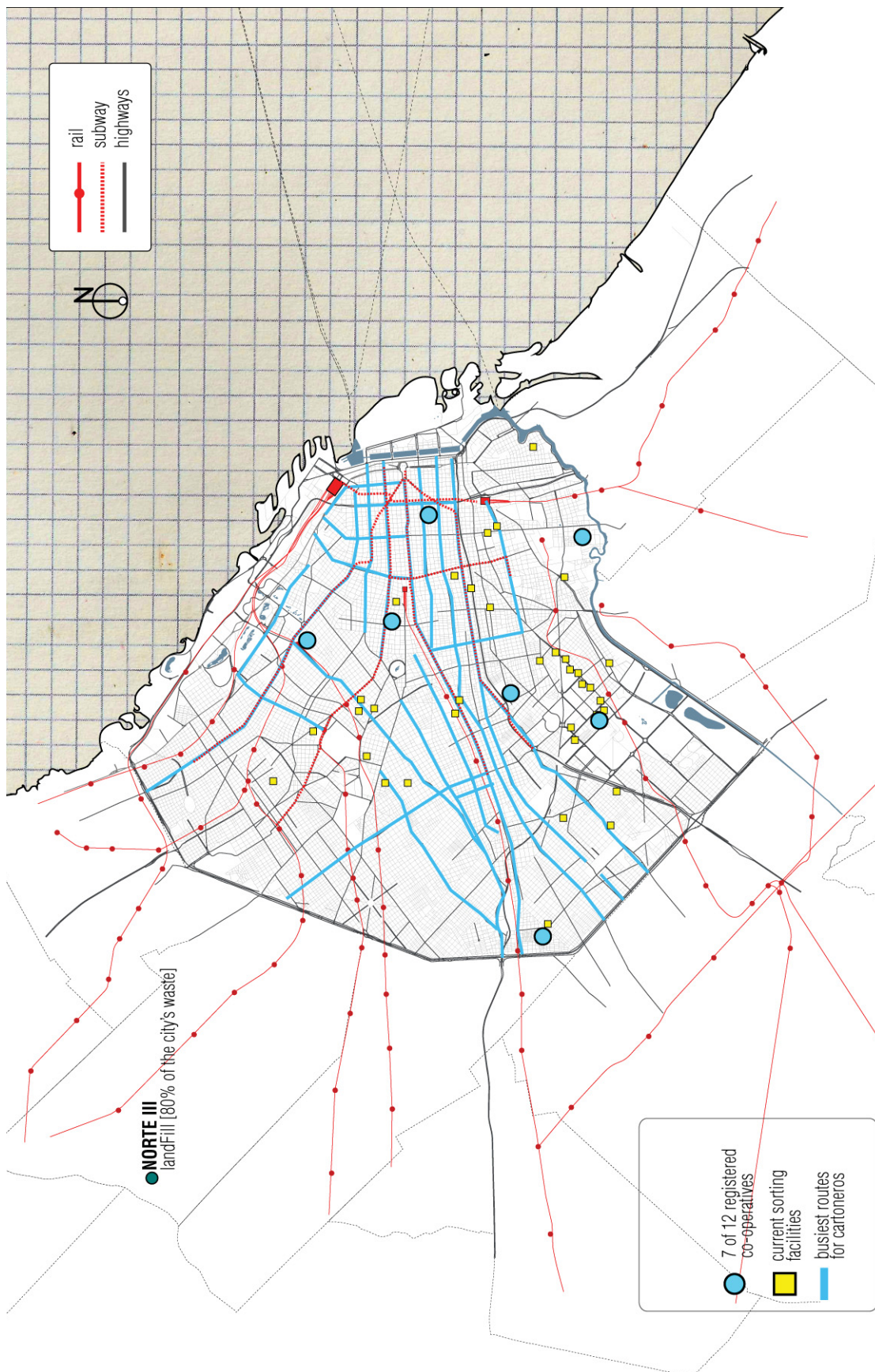
Truck transport at the end of a day's work - many *cartoneros* work with their children and families as seen in this photo. (Rawski 2012)

Social Stigma

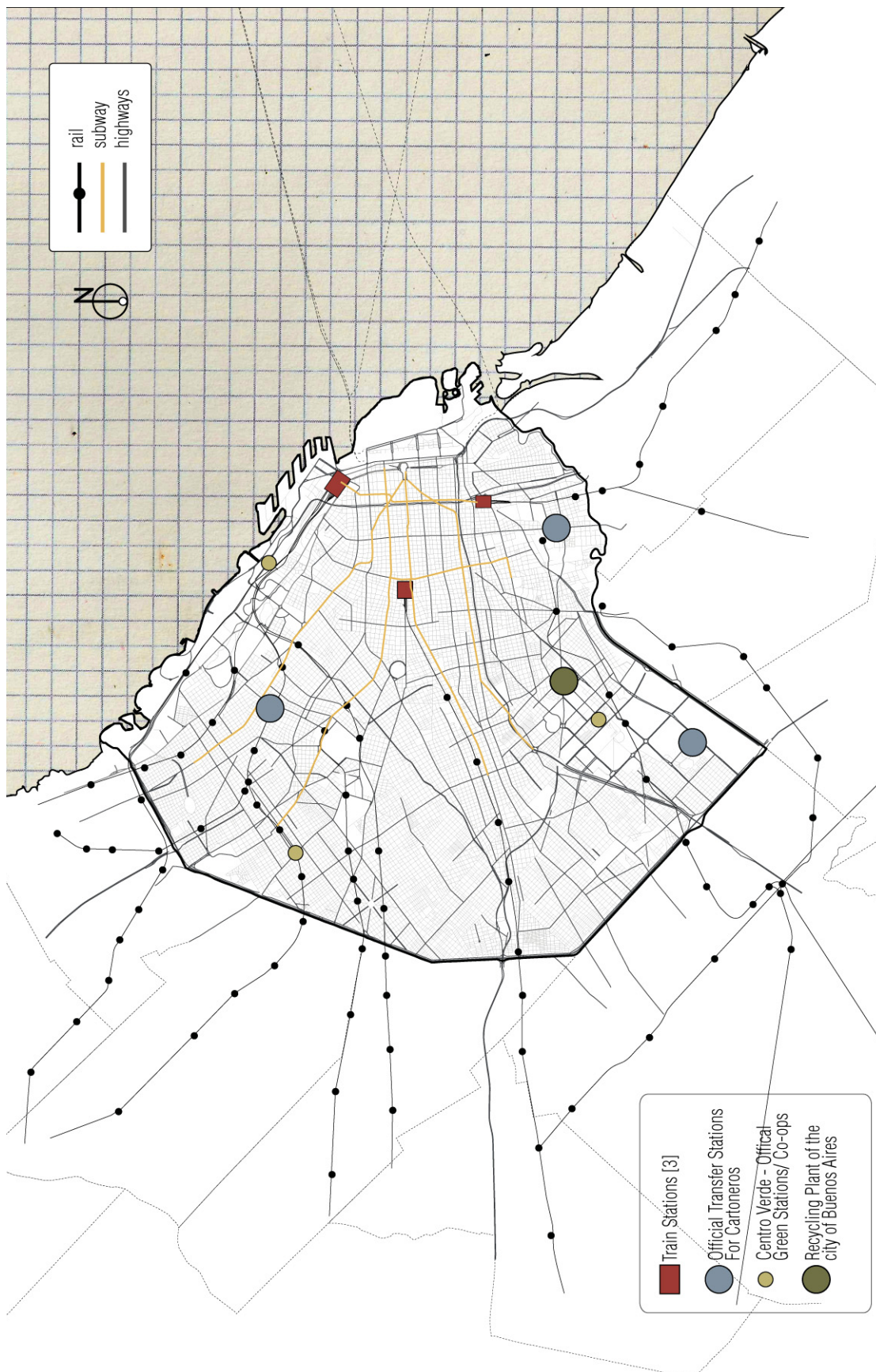
The *cartoneros* are slowly building their identity in the formal city with the creation of the co-ops and protective rights. However, this is only affecting those who have chosen to formalize their informal jobs. There are still thousands who are working



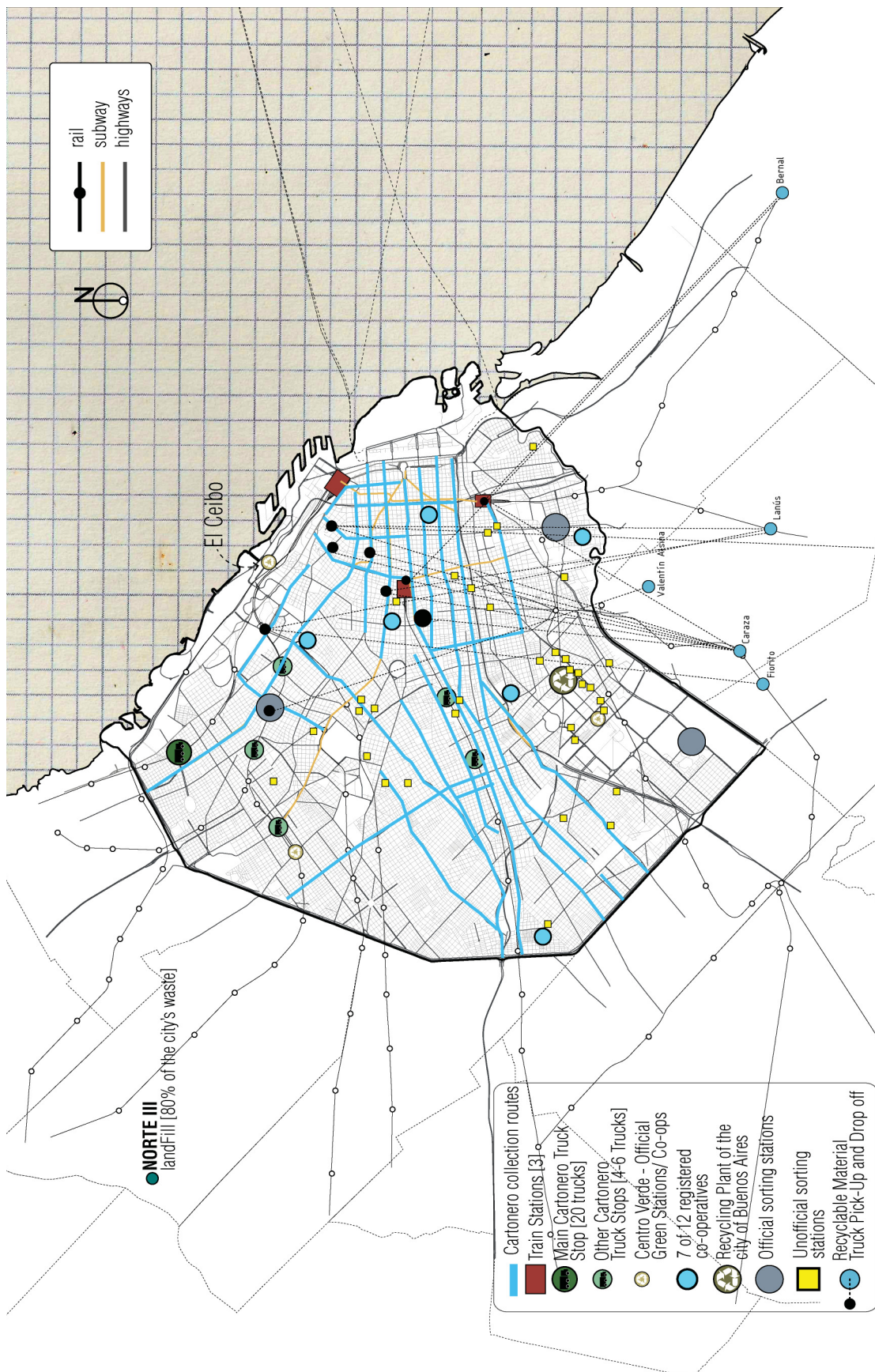
Map of Buenos Aires indicating major truck routes and train stations used by the cartoneros (data from AABA 2010)



Map indicating the registered co-ops, and informal storage/sorting facilities as well as the major walking routes used by the cartoneros (data from Perelman and Boy 2010)



Map indicating the official recycling plant and green centres and the transfer stations where cartoneros drop off their recyclables (data from AABA 2010)



Map indicating the *cartoneros'* recycling activities as well as the various co-ops and green centres (data from AABA 2010 / Perelman and Boy 2010 / UNICEF and OIM 2005)



A cartonera explains the social stigma associated with collected recyclables (Livon-Grosman 2007)

independently and cannot reap the benefits of door-to-door recyclable pickups and a list of clientele (which is part of the routine of handling recyclables within the cooperatives). This is partially due to the lack of a sufficient number of co-ops and recycling centres in the city, but also the informal nature of many *cartoneros* who want to continue working independently.

People look at it as begging. You are not begging. You're asking for work. - Francisco Monzon from Cooperative of Bajo Flores. (Livon-Grosman 2007)



La Colo, cartonera with a master's degree (Livon-Grosman 2007)

Regardless of how they work, they are still marginalized by society and have become almost invisible. Their hard work is often disregarded and there is a sense of anger towards the rest of the city because of that. Not all *cartoneros* are born and raised in poverty. Many are educated individuals who once had their own businesses and never thought they would be picking through trash for money. However, the financial crisis which put 52% of the population below the poverty line had other plans for them. For example, one of the main characters in the documentary called *Cartoneros*, was a female *cartonera* nicknamed "la colo" (because of her red hair) who owned a freight company prior to the crisis and her divorce in 2001, which left her bankrupt with children to support. She holds a Master of Philosophy and Literature and as she said, "I was helping others in my past life." As an independent *cartonera*, she also believes that the people who work on their own are the "most truthful expression" of the urban recyclers. This is



La Colo picking through trash around the city looking for recyclables. Office white paper as she said, is the most expensive recyclable and is the best find for the *cartoneros*. An example of the informal within the informal sector. She works independently (Livon-Grosman 2007)

a common ideology in a society that has suffered greatly from the establishments in the past few decades. The documentary also points out the “individualism” of the *cartoneros* due to their lack of trust for others. This is why many are against joining the cooperatives (Livon-Grosman 2007).

On the other hand, the cooperatives are definitely helping in the legitimization of their profession in the city of Buenos Aires. By consulting with the residents of the neighbourhoods and asking them to voluntarily separate their recyclables they have already initiated a dialogue between the consumers and the collectors. They are raising awareness not only about the urban recyclers but also about recycling and its benefits. They also wear uniforms, gloves, and have special bags with the name of their cooperatives on them which helps their identity in their given *barrios*.

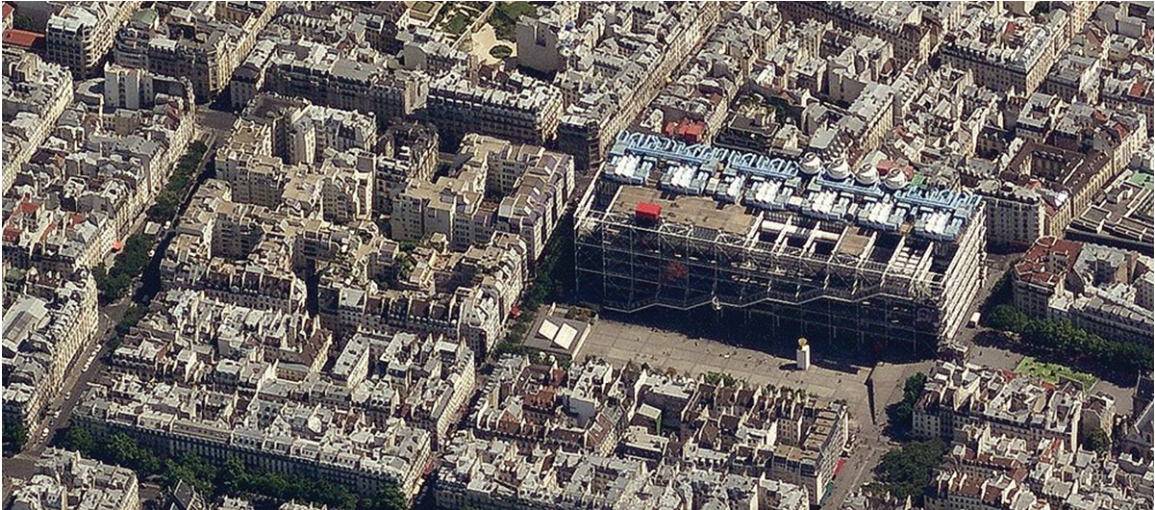


Sergio, a *cartonero* I interviewed in Buenos Aires. He works for MTE (El Movimiento de Trabajadores Excluidos) - The Excluded Workers Movement. One of the formal organizations within the informal sector.

This thesis is trying to address both views in the urban recycling sector; those who prefer to work independently, and those who enjoy the conveniences and benefits of working in cooperatives. By learning from the formal and the informal, the aim is to create a flexible design to satisfy the many involved individuals.

CHAPTER 4: ANTI-THESIS

Beaubourg, Bilbao, Buenos Aires?



Aerial view of Centre Pompidou in Paris
(Bing Maps 2013)

..if you had to have something in Beaubourg, it should have been a labyrinth, a combinatory, infinite library, an aleatory redistribution of destinies through games or lotteries - in short, the universe of Borges. (Baudrillard 1994, 65)

Jean Baudrillard, the French philosopher and cultural theorist dedicated a chapter titled “The Beaubourg Effect” in his book *Simulacra and Simulation*. He criticizes the design and intentions of Centre Pompidou by Renzo Piano and Richard Rogers built in 1977 referring to it as a “miserable anti culture.” This centre was in Beaubourg, a run-down district of Paris which was unknown prior to this project. The Pompidou Centre, a new museum, attracted (and is still attracting) many tourists as well as locals to Beaubourg. Baudrillard passionately argues that this project is not promoting cultural and social awareness of the district but simply using it as a means of promoting ‘rich’ art to the wealthy. He compares the visitors’ impersonal circulation through the neighbourhood and the building to the air and water that passes through the centre’s external ductwork (Baudrillard 1994, 62-65).



Centre Pompidou's exposed ductwork
(Vitamean 2012)



Aerial view of Guggenheim Museum in Bilbao, Spain (Bing Maps 2013)

The idea of building a ‘jewel’ in a city to attract visitors is quite common especially in contemporary architectural practices, for example the Guggenheim museum in Bilbao by Frank Gehry which was the cause of the so-called “Bilbao Effect.” This project boosted the economy of Bilbao significantly. Tourists are flocking to the city just to see this architectural wonder. The economic advantages of the project are clear, but the socio-cultural aspects are comparable to Beaubourg. The visitors are simply blinded by the “alien” object and could care less about the city that it resides in. As Joan Ockman of Columbia University says, both the Pompidou and the Guggenheim Bilbao are “alien objects dropped in from another world,” but it makes a difference where it is dropped and what the long-term consequences are (Lubow 2003).



Puerto Madero, Buenos Aires (Google Earth 2013)

Buenos Aires suffers from a less successful project that was intended to attract visitors and tourists. *Puente de la Mujer* is a pedestrian bridge designed and built by the office of Santiago Calatrava in the wealthy neighbourhood of *Puerto Madero*. This project was encouraged by an advertising campaign to promote this newly built luxurious neighbourhood. This 6-million dollar bridge is 300 metres away from two existing bridges, in both directions - an 8-minute walk. It spans over a

Puente de la Mujer by Santiago Calatrava built as a landmark for the revitalized neighbourhood of Puerto Madero - an investor destination with little use for locals (Calatrava 2001)



man-made canal and its sole purpose was to be a landmark. A project like this affects the city as a whole, especially since one of the largest informal settlements is a few blocks south of this “rich” neighbourhood. It is not the intention of this thesis to follow in the footsteps of such projects. The utopian idea of a magical architectural project that can save a city or revitalize a culture is heavily questioned. The emphasis is on the creativity of the residents and the slow “organic” transformation or as Slavoj Zizek puts it - a *True Utopia*.

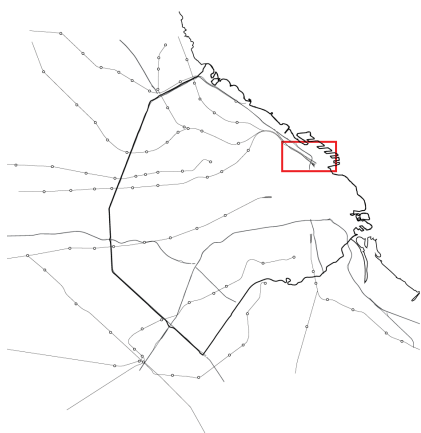
The true utopia is when the situation is so without issue, without a way to resolve it within the coordinates of the possible that out of the pure urge of survival, you have to invent a new space. Utopia is not a kind of a free imagination, Utopia is a matter of inner most urgency. You are forced to imagine it as the only way out... And this is what we need today. (Slavoj Zizek quoted in Taylor 2005)

CHAPTER 5: THE SITE, THE CITY

Two Sides of the Track - Recoleta and Villa 31



Aerial view of the contrast (Google 2013)



The chosen site within the *Capital Federal* showing its 'northern' location near the port and the wealthier neighbourhoods of Buenos Aires

The site for this thesis is the most controversial formal/informal condition that currently exists in Buenos Aires. It is heavily charged and has been the topic of debate for the residents and politicians for decades. On the formal side, it is the bourgeois neighbourhood of Recoleta - considered the most expensive real estate in the *capital*. On the informal side across the railway tracks is Villa 31 and 31 bis, one of the largest and fastest growing informal settlements. It is also the only one in the wealthier northern part of the city. Its unique location is the result of 50 years of growth which began with mostly Italian immigrants working in the nearby port. Now it houses an estimated 30,000 inhabitants (10,375 families in 6210 homes). Contrary to what the formal city assumes, 57% of the residents are Argentine, and the rest are 14% Bolivian, 13% Paraguayan and 7% Peruvian (Lavaca 2011, 5).

Both neighbourhoods are in a prime location, however only one really reaps the benefits. The informal city is quite separated from the formal and currently there is no direct access across the tracks. The residents from Villa 31 have to walk about 50 minutes in order to get to the other side where it would be

Aerial view of Villa 31 and Recoleta across the tracks (Katz 2012)

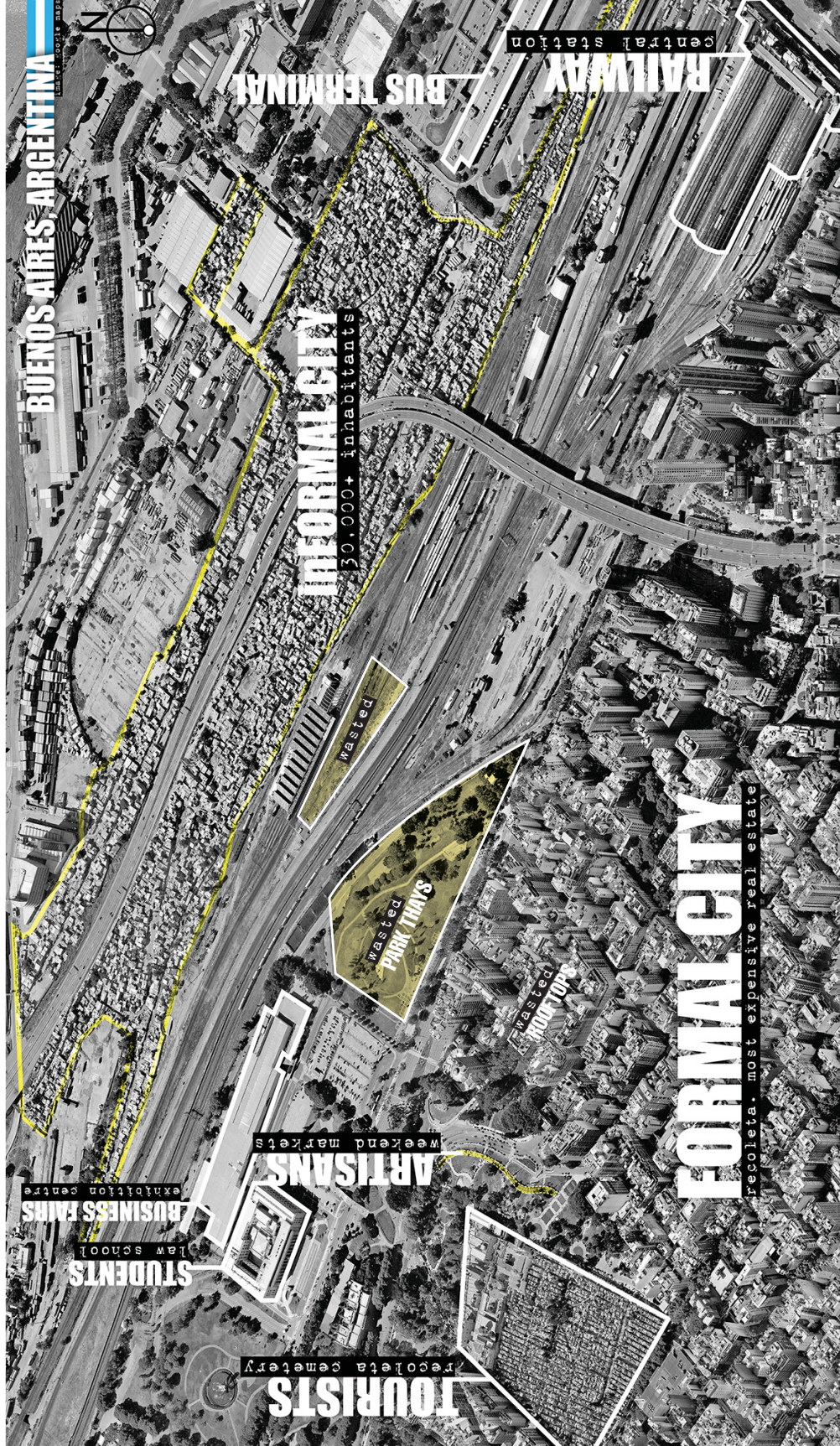


a 5-minute walk via a direct route. This trip is significantly longer for the *cartoneros* that are travelling with their carts. Other important aspects of the site include the variety of users in the area: artisans, students, businessmen and -women, art lovers, the rich, the poor and the many travellers visiting some of the most popular tourist destinations in the city: Recoleta Cemetery and the Museum of Fine Arts. All these facts along with the availability of the many *wasted* spaces, and the variety of existing vehicular and pedestrian routes made this site the perfect location for the execution of this concept. The site is only a testing ground for the grand idea of blurring the social boundaries and the concept could essentially be applied to other sites throughout Buenos Aires with varying results.



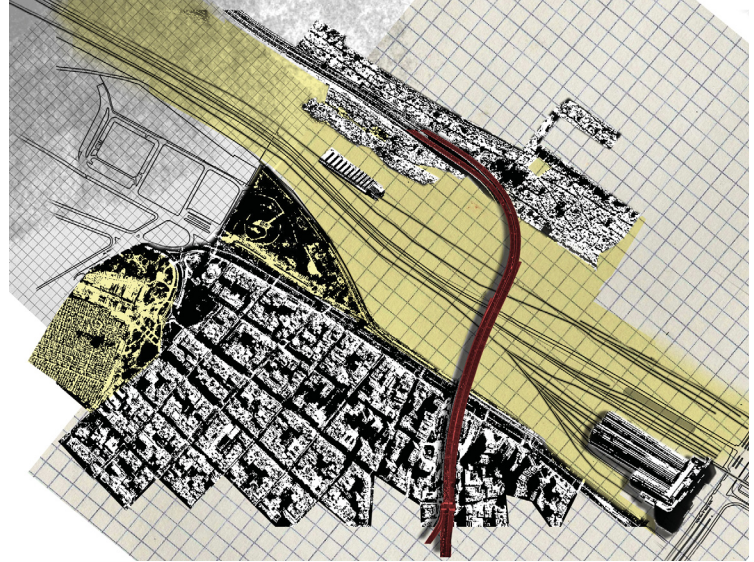
The contrasting elevations, Recoleta on top and Villa 31 at the bottom

Both Recoleta and Villa 31 are a crucial part of Buenos Aires and this thesis aims to expose their interdependence through the *cartoneros* and the various architectural phases.

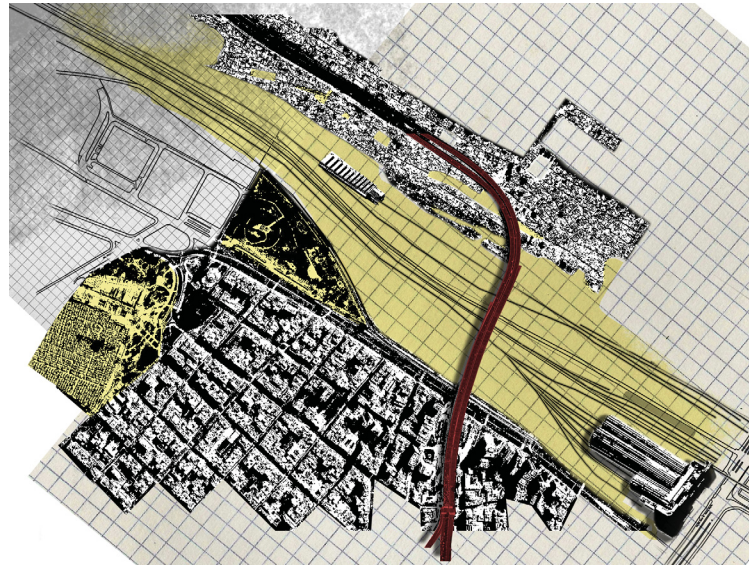


Aerial view of the site indicating the contrast between the two opposing sides and the different 'wasted' opportunities that this thesis will be focusing on: formal city rooftops, the underutilized Park Thays and the unused land within the train tracks. (base map from Google 2013)

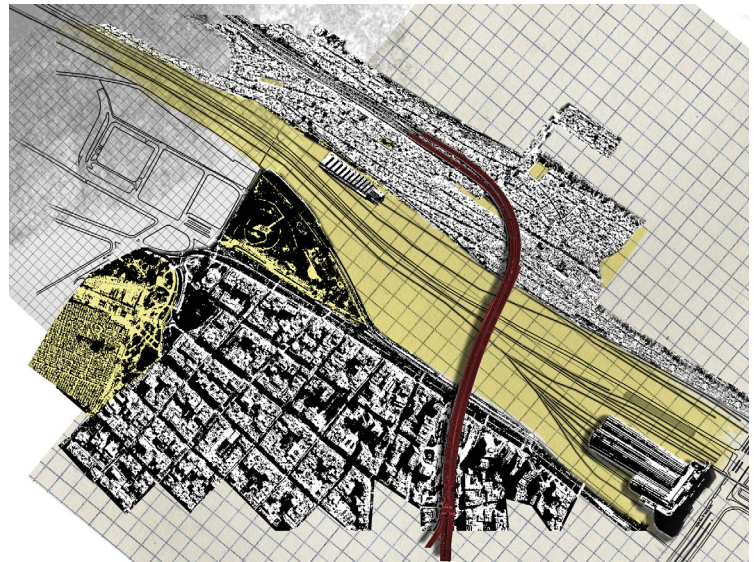
Growth of Villa 31
(Google 2012)



2001



2006



2012



Formal City - View of 9 de Julio Avenue, named the widest avenue in the world which connects the North to the South of the city of Buenos Aires (Wikipedia 2013).



Plaza de Mayo - One of the many public spaces in the formal city of Buenos Aires surrounded by colonial architecture. These neighbourhoods are the reason behind the labeling of the city as the “Paris of the South”.



Villa 31 - The newly painted homes and the temporary markets surrounding the public space are a reminder of the life in this struggling neighbourhood and the need to be recognized by the formal side. (Mercopress 2013)



Villa 31 - View through the narrow alleys of the informal city



Villa 31 and Recoleta- The multitude of the existing layers in the city of Buenos Aires. The colorful informal city in the foreground and the formal city in the background (Lólo 2013)



1:100 model of a typical housing block in Villa 31



Recoleta - View from Park Thays towards the formal city. The excessive number of public spaces in this part of the city has resulted in many underutilized spaces with little to no use by the public.



Villa 31 - Photo taken from the highway that cuts through the neighbourhood crossing the railway tracks. Shows the much more lively yet 'dry' public spaces in the informal settlement. Soccer is the most common activity in Argentina, so many of the public spaces are built around a soccer field.



Feria de San Telmo - Typical Sunday market in one of the oldest neighbourhoods of Buenos Aires. The street has been pedestrianized for the selling of artisanal goods. This practice is very common in the city and benefits the artisans and also the tourists and shoppers who get unique hand-made goods while interacting directly with the people that produced them. (Wikipedia 2013)



Recoleta weekend *feria* beside the Recoleta Cemetery. Every weekend the plaza is taken over by temporary market stalls, performers and buskers. The project is aiming to act as an extension of this already existing phenomenon.

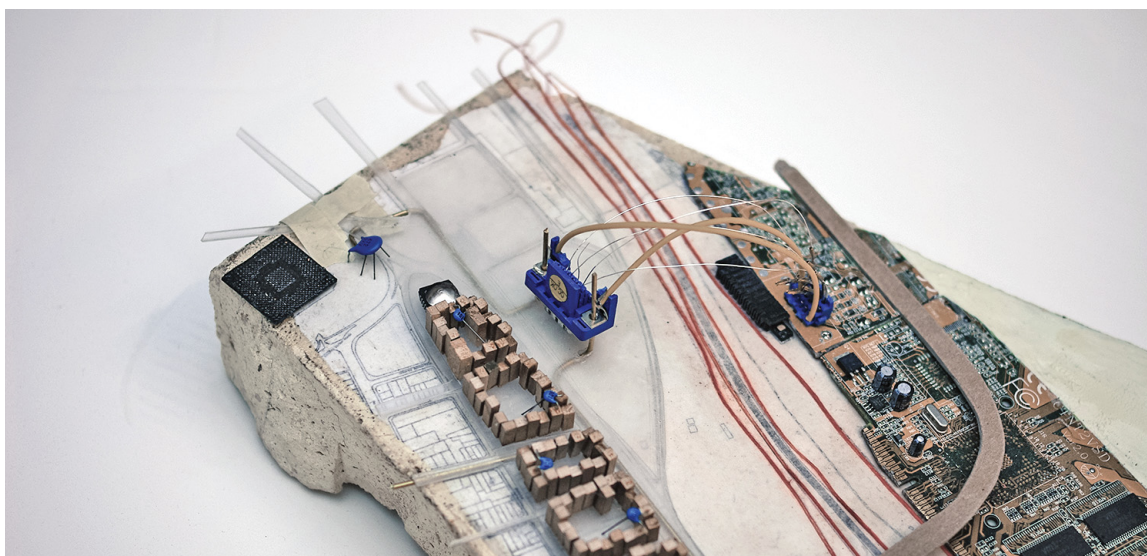


MTE - El Movimiento de Trabajadores Excluidos (The Excluded Workers' Movement) is one of the larger *cartonero* cooperatives in Buenos Aires. Here they are shown selling recycled goods at a local design market (MTE 2013)



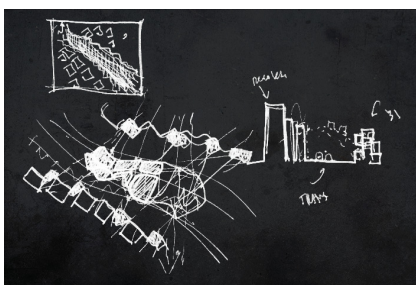
Selling hand-made objects is a very common practice in Buenos Aires. The use of recycled materials has become more apparent throughout these *ferias* (MTE 2013)

CHAPTER 6: THE METAMORPHOSIS

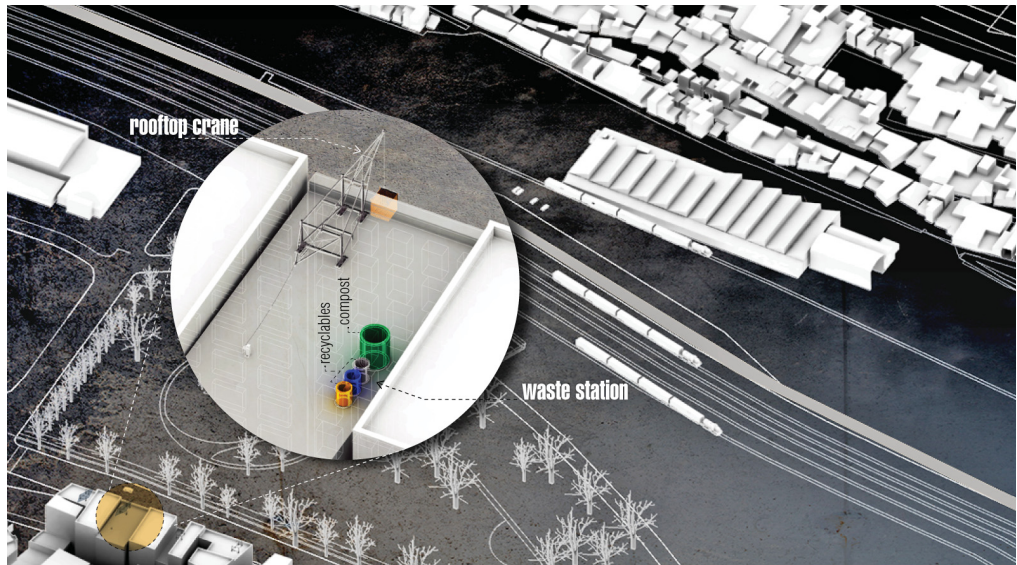


1:5000 model of the chosen site. The formal city to the left and the informal to the right. The blue 'creatures' are part of the proposed concept.

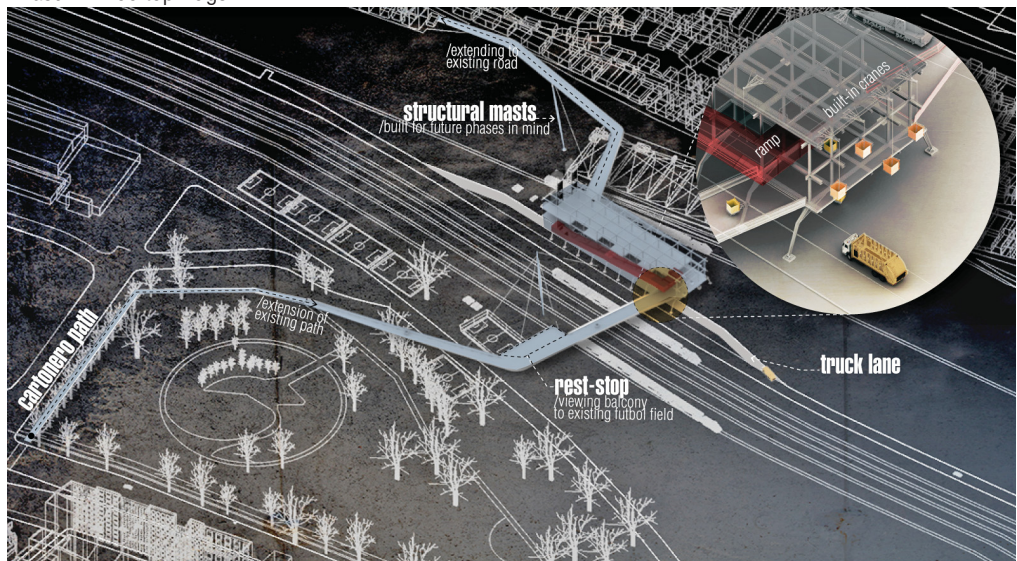
The first stage of this social metamorphosis begins with identifying the existing elements within the city. The seed from which this transformation will grow from already exists within the system. In order to effectively make a difference in the larger city scale these changes have to start from the individuals. The *cartoneros*, although invisible, are the individuals who have already crossed the social boundaries and the first phase begins with highlighting their importance in the formal city and building on their identity as contributing citizens. They are the third existing element that has already started to blur the boundaries between the two opposing ends. This proposal aims to initiate this bottom-up transformation by trusting the energy and creativity of the individuals involved. The following pages will outline the different phases of the project which were imagined for a 10- to 20-year period of continuous metamorphosis beginning with the rooftop bugs leading to the large public plaza (*Plaza la Cartonera*) over the existing train tracks. These structures are understood as taking on their own life after their formal construction. There are 6 distinct calculated phases which will be discussed individually.



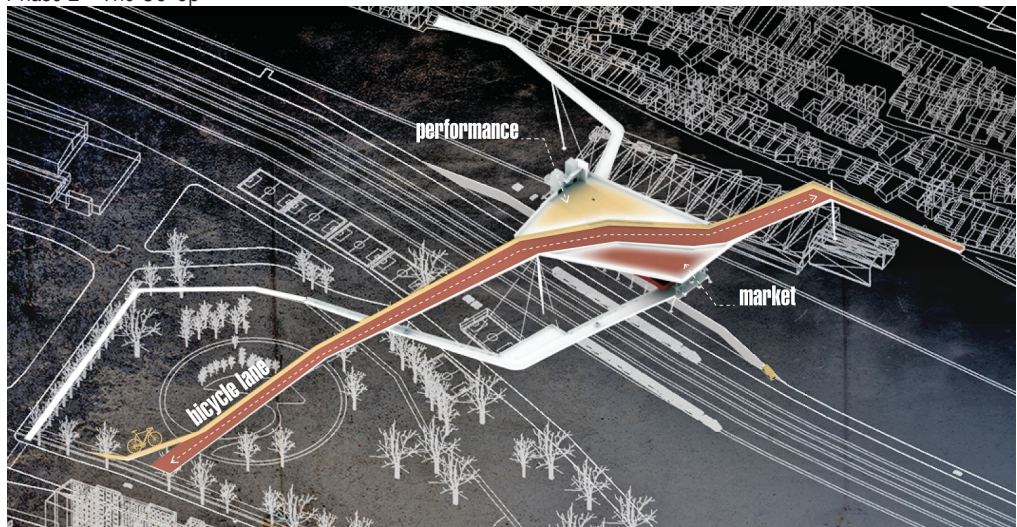
Concept sketch showing the growth of this element on both sides slowly gravitating towards the centre



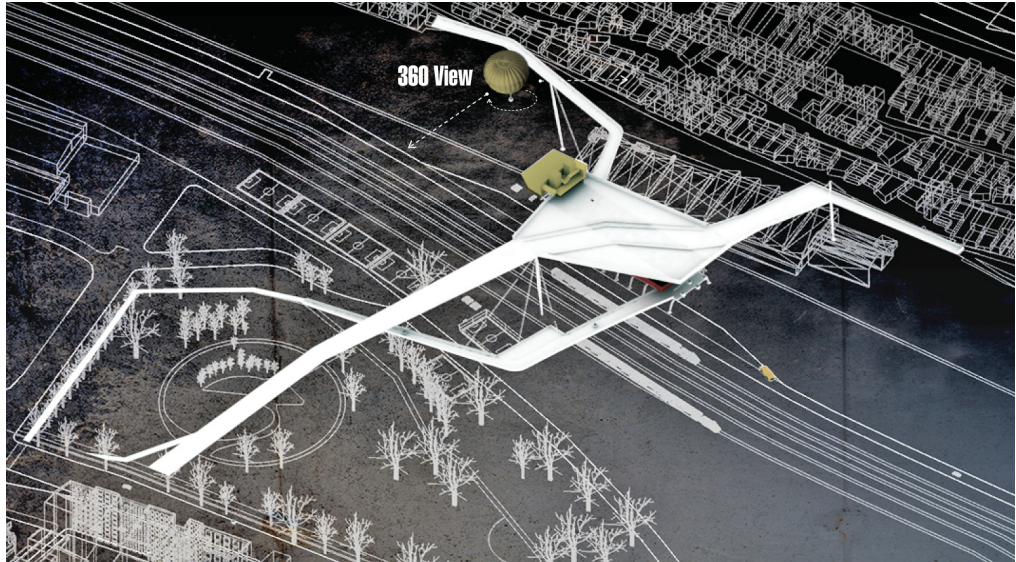
Phase 1 - Rooftop Bugs



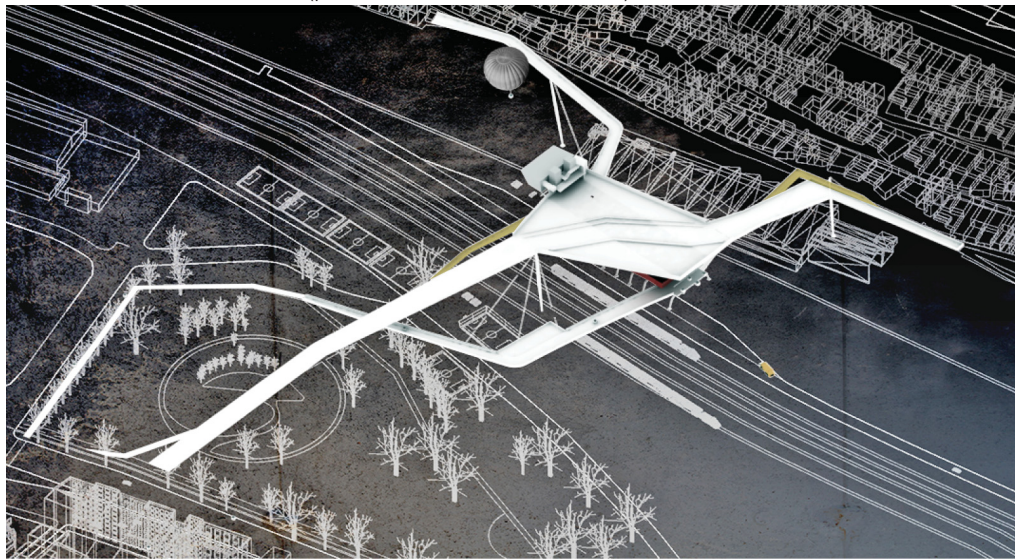
Phase 2 - The Co-op



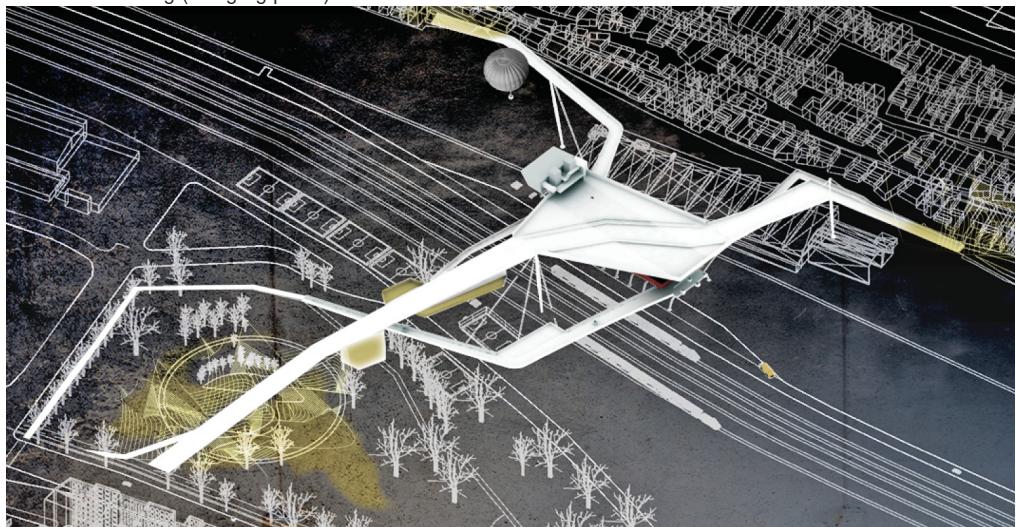
Phase 3 - Public Plaza (*Plaza la Cartona*)



Phase 4 - View to the other side (platform and solar hot air balloon)



Phase 5 - Blurring (Merging paths)



Phase 6 - Informal growth



Buildings under construction in the formal city of Buenos Aires (Skyscraper City 2008)

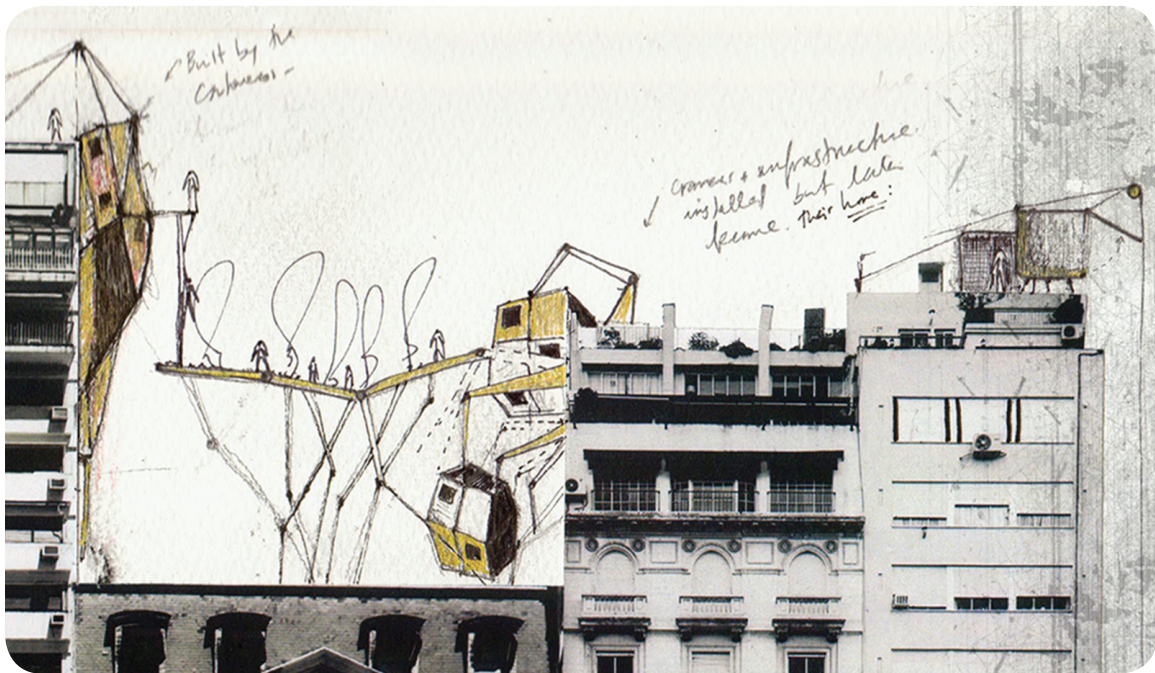
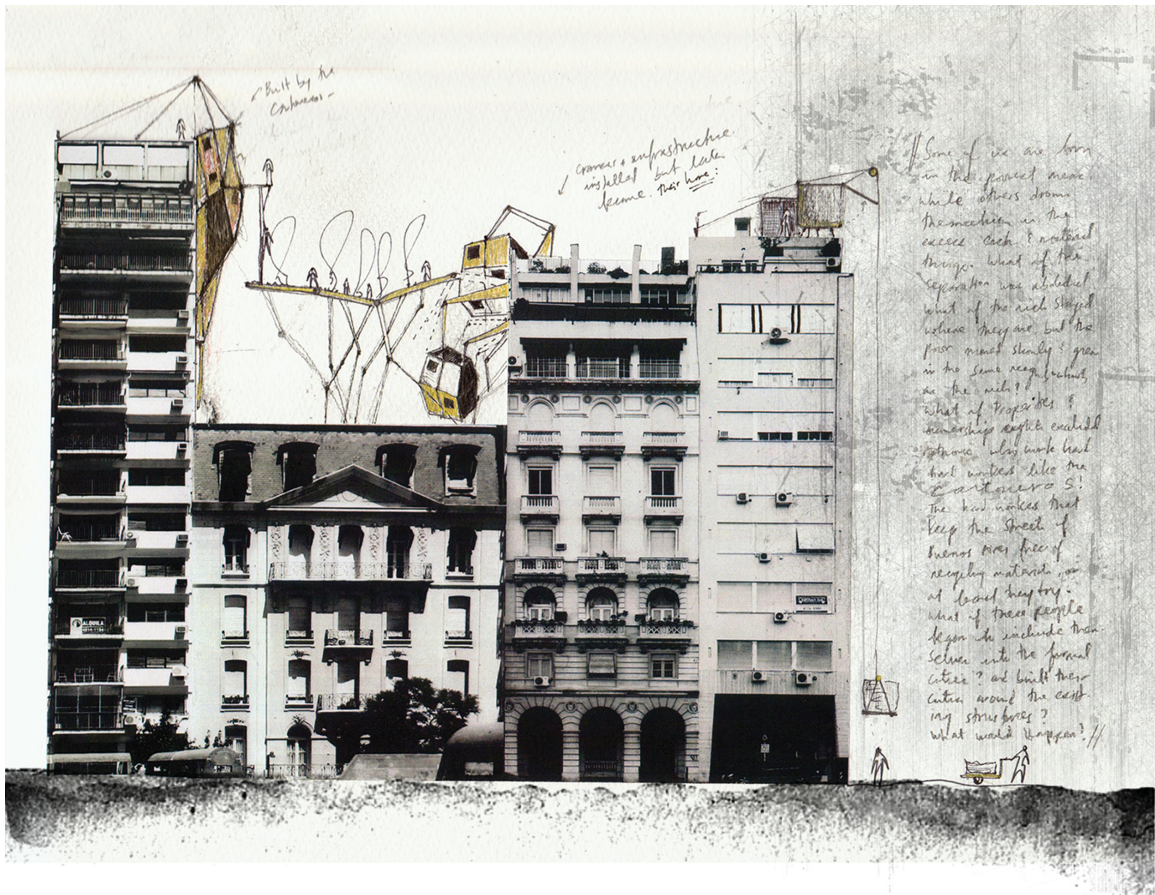
Phase 1: The Rooftops

You build a city,
 You build more on the city,
 You maintain the city,
 You allow the city to be under construction,
 Some for years,
 Some for decades,
 Who is to say how long this 'construction' goes on for?

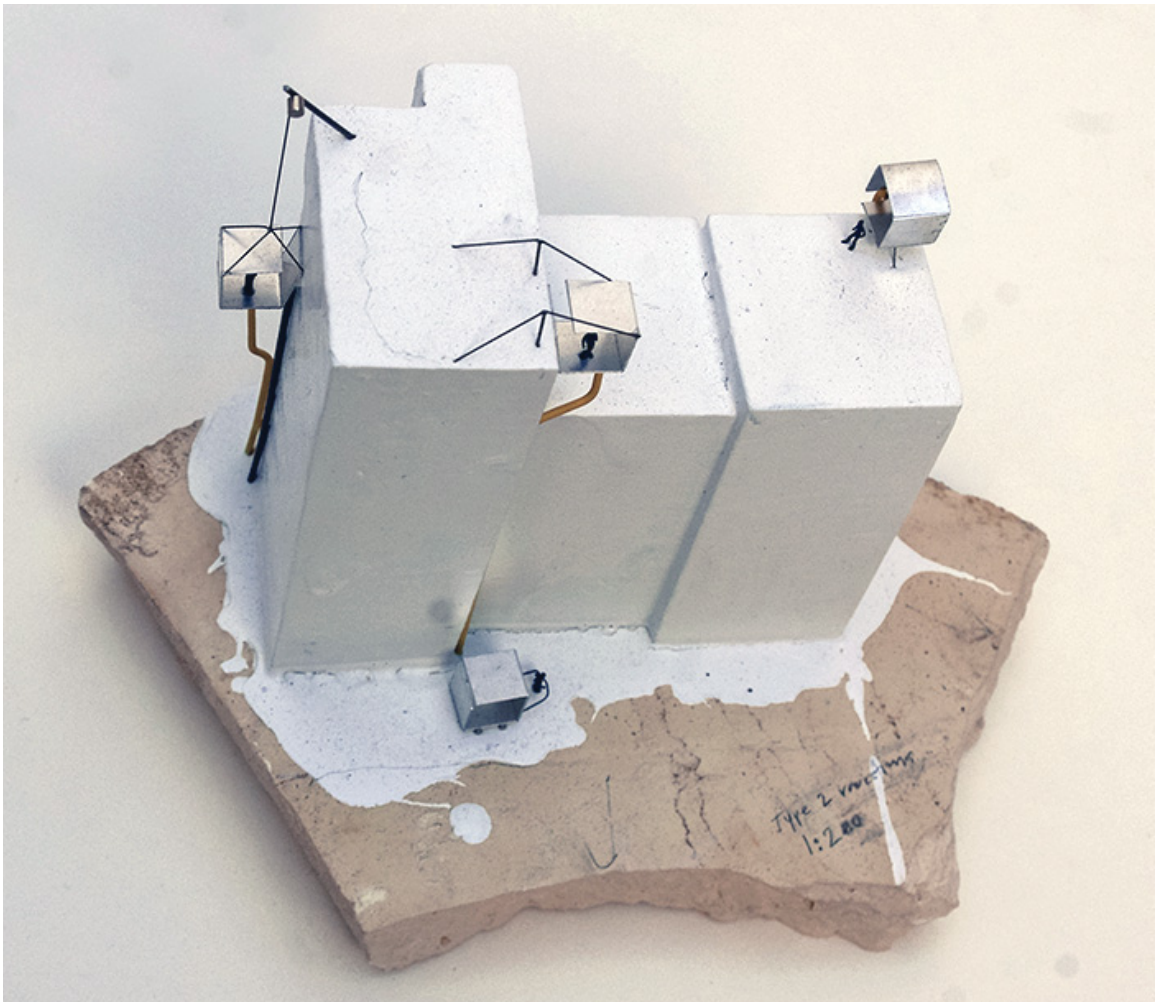
What if this construction was there to cleanse the city?
 To clean the existing
 City of cranes,
 City of cartoneros,
 A city in repair.



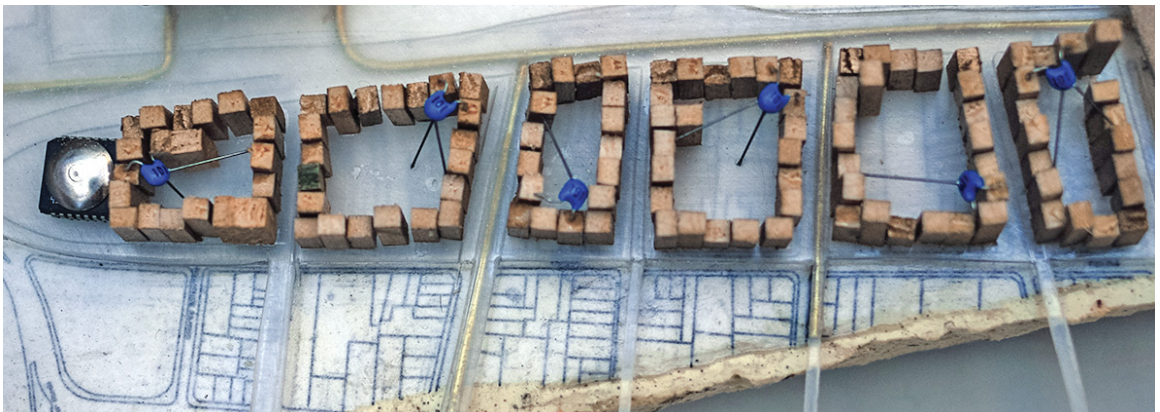
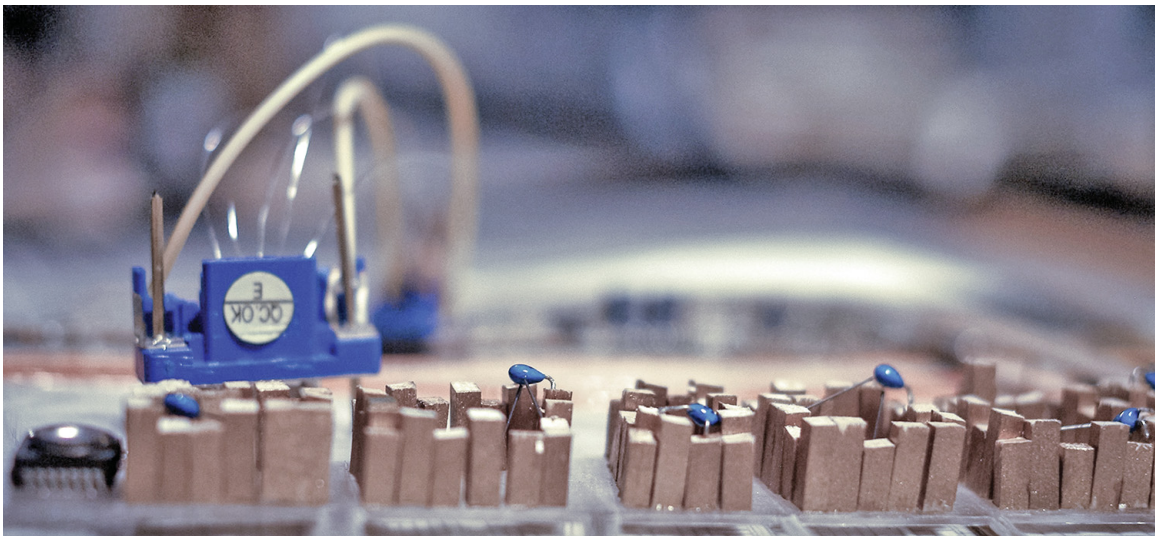
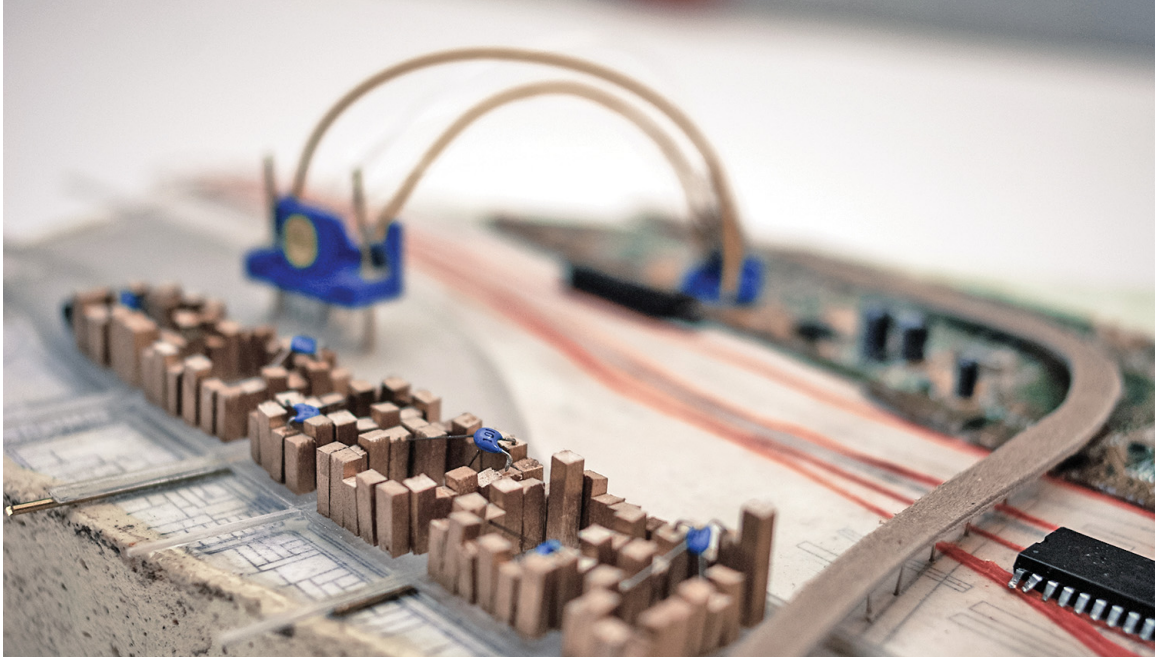
Puerto Madero, another wealthy neighbourhood 10 minutes from the chosen site. New skyscrapers are currently under construction, some designed by world-class architects like Norman Foster and designer Philippe Starck. It is also the home of the Calatrava bridge. (Skyscraper City 2008)



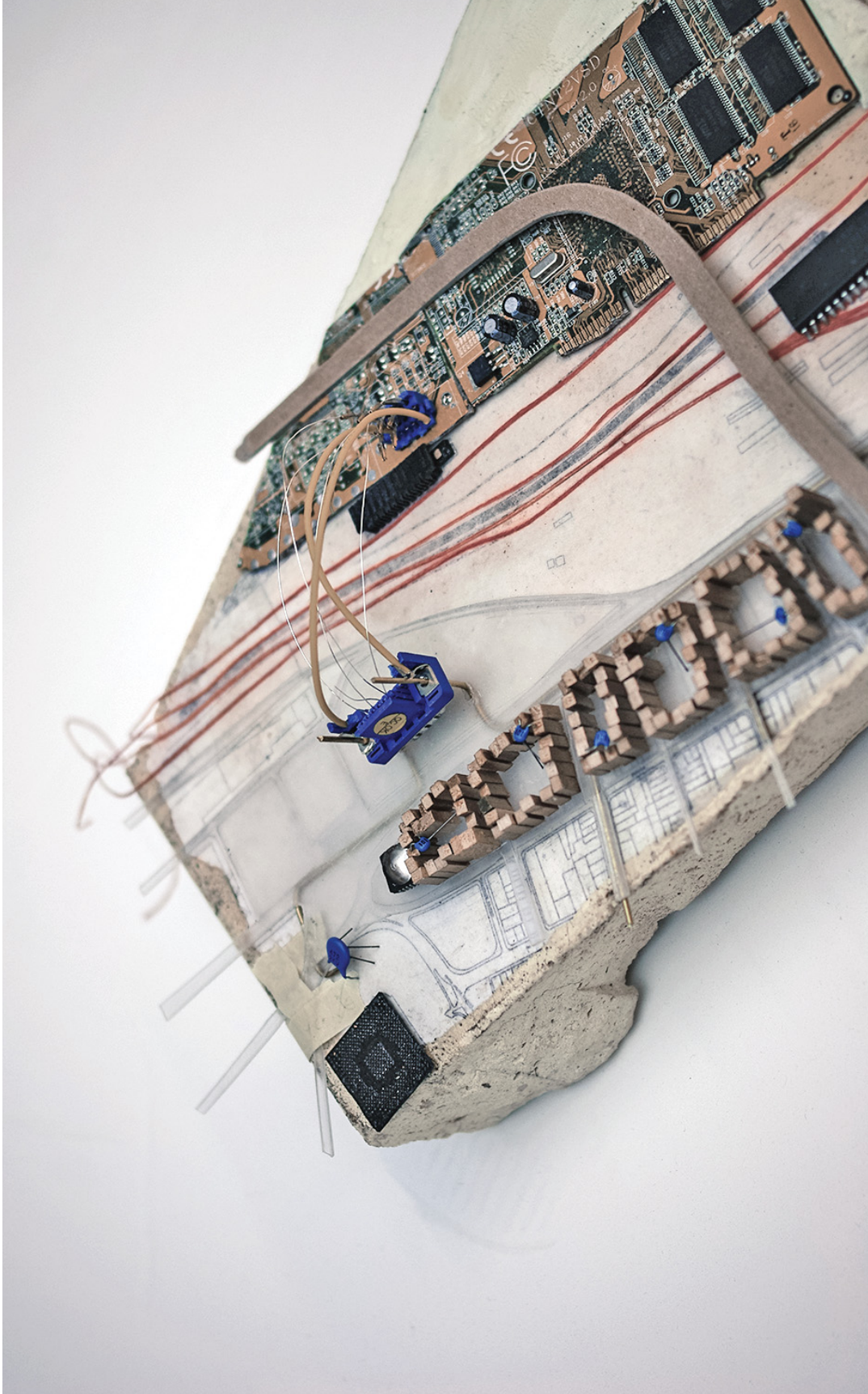
Concept sketch which initiated the idea of occupying the rooftops and seeing them as wasted opportunities because of the general underutilized nature. By following the existing language of cranes and construction within cities, this proposal imagines a city on top of the existing.



1:200 Concept model of activities taking place on rooftops and experimenting with the possibilities of the structures



1:5000 model of the idea of a third element growing within the existing fabric



1:5000 model made from scraps showing the gridded formal city of Recoleta on the left and the informal city on the right, with the blue creatures showing the concept

The garbage is disposed on the rooftops as opposed to the streets. Each resident is introduced to the *cartonero* in charge of their building block. They are educated on how to separate their trash and the importance of recycling for the environment and the city. The rooftop is fully equipped with a waste disposal station, separate bins for different types of waste: paper, cardboard, plastic, metal and food. Each disposal bin will include signage above with graphics and a count of how much has been recycled and how many garbage bags have been saved because of the new system.

1:100 Concept model showing the waste management station on the rooftop along with a possible skin for the structure

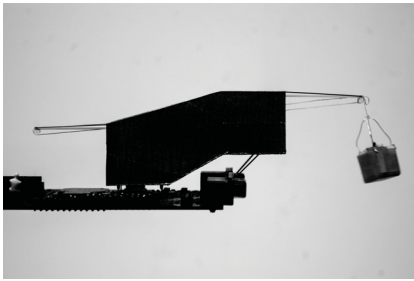


The residents will hopefully be more conscious of what they throw out and how they dispose of it. They are no longer throwing everything on the streets in black opaque garbage bags. The person that handles their waste is no longer an unknown waste collector but someone they see on a daily basis. By simply exposing the afterlife of their trash the hope is an increased sense of responsibility towards their community and the city.



Cartonero interacting with the residents because of the cooperative movements (Livon-Grosman 2007)

The *cartoneros* prepared with their large recycled and woven bags gather the already separated waste and lower them down to the street level by using the cranes. The rooftops become their place of work. They become a familiar face and they



1:100 Concept model of a rooftop structure

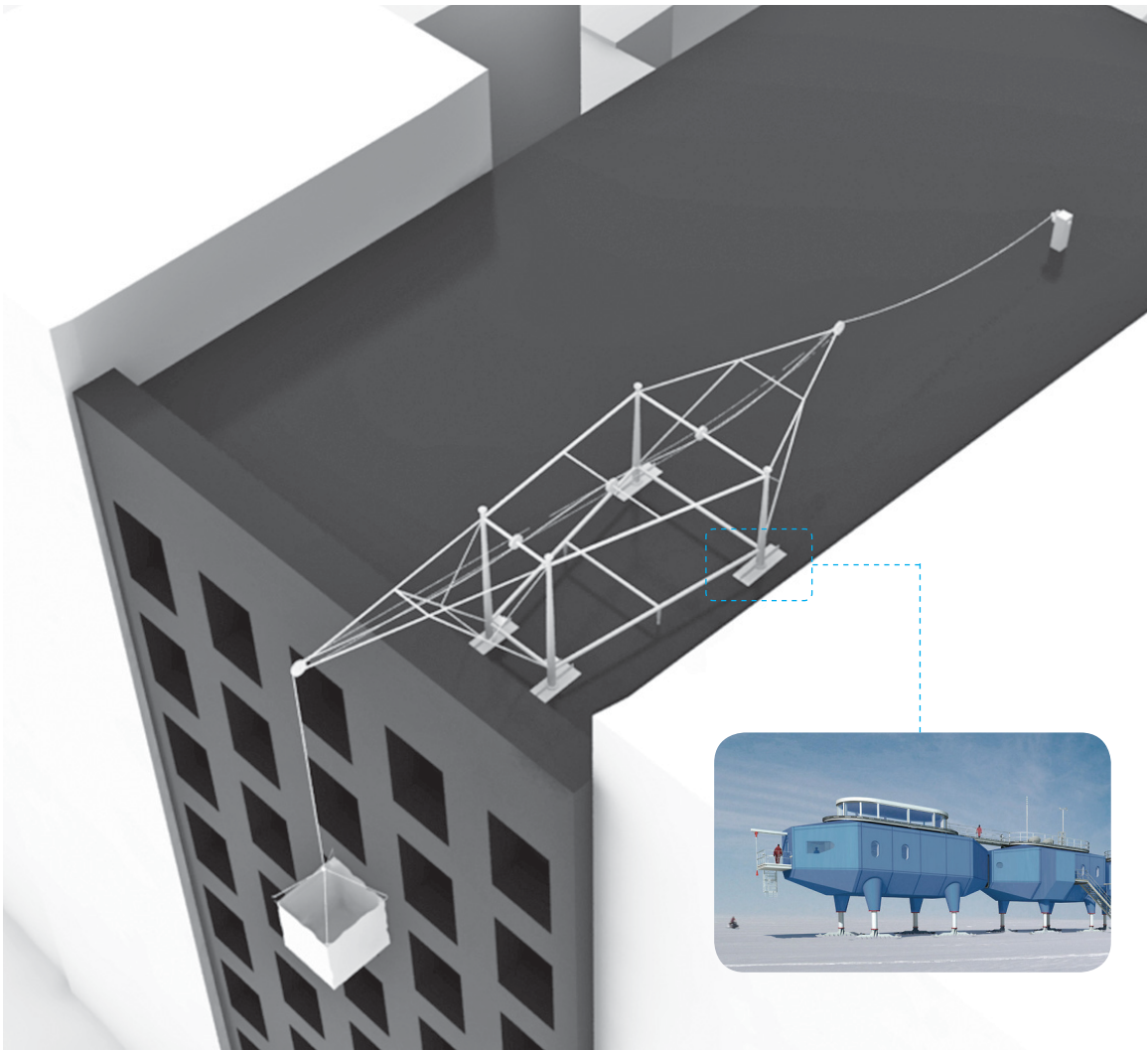
customize their cranes and rooftops to their needs. They build onto the frame of these rooftop *bugs*, that are in the primary stages of a grand social metamorphosis which is unknown to most. Each one is different but they all share their origin and purpose. Slowly many city rooftops are occupied with these structures, some become sleeping shelters, while others are just a shaded refuge to escape the hot summer days of Buenos Aires. What becomes visible from street level are these bags full of recyclables being hoisted down through the mouth of these creature-like structures.

The *cartoneros* and residents both become key players in the transformation of the city's garbage problem but

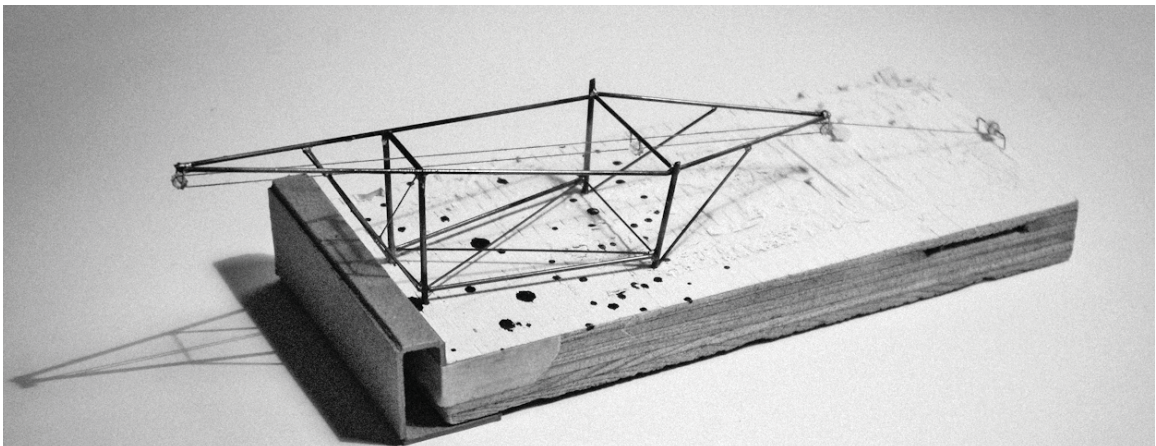


1:100 Concept model of another rooftop structure with the recyclable materials existing and getting hoisted down

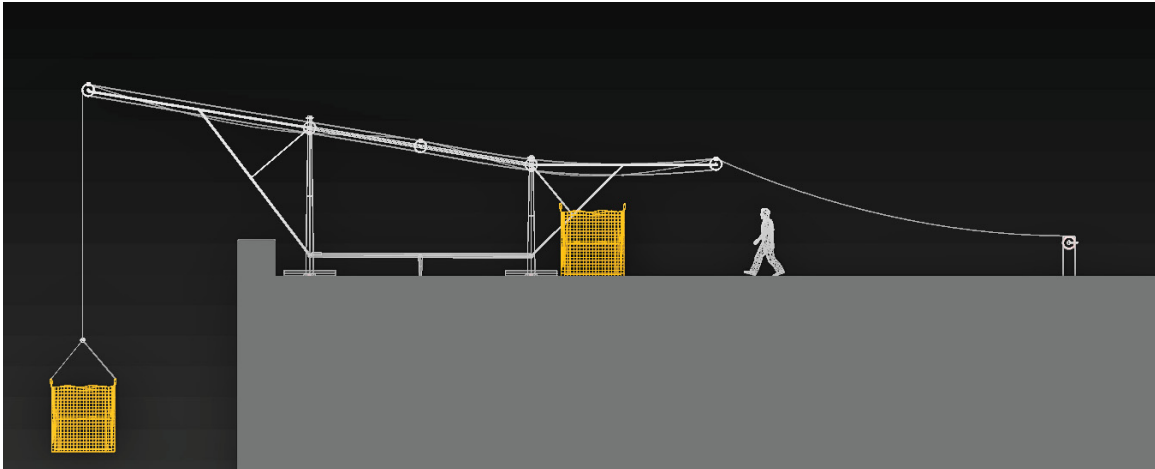
unconsciously they have also become more aware of each other's existence. This interdependent relationship grows the consciousness throughout the city regarding not only their waste and the environmental implications, but also the struggles and pleasures of their cohabitants.



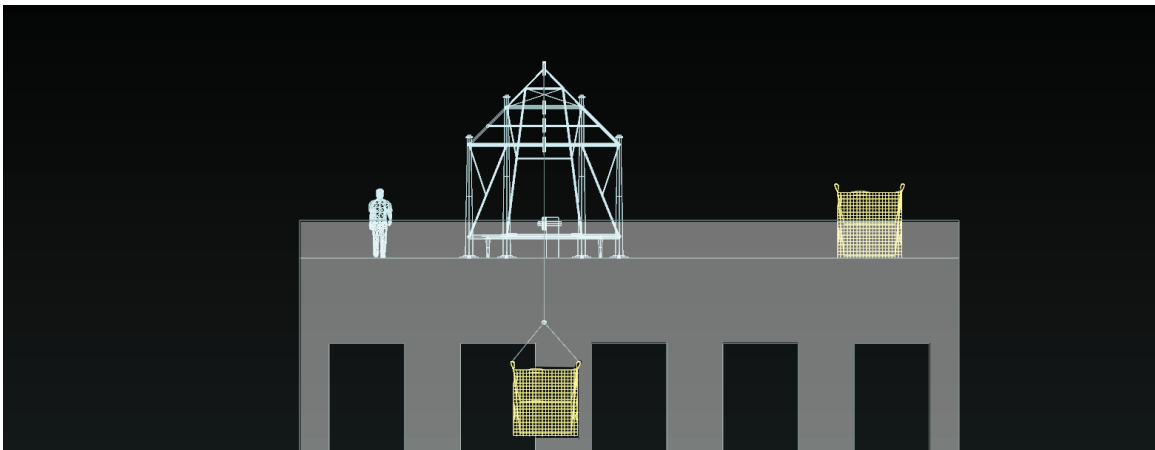
3-D model of the 'bare bones' of the rooftop bugs. This is the formal structure of the creatures which will be customized and modified according to the different types of users. It is constructed from tubular steel scaffolding along with a pulley-system to allow the cartoneros to hoist down their collection. The 'feet' are inspired by the arctic pods which are used to distribute the load throughout the rooftop as opposed to a point load.



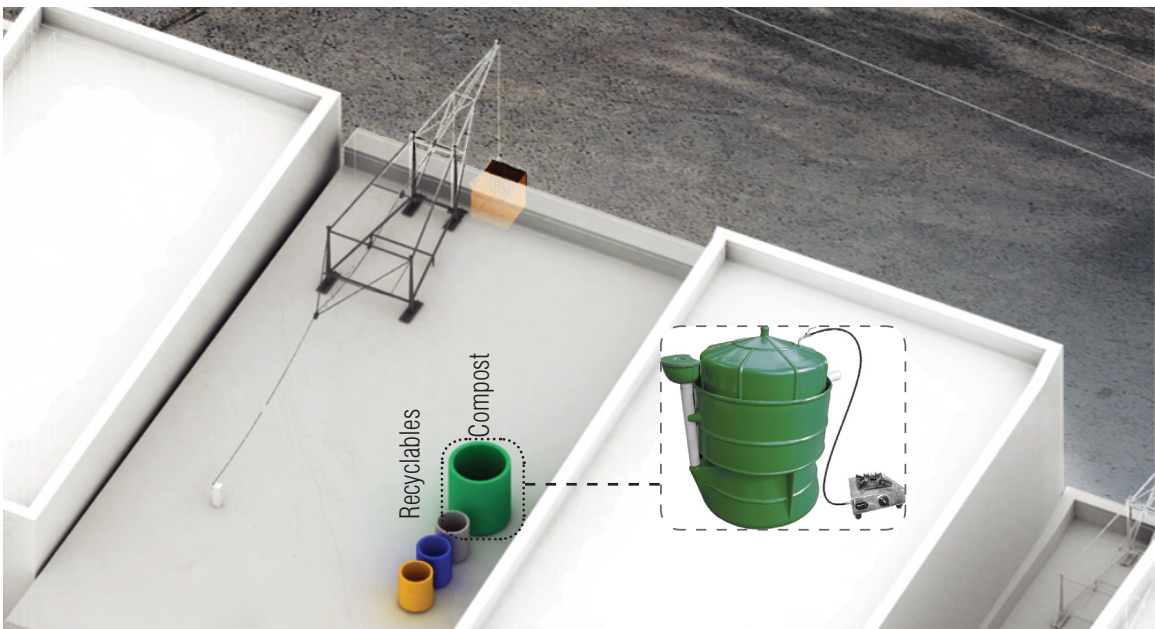
1:100 Physical model of the frame



Typical side elevation of the structure



Typical front elevation of the structure



Waste management station on the rooftop. The compost disposal tank is inspired by the BIOTECH technology developed in India which turns food waste into energy. (Biotech 2013)



The streets are free of garbage bags and the rooftops take on their own life. The *cartoneros* can comfortably sort through the recyclables away from hustle and bustle of the dense Buenos Aires streets.



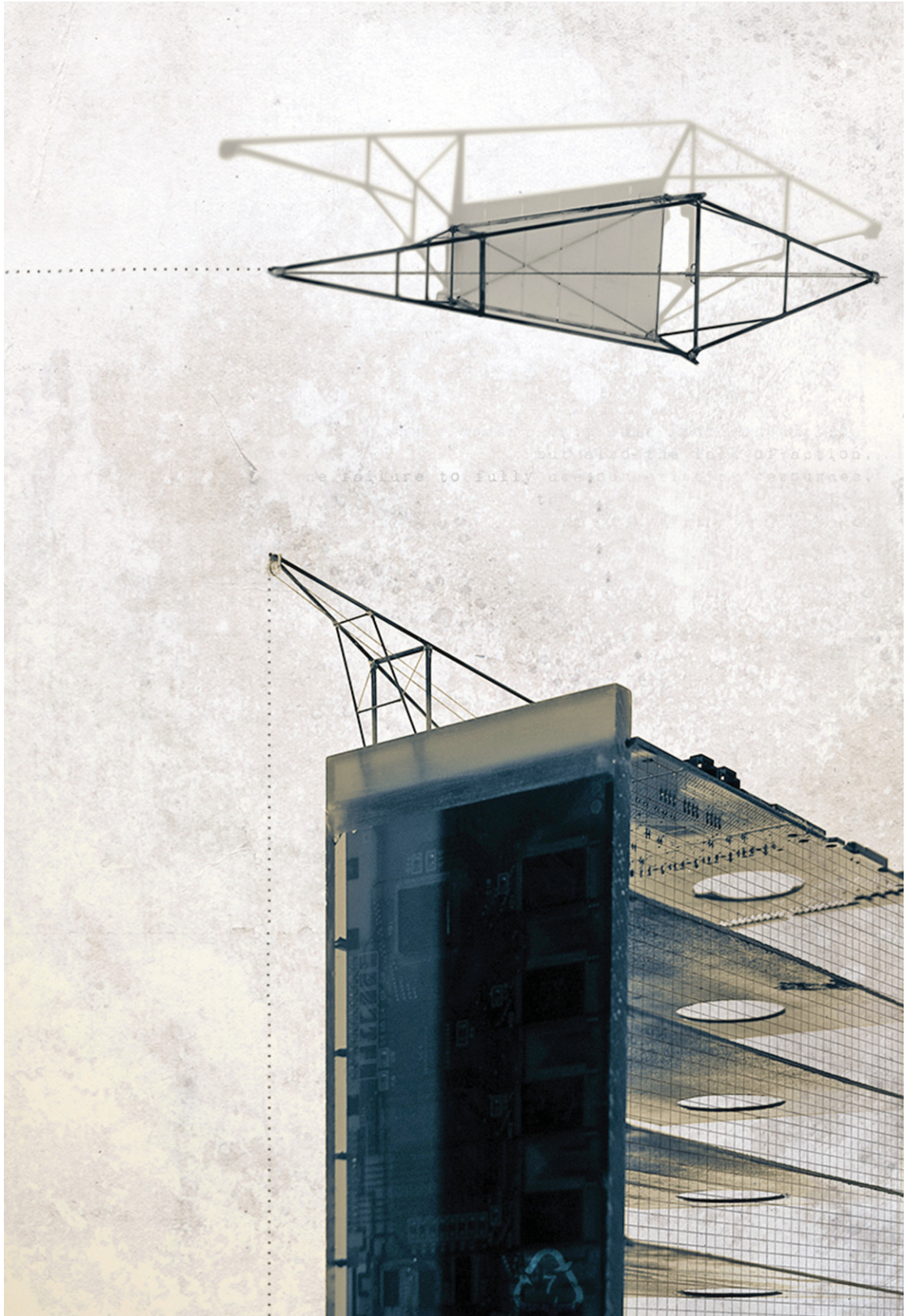
A concept section of one of the rooftop structures with different activities taking place in and around the bugs



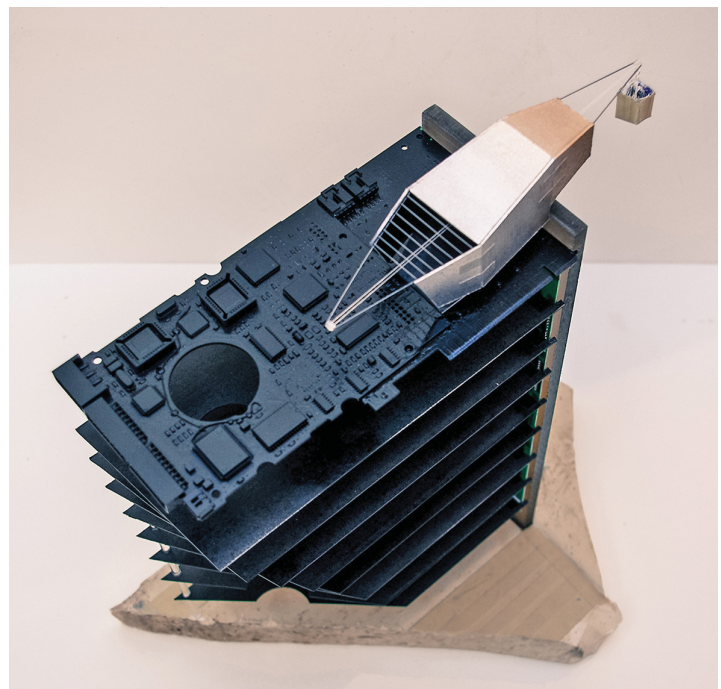
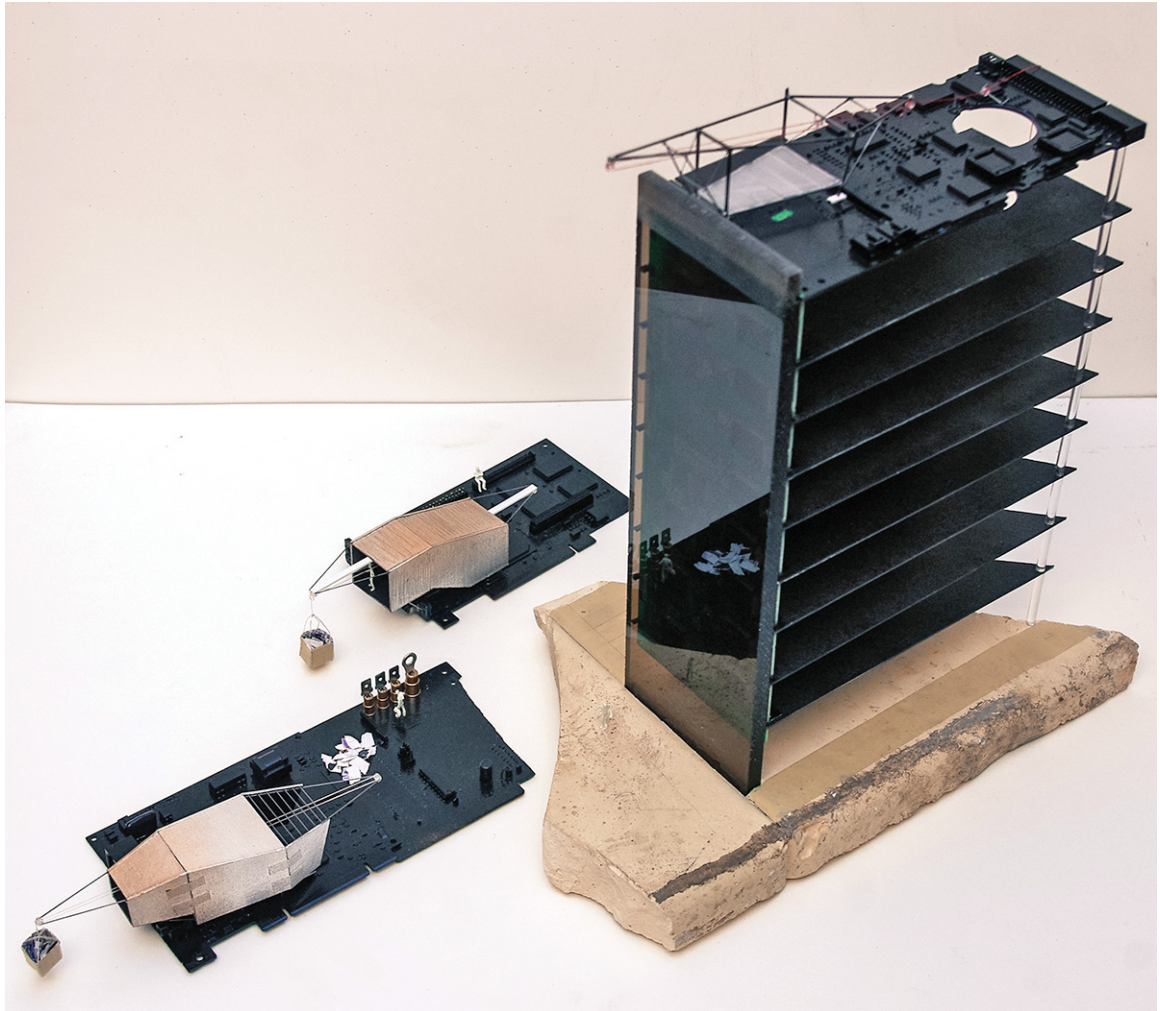
These bugs become a visible part of daily life in this lively city. They become a symbol of change and transformation. This view shows Recoleta from the entrance of Park Thays (where the next phase begins).



Detail of aerial view of Recoleta with the initial stages of the rooftop bugs (base map from Google 2013)



Hybrid drawing (models and digital edit) showing the structures in plan and from below

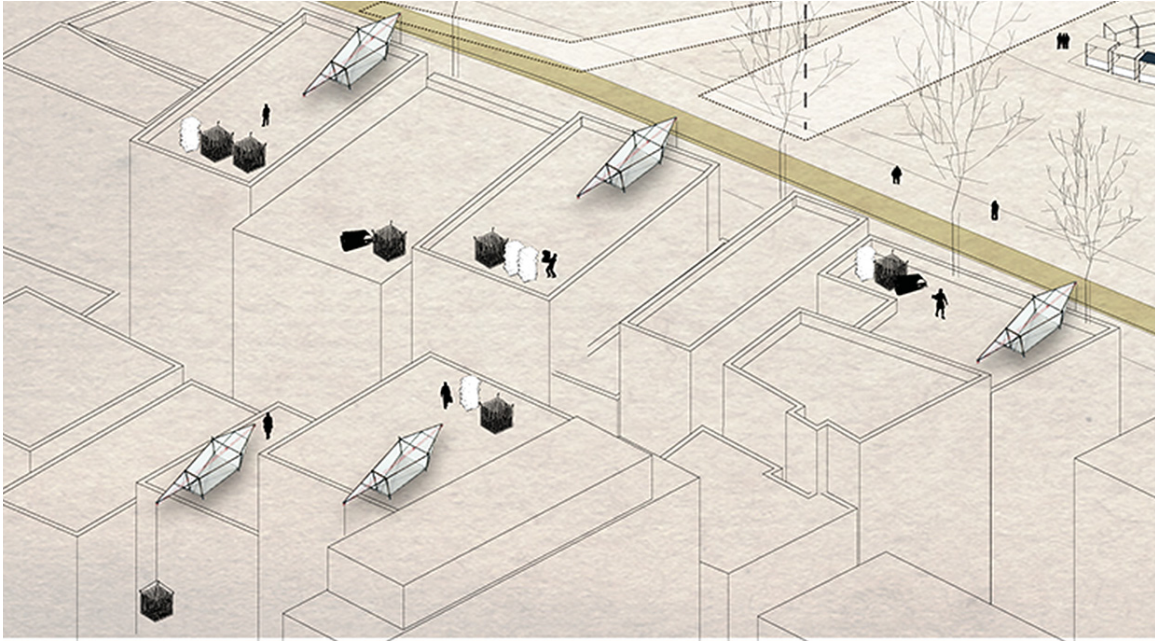


1:100 models of the rooftop structures



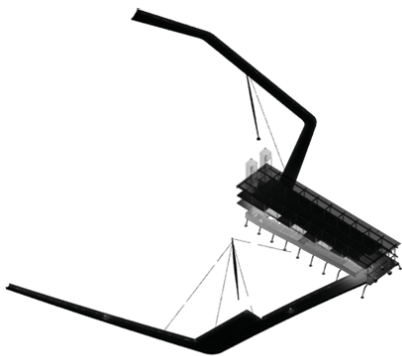
1:500 models of the rooftop structures on the 'piano' model

Phase 2: The Co-op



Detail of axonometric drawing showing occupied rooftops. (Refer to page 105 for full drawing)

The rooftops have now been occupied by the initial stage of this metamorphosis. Both the *cartoneros* and the city residents are adapting to their more frequent interactions. The next phase further recognizes the *cartoneros*' hard work by building a highly accessible co-op facility in the middle of the train tracks while also providing a semi-direct bridge between the two sides. The Co-op follows the language of the rooftop bugs by growing around what already exists. The building site is on an unused triangular patch in between an existing road and the train tracks. The *cartoneros* can access the Co-op from the formal city through an existing tree-lined path that extends to the new structure or through an extension of an existing road from *Villa 31*. There will also be vehicular access from the ground floor through an existing road. This phase will further establish the *cartoneros* in the formal city while providing the foundation for the following stages of this social transformation.



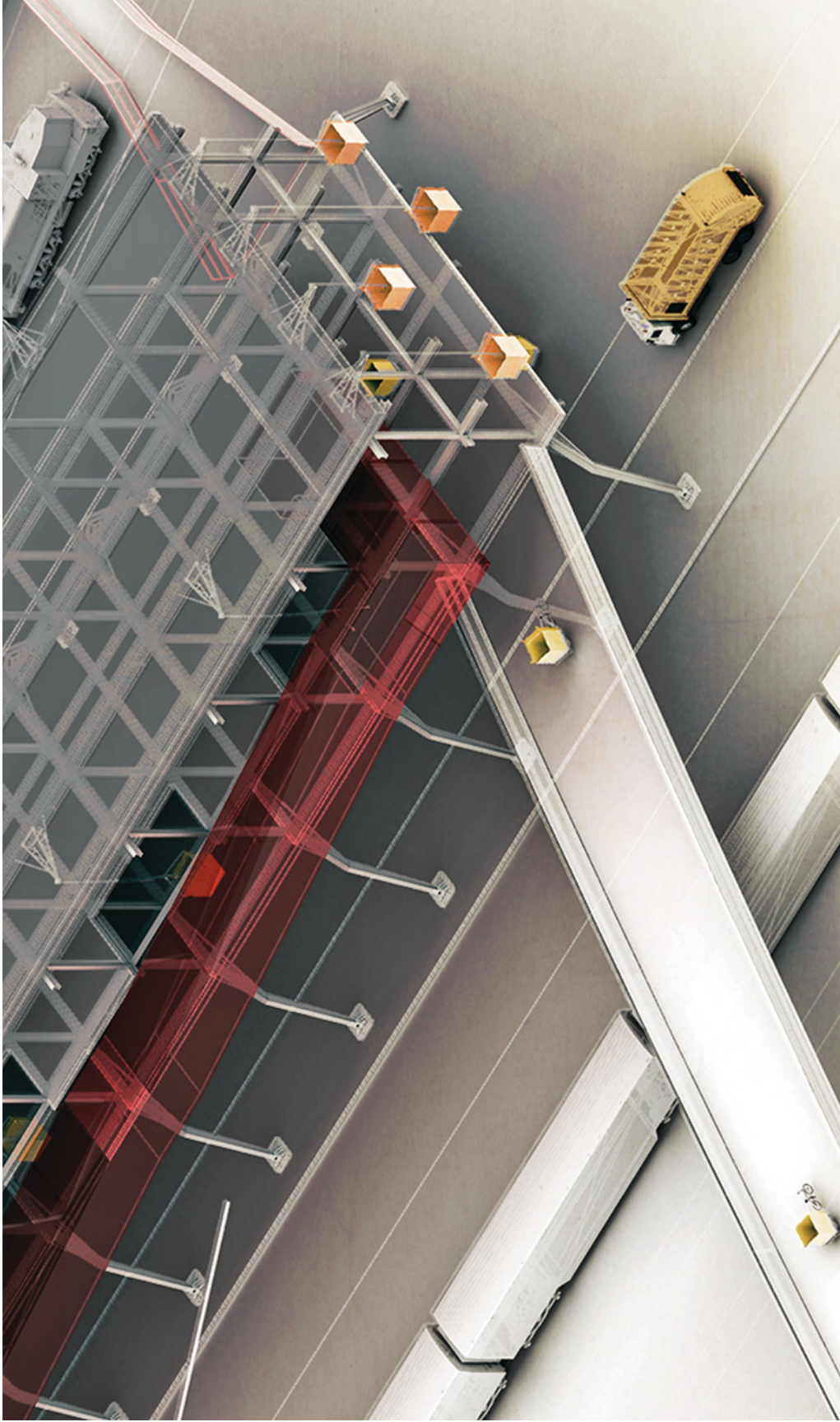
Phase two includes two bridges (connecting Recoleta to Villa 31) and a raised long modular factory-like structure



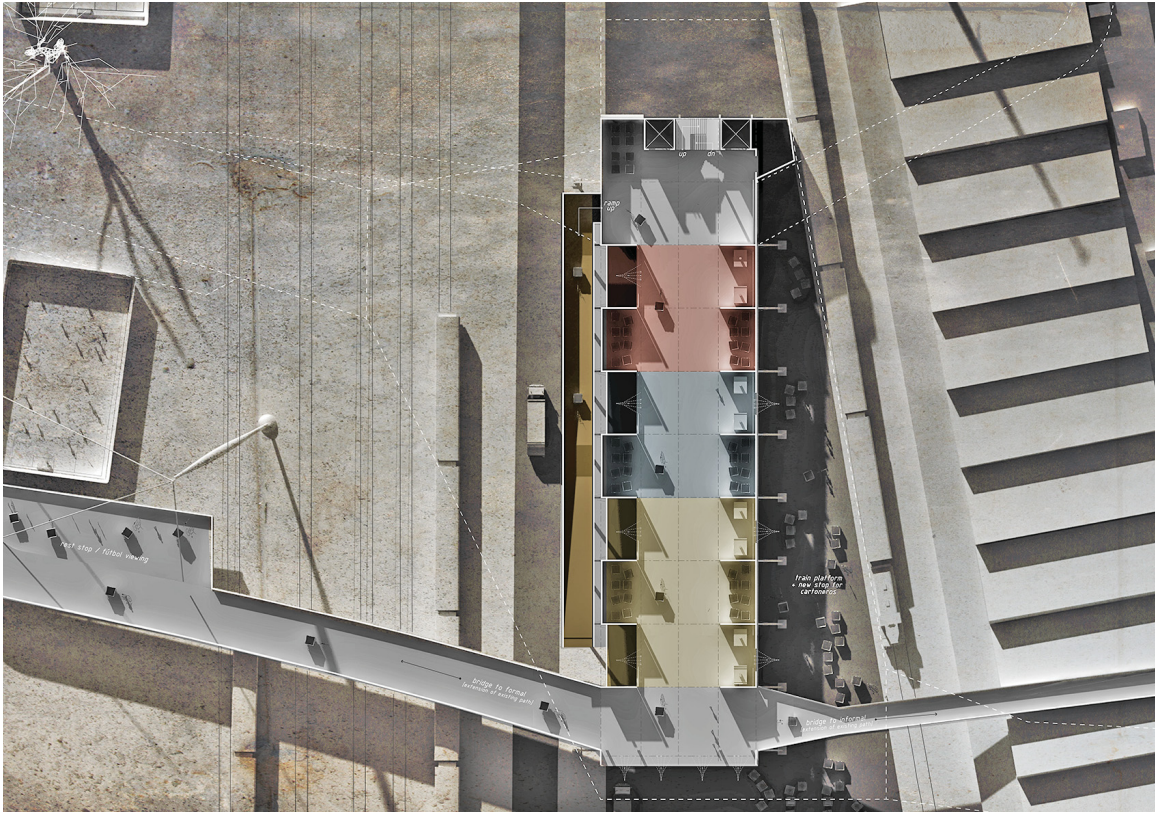
Phase 2 - The Co-op built in the 'wasted' empty site between the existing railway tracks and the road



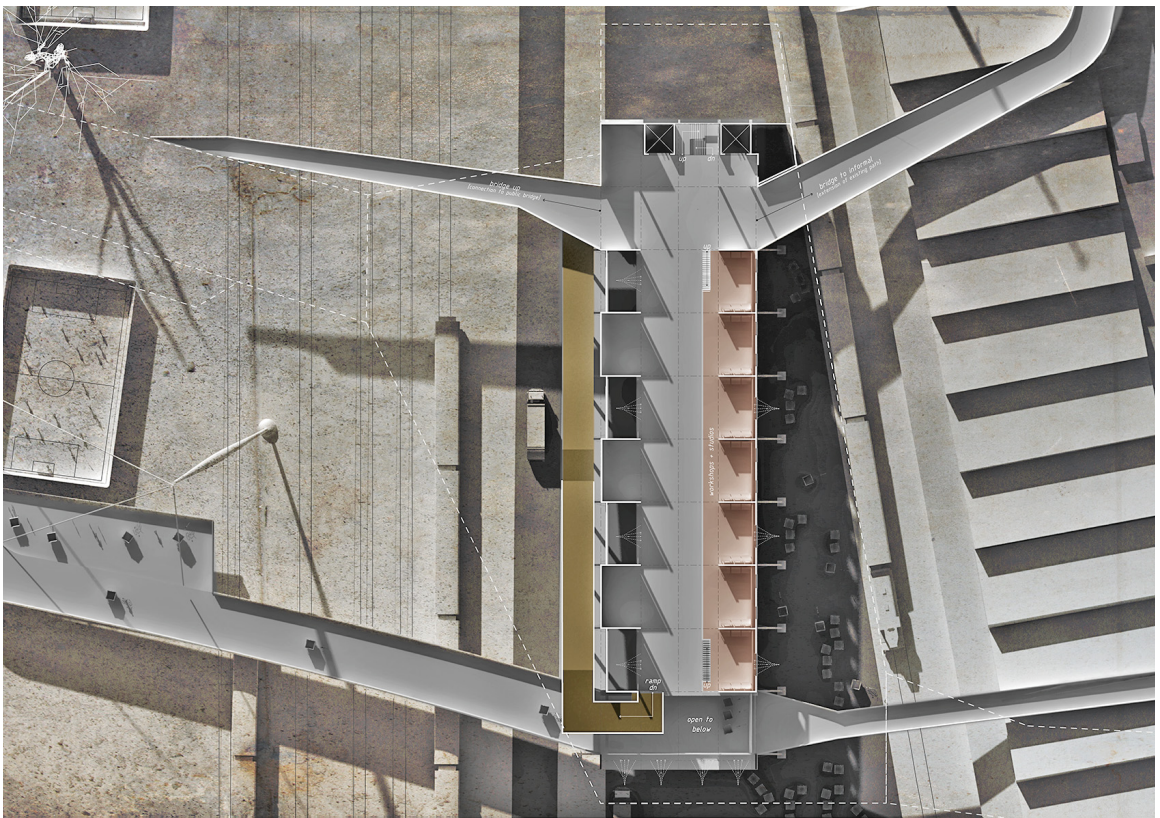
A view of the Co-op in its initial structural phase. These bare bones will soon be covered with different materials by the hundreds of different users it will facilitate. The *cartoneros* can also access the building through a new train platform to the right or an extension of the existing road.



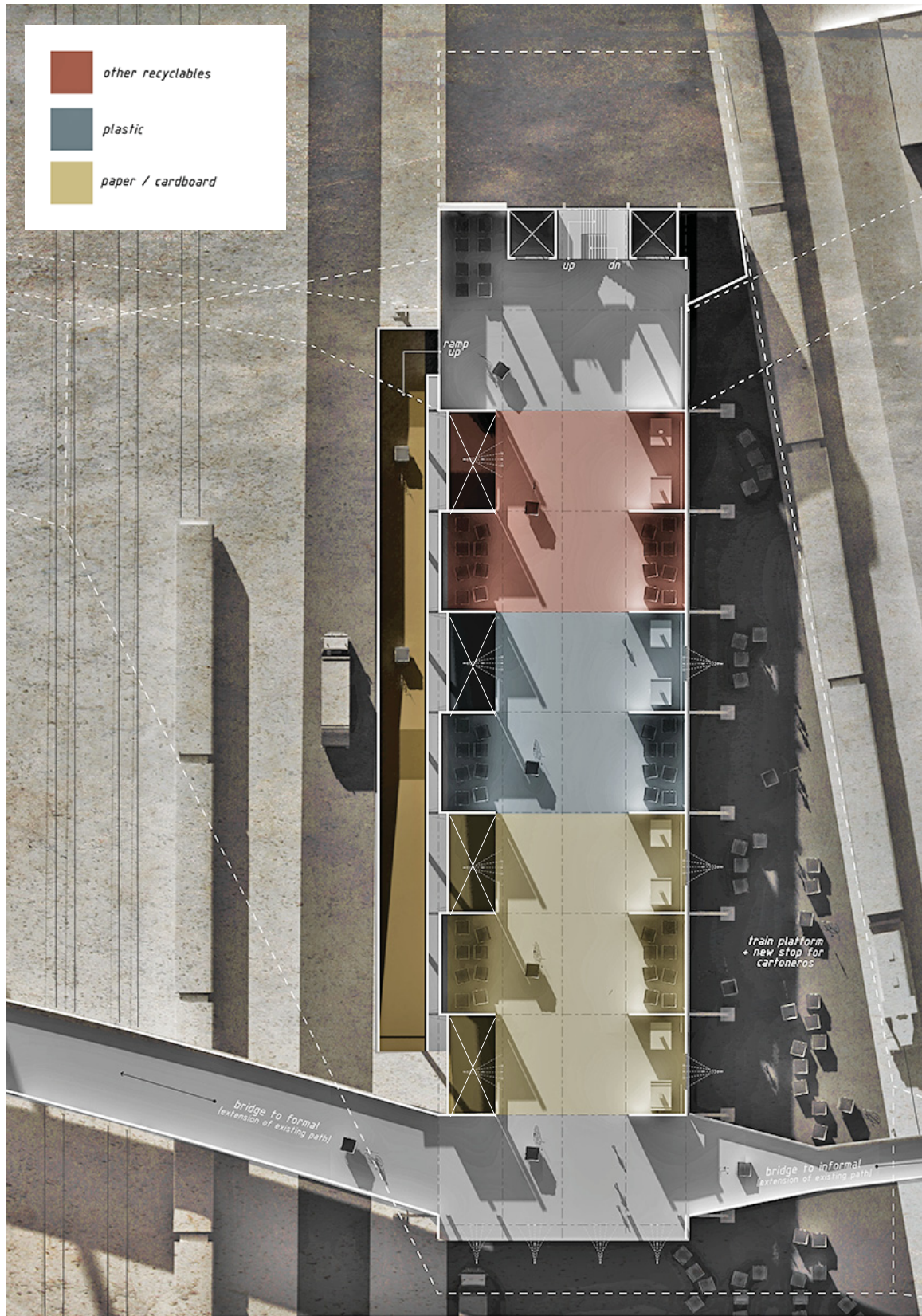
Aerial View of the new Co-op showing the three different means of access: bridge (walking or cart), road (trucks or cars), and the railway. The cranes are also built into the structure for easier lifting/lowering of recycled materials by following the language of the rooftop bugs.



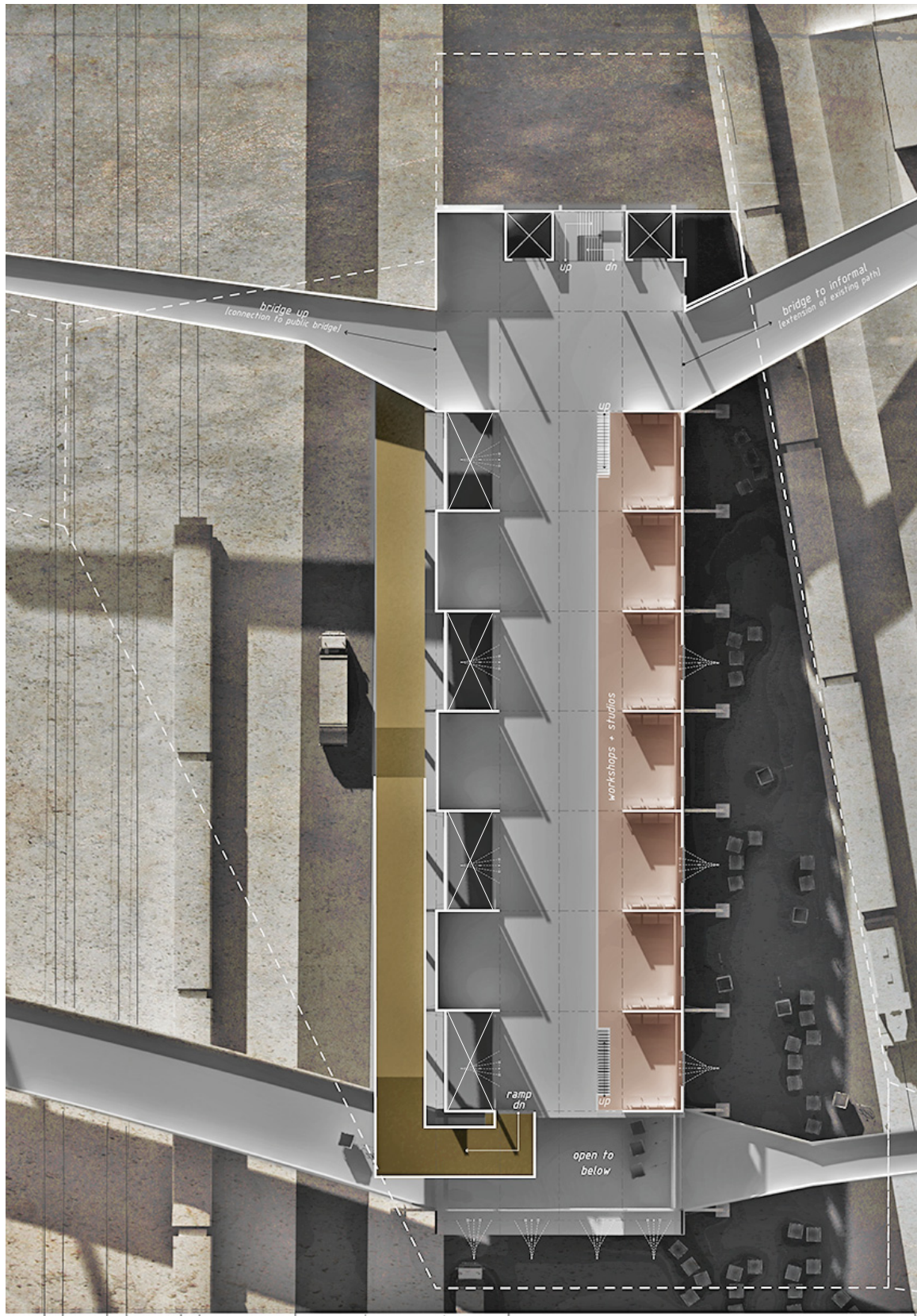
First floor plan showing the compacting stations to the right and the storage and cranes to the left of the building



Second floor plan with the third floor studios and workshops



Storing and Compacting - First floor plan of the Co-op showing the different enclosed spaces built around the structural grid (10m bays)



Producing and Teaching - Second floor plan of the Co-op complete with the final phases of the proposal (merging bridges and bridge plaza above). The open concept workshops and studios are on this level.

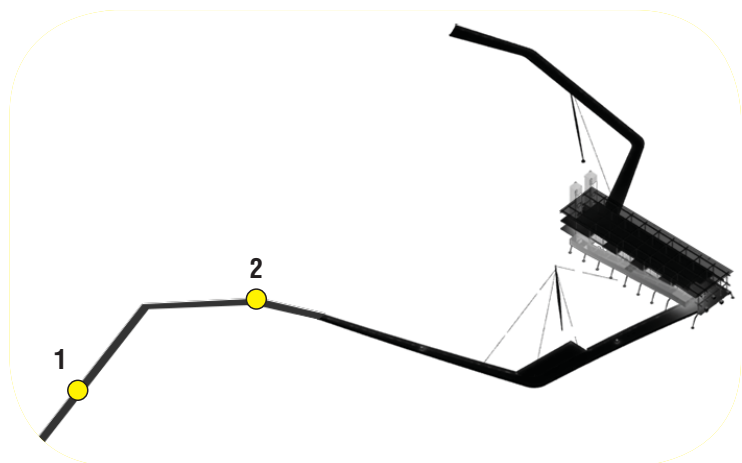


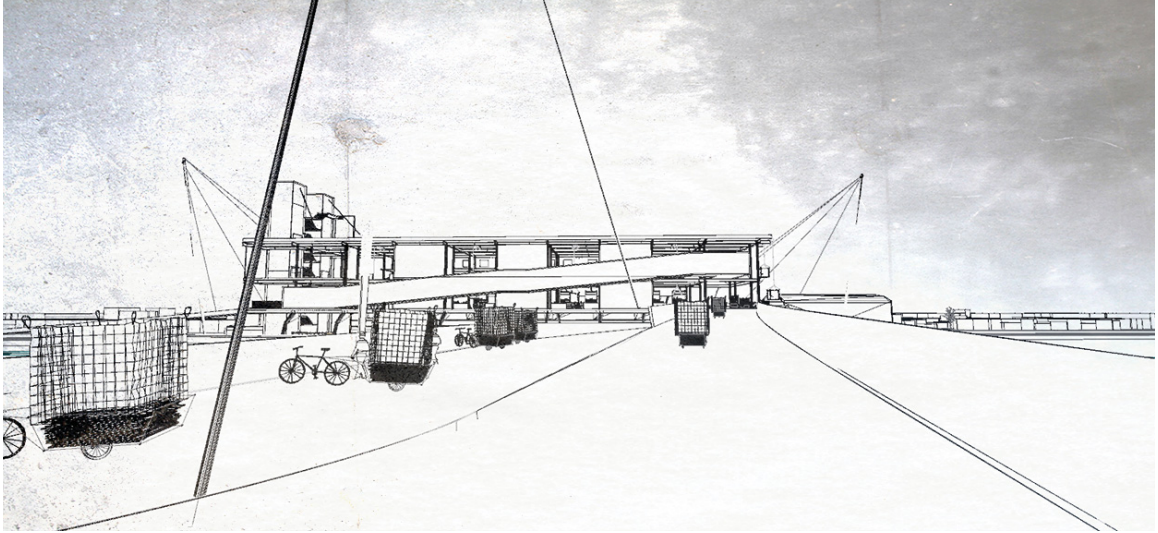
Vignette 1 - The *cartoneros* tree-lined pathway is not only an access point to the new Co-op but also a perfect resting spot, especially in the hot summer days. The informal growth begins shortly after the formal structure is built.



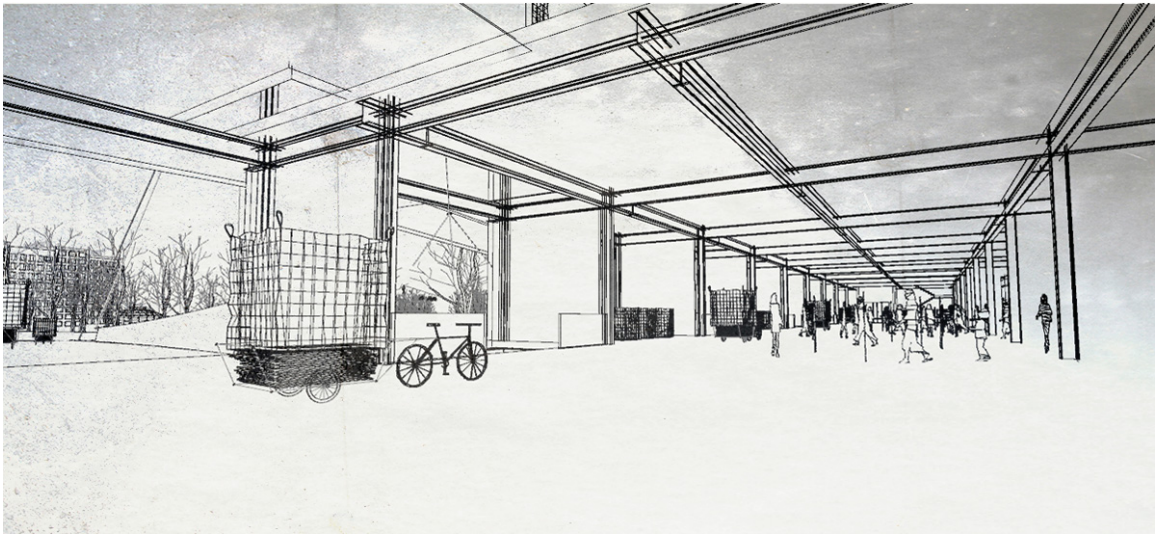
Vignette 2 - The new structure is an extension of the existing path. This is the view towards the Co-op from Park Thays.

Diagram showing the location of the vignettes on the second phase



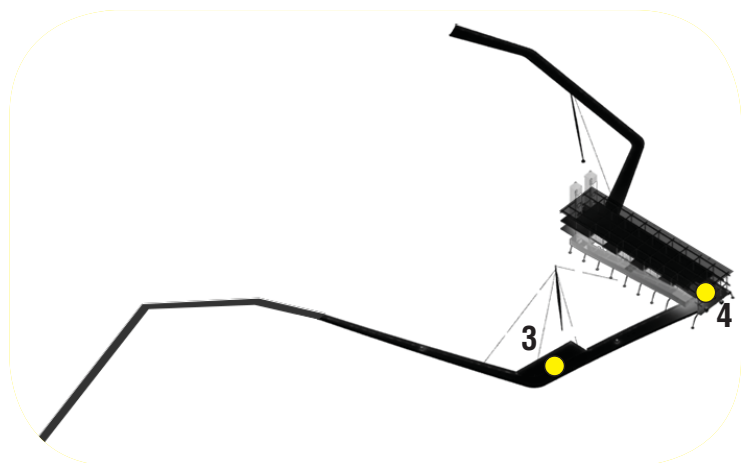


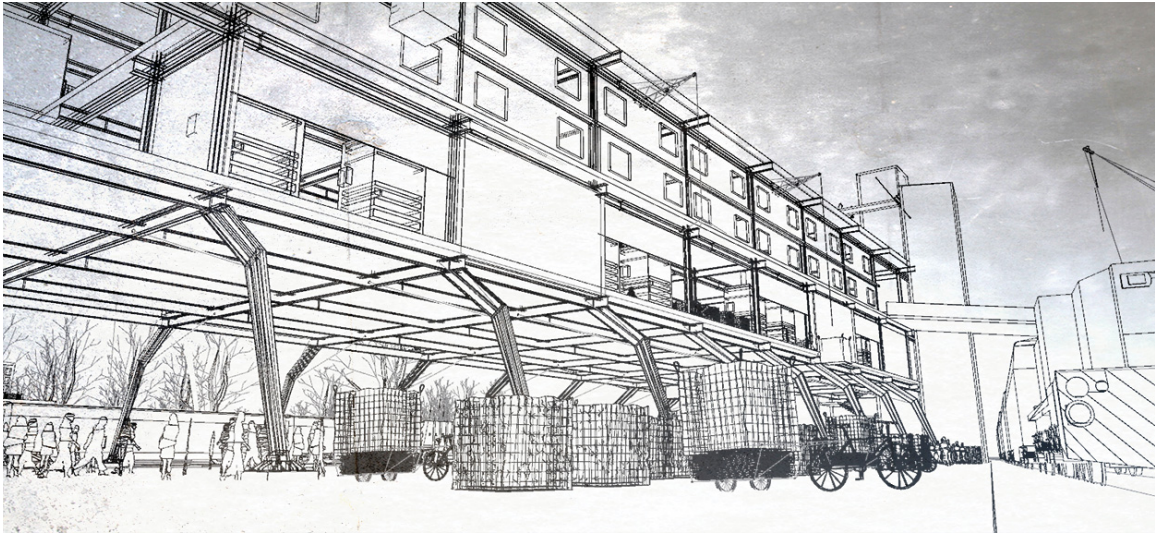
Vignette 3 - Resting/viewing pocket to the left of the bridge allows the cartoneros to stop and watch an informal soccer match taking place at the existing field below or they can continue on towards the Co-op.



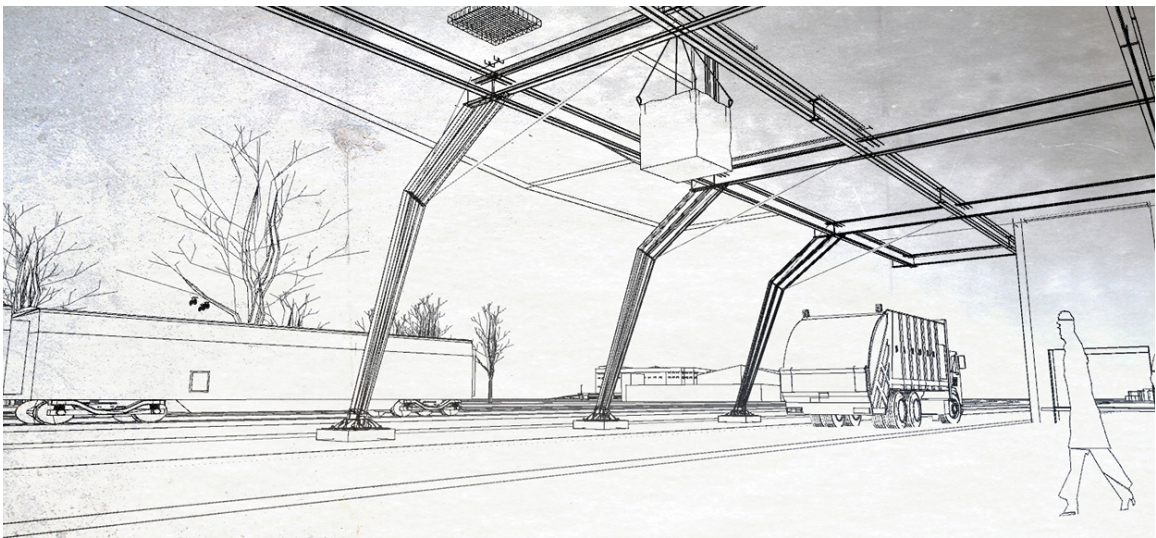
Vignette 4 - First floor of the Co-op is for storing (left) and compacting (right) with cranes that allow the *cartoneros* to lower their already compacted bags into the trucks below.

Diagram showing the location of the vignettes on the second phase





Vignette 5 - View of the Co-op from the train platform showing the busy nature of the facility



Vignette 6 - The four cranes on the south side of the Co-op allow the lowering of the recyclables directly into the pickup trucks

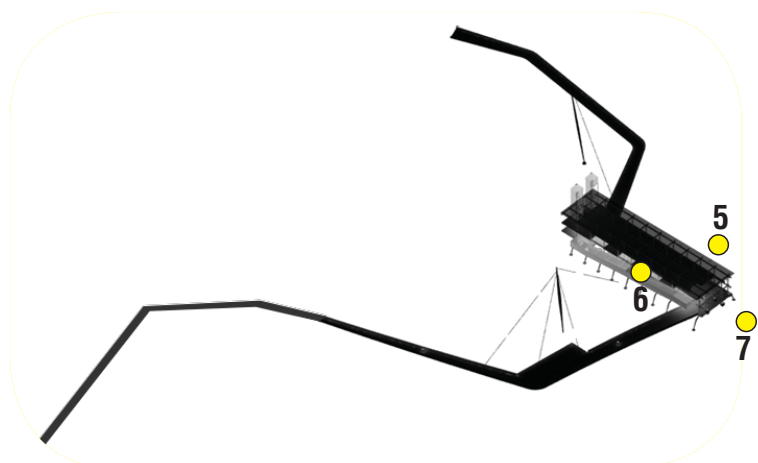
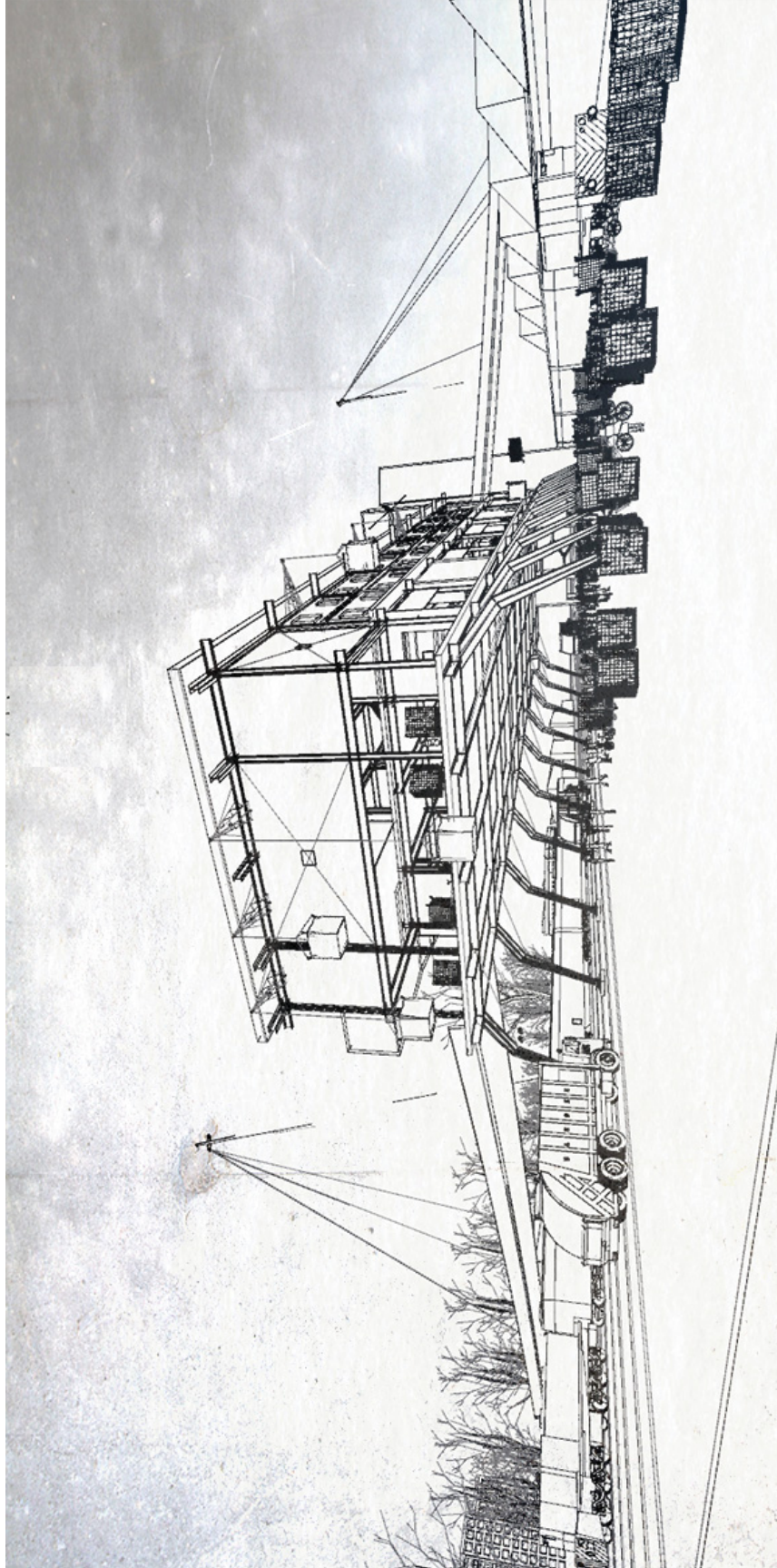


Diagram showing the location of the vignettes on the second phase



Vignette 7 - View from train platform looking towards the Co-op. (Refer to page 116 for the evolved version of this view)



1:500 'piano' model showing the Co-op in context beside the existing train repair warehouse

Phase 3: Plaza la Cartona



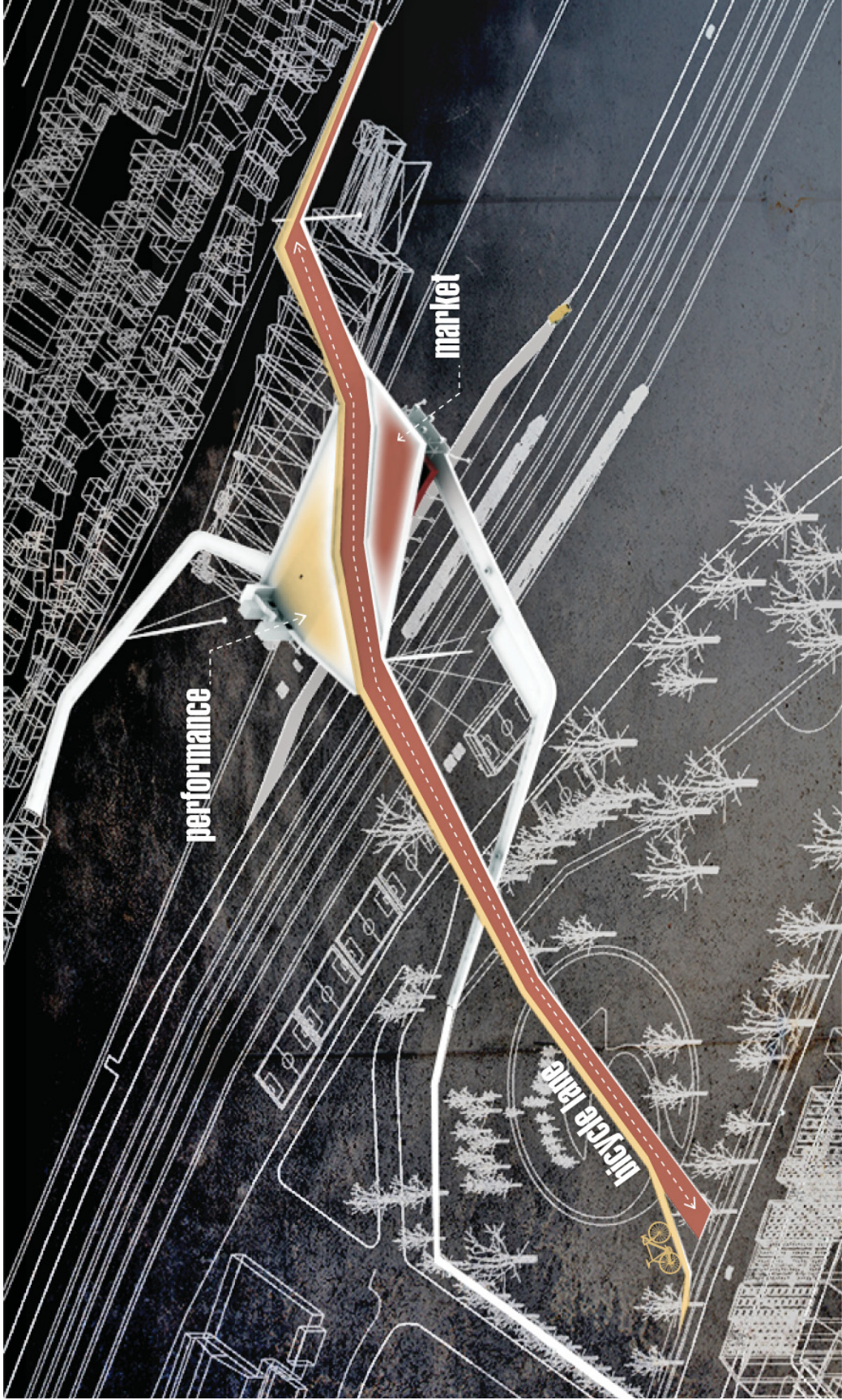
Long perspective elevation of the Co-op with the newly added public plaza on its rooftop

The *cartoneros* and their new spaces evolve throughout the years. The cleansing of the city is apparent to all the residents and the Co-op facility is now a bustling head quarters for the various recycling organizations. Recycling has slowly become a part of everyday life for the residents of Recoleta and the rest of Buenos Aires. This next phase is in response to three main issues: a desperate need for a public recreational space for Villa 31, a space for the Co-op and the *cartoneros* to sell their recycled products as well as a more direct connection between the two sides of the track. The bridges are an extension of the existing paths on either side with a dedicated bicycle lane which leads to the large public plaza over the train tracks, called *Plaza la Cartona* (inspired by *carton* meaning cardboard in Spanish).

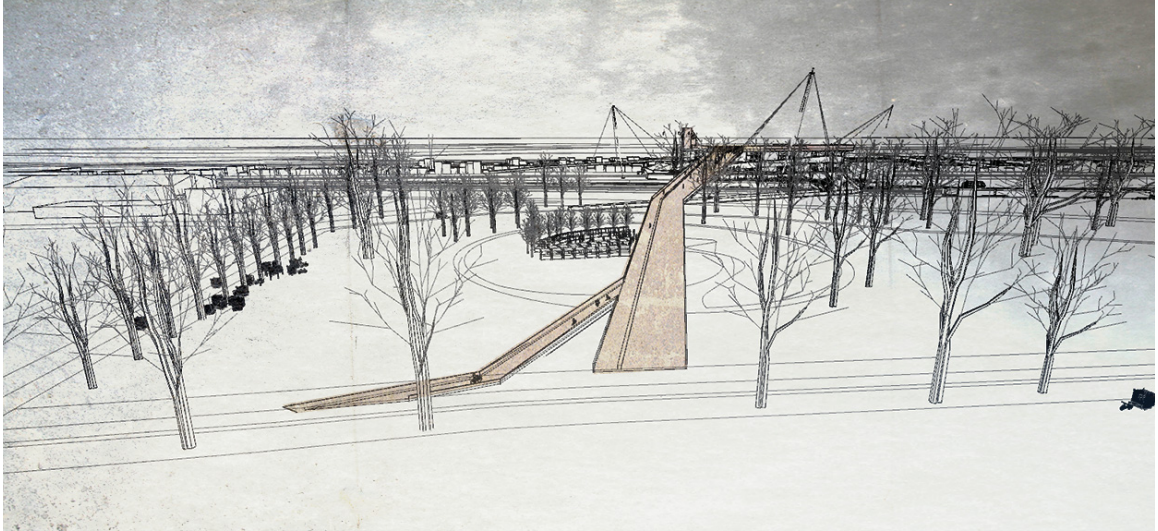


Phase three includes two larger public bridges and a smaller bicycle lane extension meeting on the large plaza above the Co-op

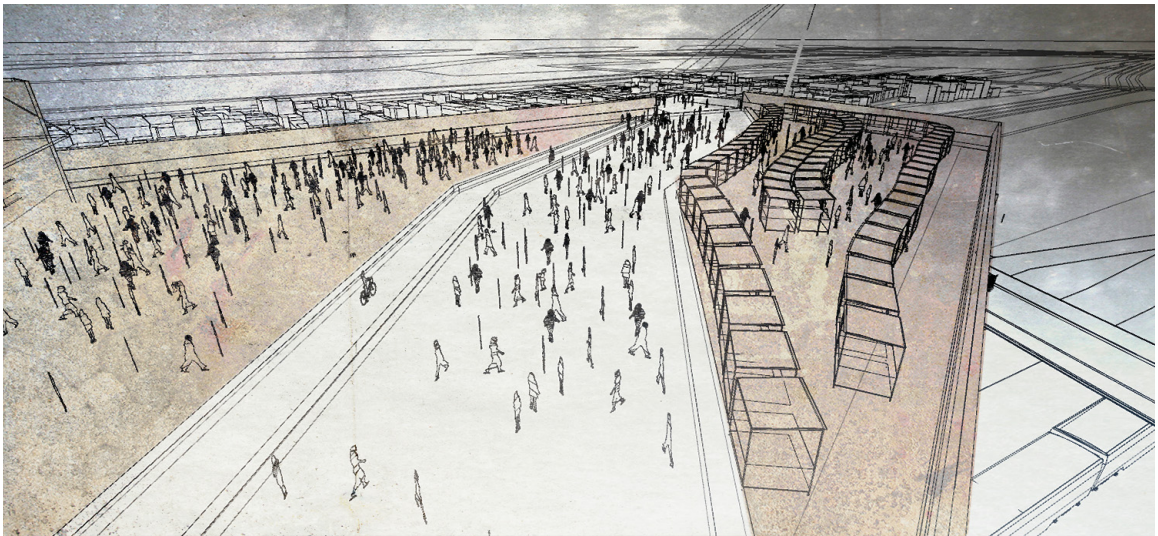
There will be a new public *feria* where local artisans can sell their goods made from recycled materials. The locals as well as tourists will get a glimpse of the process involved in recycling goods and what the *cartoneros* accomplish within the city. There will also be concerts, performances, plays and many different activities taking place on this large open space.



Phase 3 - Plaza la Cartona and the new connecting bridges which will be split into two smaller sections because of the bicycle lane and pedestrian bridge. One side will be used for performances and one side for the market.



Vignette 1 - View of the new Co-op and the public plaza from the Recoleta residences across the street, and across Park Thays



Vignette 2 - Birds eye view of the activities taking place on *Plaza la Cartonera* with Villa 31 in the background

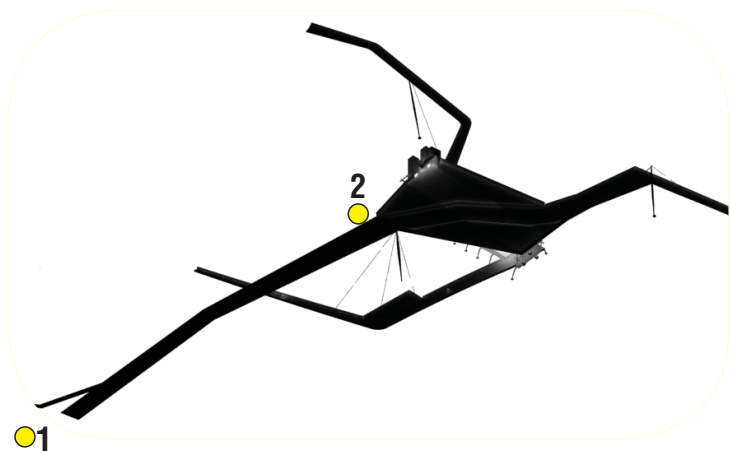


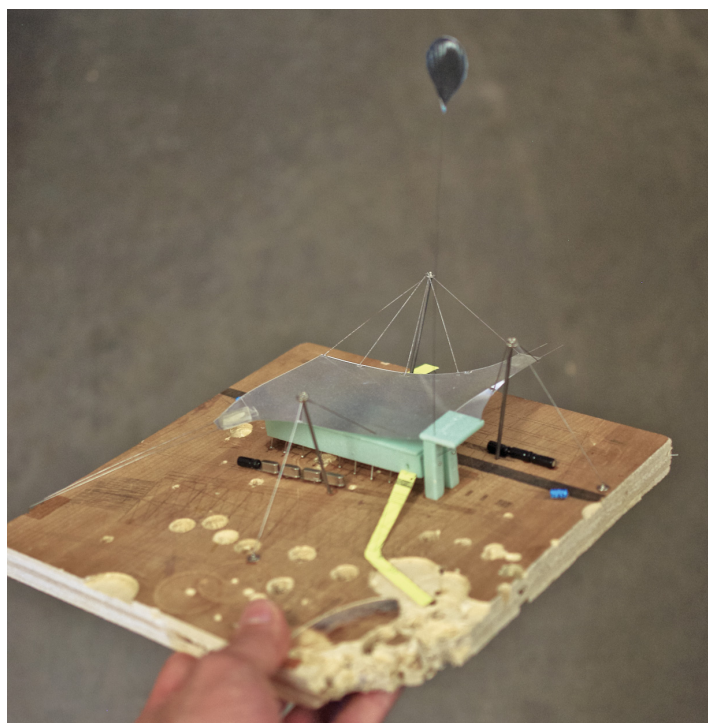
Diagram showing the location of the vignettes



Solar hot air balloons gain buoyancy when the air inside is heated by the sun's radiation (Wikipedia 2013)

Phase 4: View to the Other Side

The *cartoneros*, the Co-op and the *Plaza la Cartona* have become a part of the city fabric. Many locals are using the new public spaces and the bridges for recreation or simply for circulation. The interaction between the residents of Recoleta and Villa 31 has increased dramatically. At this stage, many preconceptions have been forgotten because of the increased level of comfort between the two sides. This next phase takes this interaction to other heights through a viewing platform



1:1000 concept model



Phase four includes an addition of a viewing platform as well as a stage, offices and public bathrooms along with the solar hot air balloon ride

and a solar hot air balloon ride. The intent is to show the users and tourists the reality of the contrast across the tracks and hoping to create a dialogue between the two. The hot air balloon will become a tourist attraction for the best view of the "Paris of the South." It will also become a symbol of what the *cartoneros* have accomplished and what the city has done regarding their waste management. The viewing platform will be built on top of the new Co-op headquarters and the new stage for *Plaza la Cartona*.



Phase 4 - 360° view of the city from the solar hot air balloon as well as a new large stage along with a backstage all built into the 'head' of this structure. On the same level as the plaza, there will be offices for the cooperatives as well as more public bathrooms.



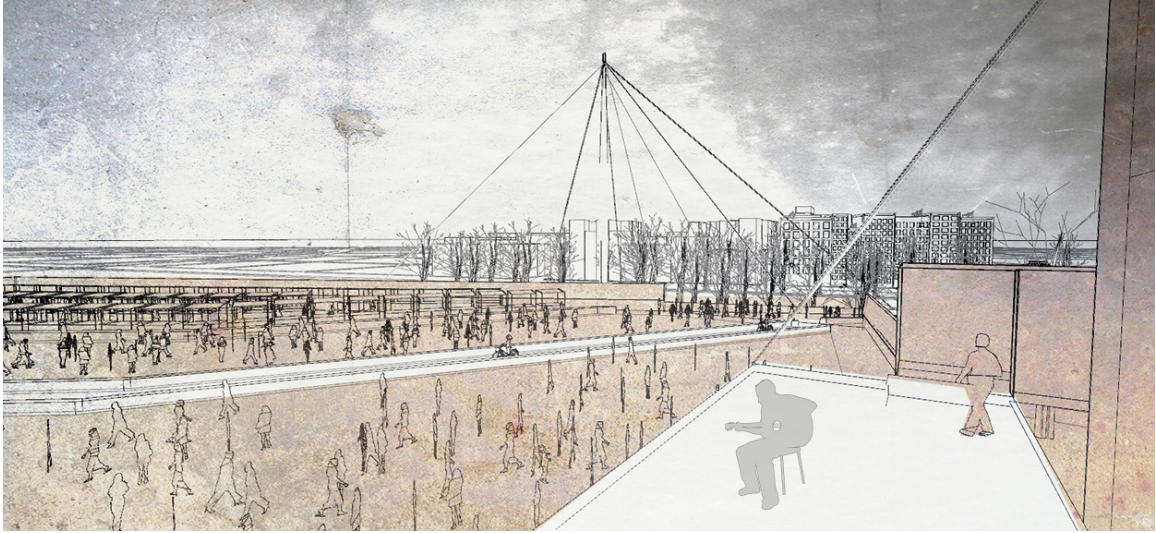
VIEWING
PLATFORM

BACKSTAGE

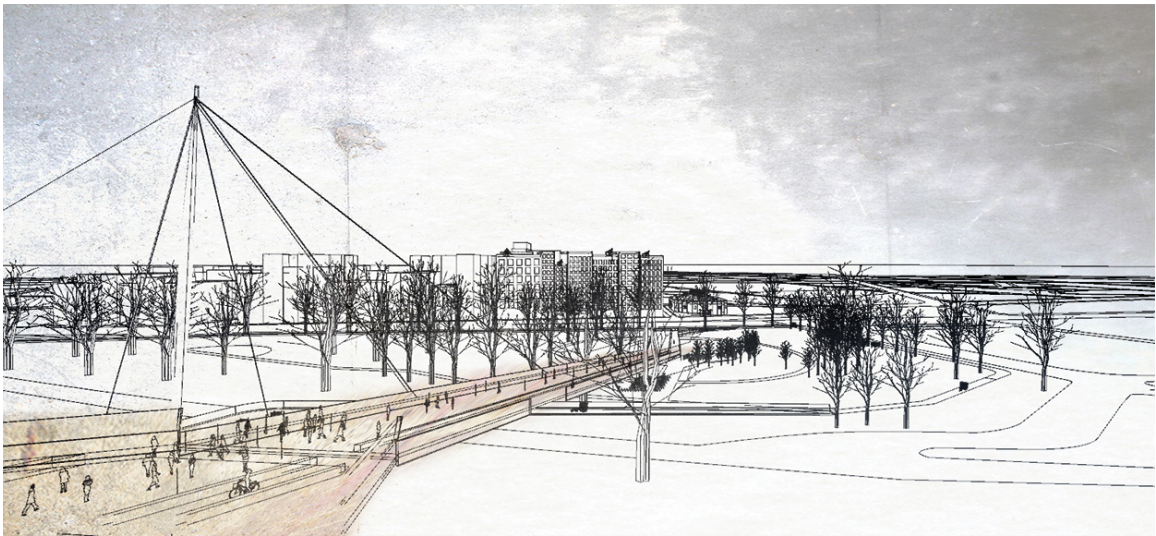
CO-OP OFFICES

BRIDGE TO STAGE

1:500 model showing the headquarters of this structure as well as the viewing platform



Vignette 1 - View from the stage looking towards *Plaza la Cartona* and Recoleta



Vignette 2 - From the viewing platform looking towards Recoleta and Park Thays

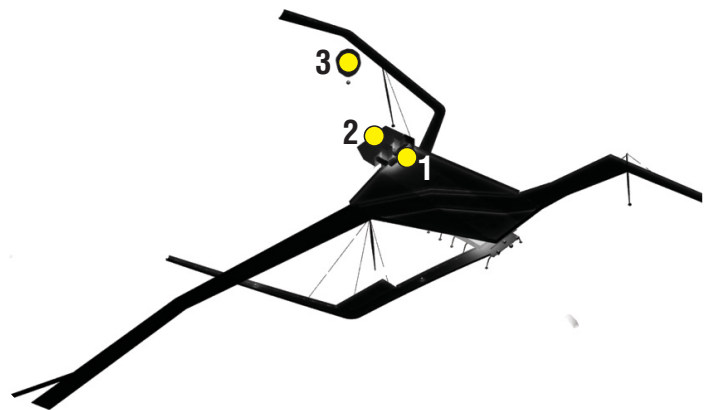
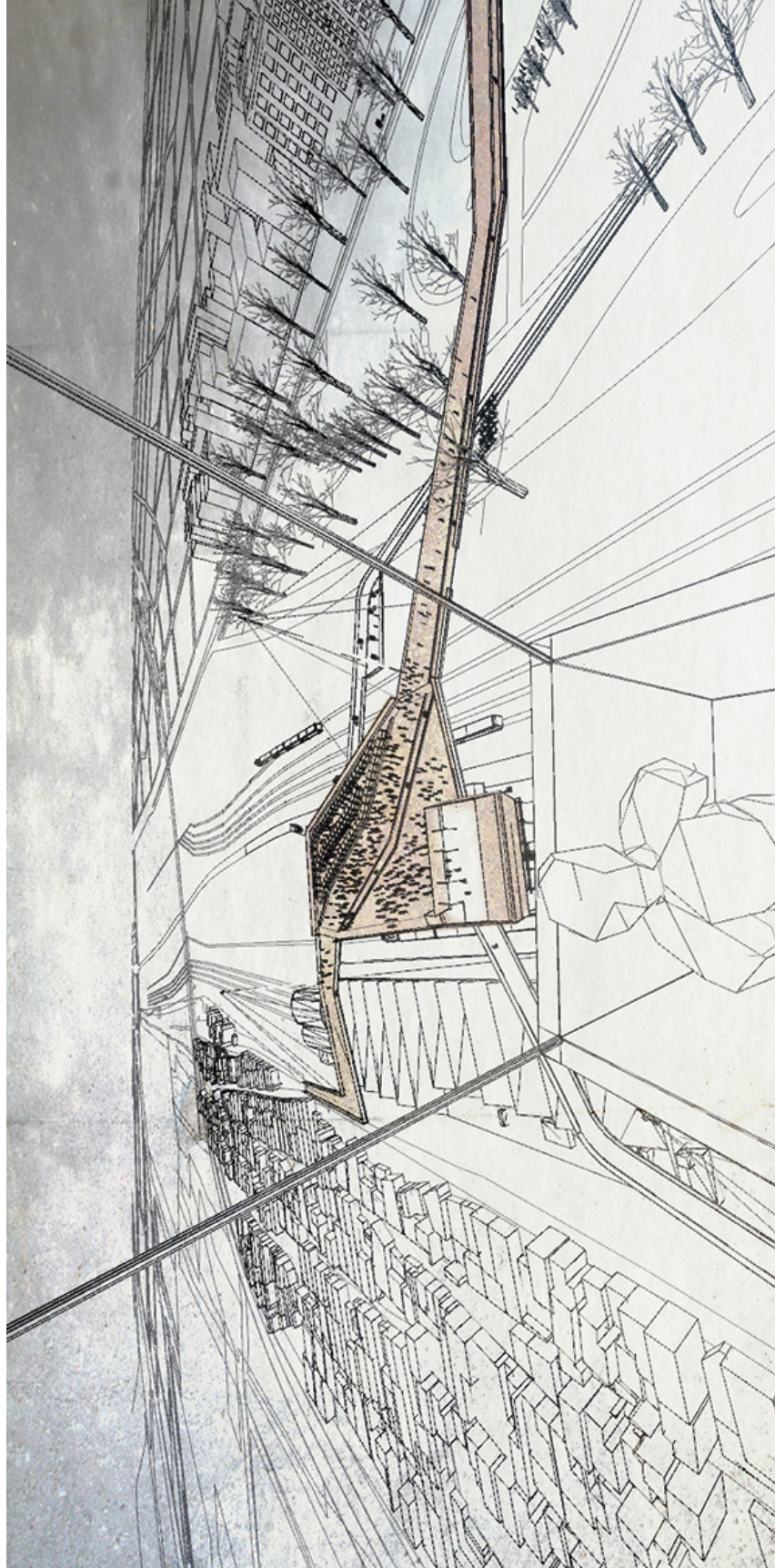


Diagram showing the location of the vignettes



Vignette 3 - View from the solar hot air balloon showing the existing contrast on the different sides of the train tracks, Villa 31 to the left and Recoleta to the right



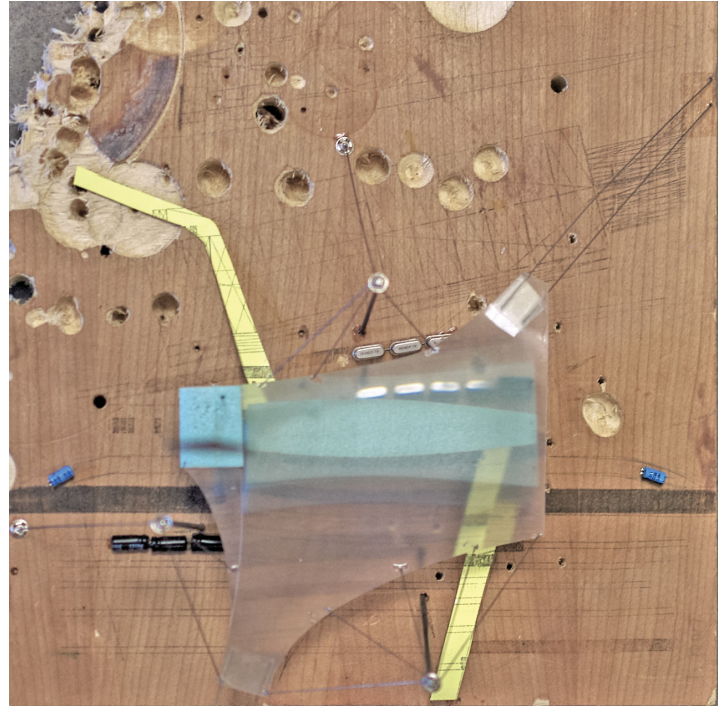
1:500 'piano' model showing the rooftop bugs overlooking the Co-op, the plaza and Villa 31



1:500 built on found piano soundboard showing the design in context, Villa 31 to the right and the new bridges

Phase 5: Blurring

The invisible social boundaries that existed between the two opposing sides are beginning to become a bit blurry. The *cartoneros* and the residents have developed a respectful



1:1000 model showing the public layer above the Co-op below

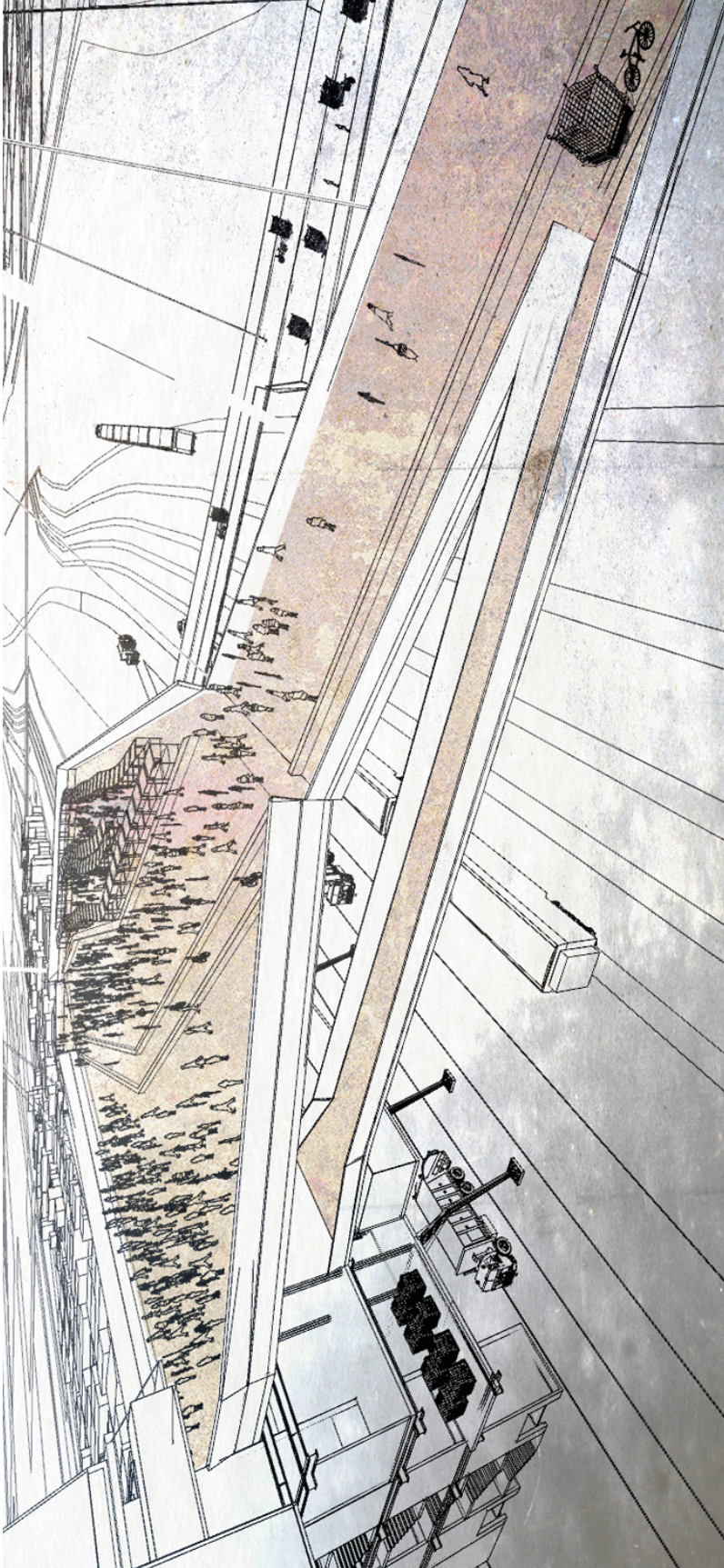
relationship while keeping the streets of Buenos Aires clean. Recycling is no longer a foreign concept but a daily routine for everyone. The local artisans have workshops and studios to experiment with different materials at the Co-op and to sell their goods back to the public in the weekly market at *Plaza la Cartona*. The viewing platforms along with the balloon ride have opened peoples' eyes and minds by being able to see the city from a different angle. The final designed elements are two more bridges joining the public to the industry below. This completes the circulation paths for the *cartoneros* as well as the general public. After decades of being stigmatized by the formal city, the *cartoneros* can now comfortably walk beside the locals with no shame.



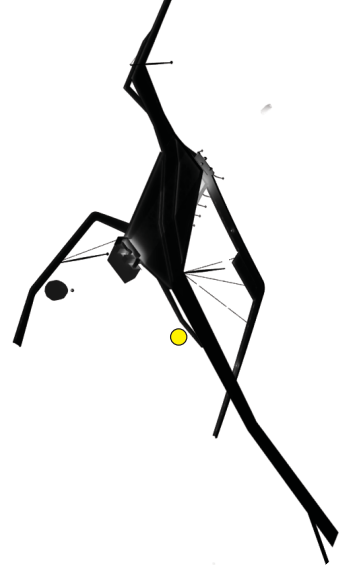
Phase five includes two bridges, both connecting the Co-op to the public bridges above



Phase 5 - The final bridges will connect the top public layer to the industry below



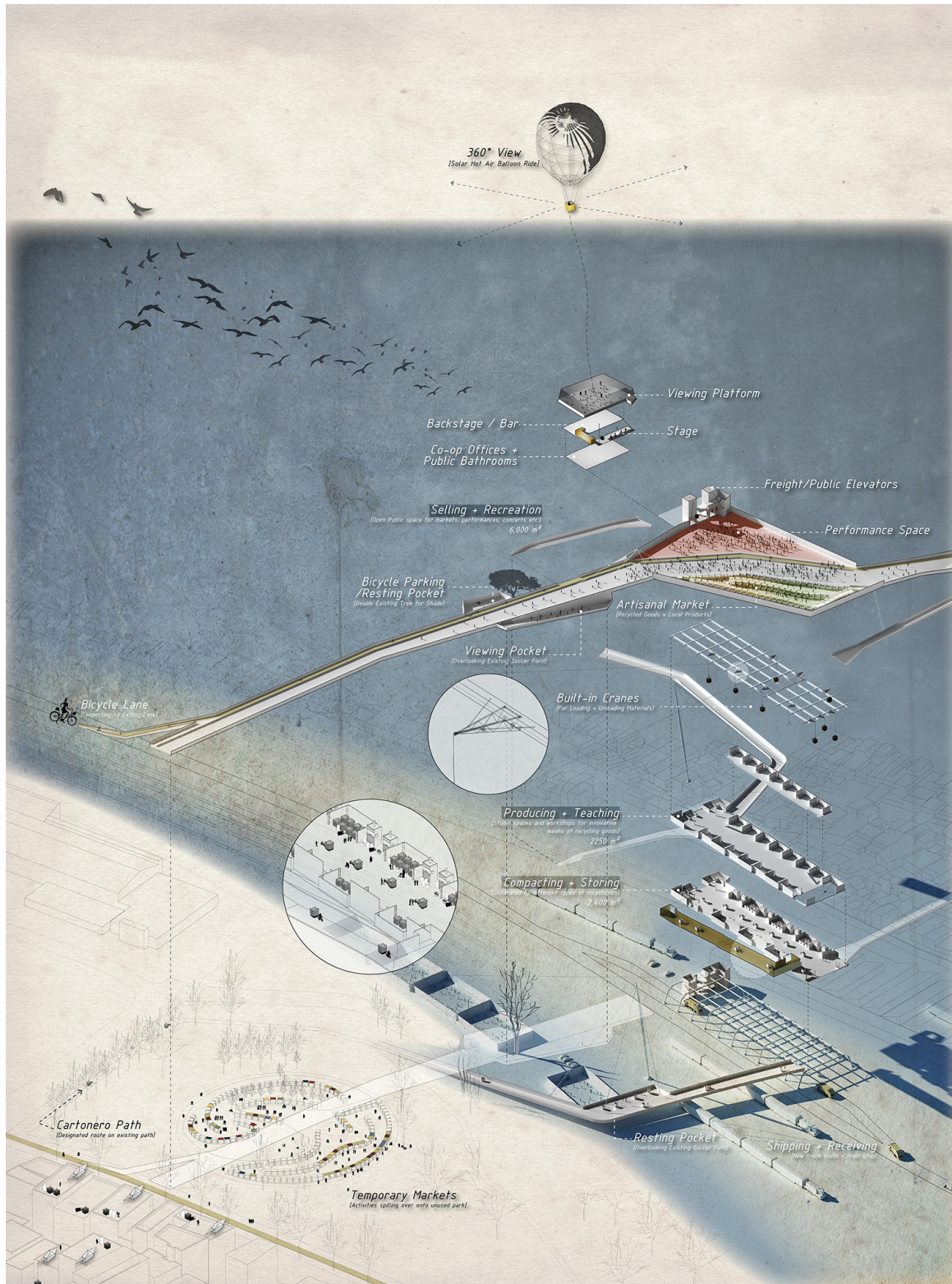
View of the merging paths and the different activities taking place within and on top of the structure



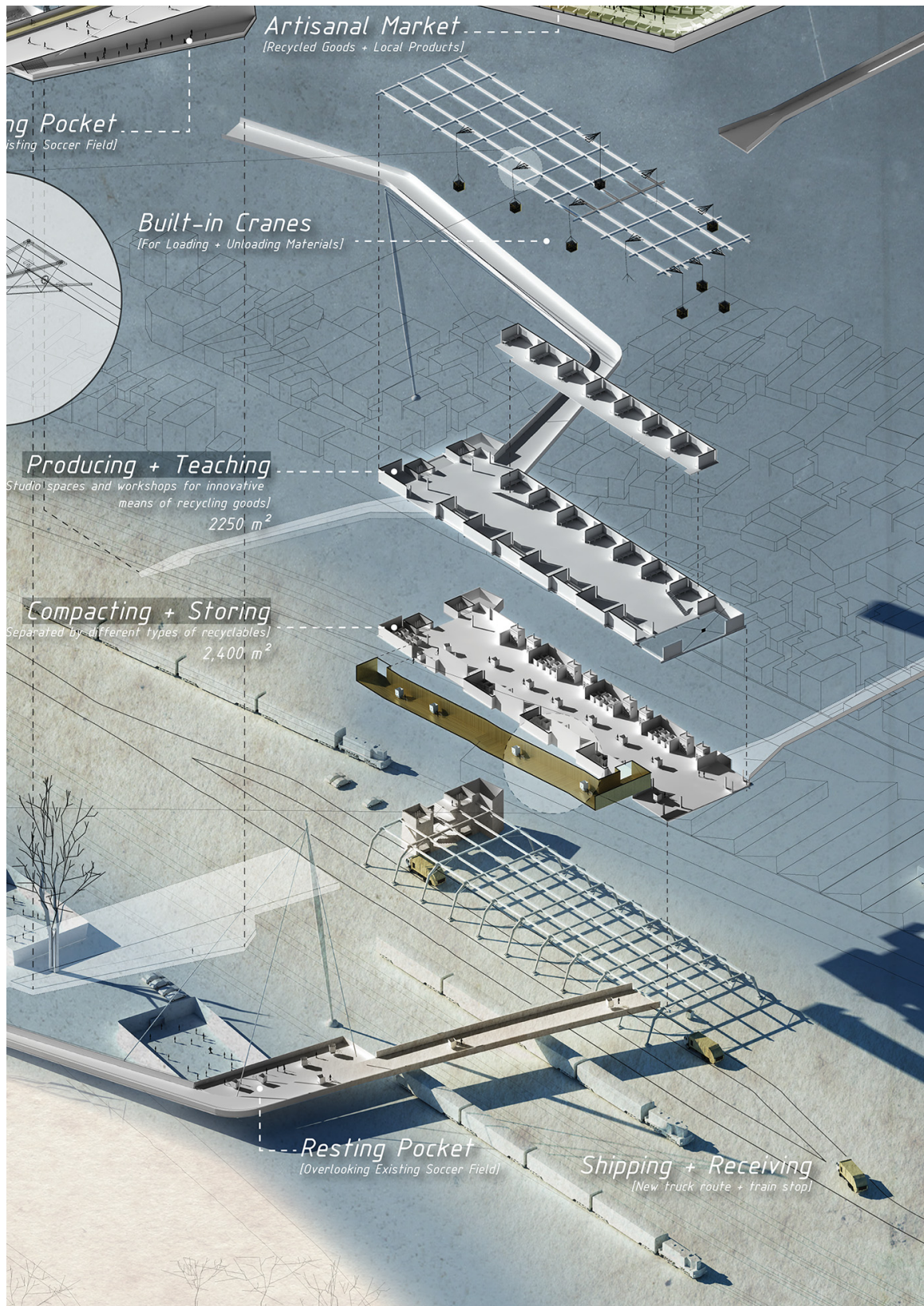


View from the final bridges extending towards the Co-op from Villa 31

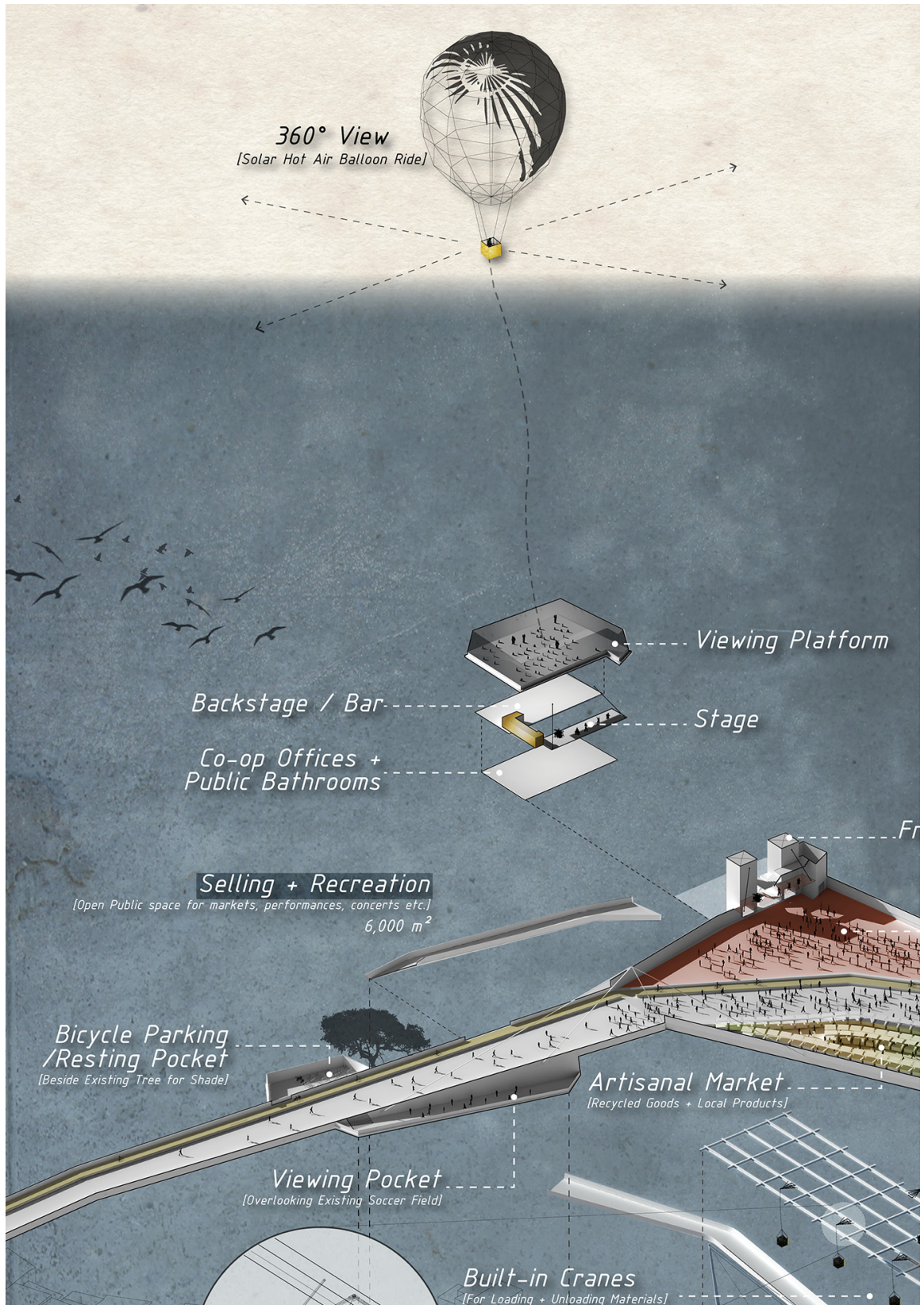




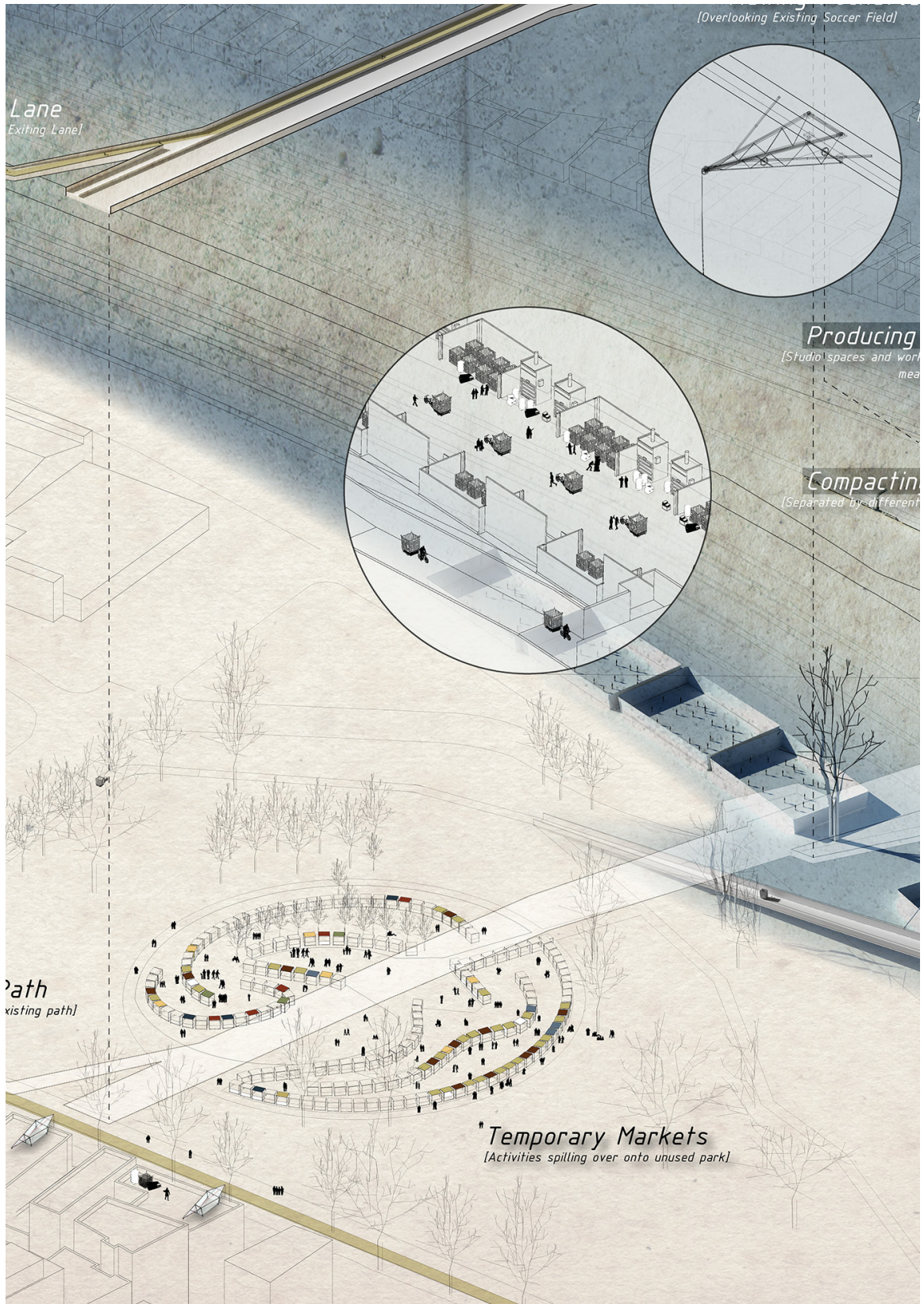
Exploded axonometric drawing showing all the different phases of the project together



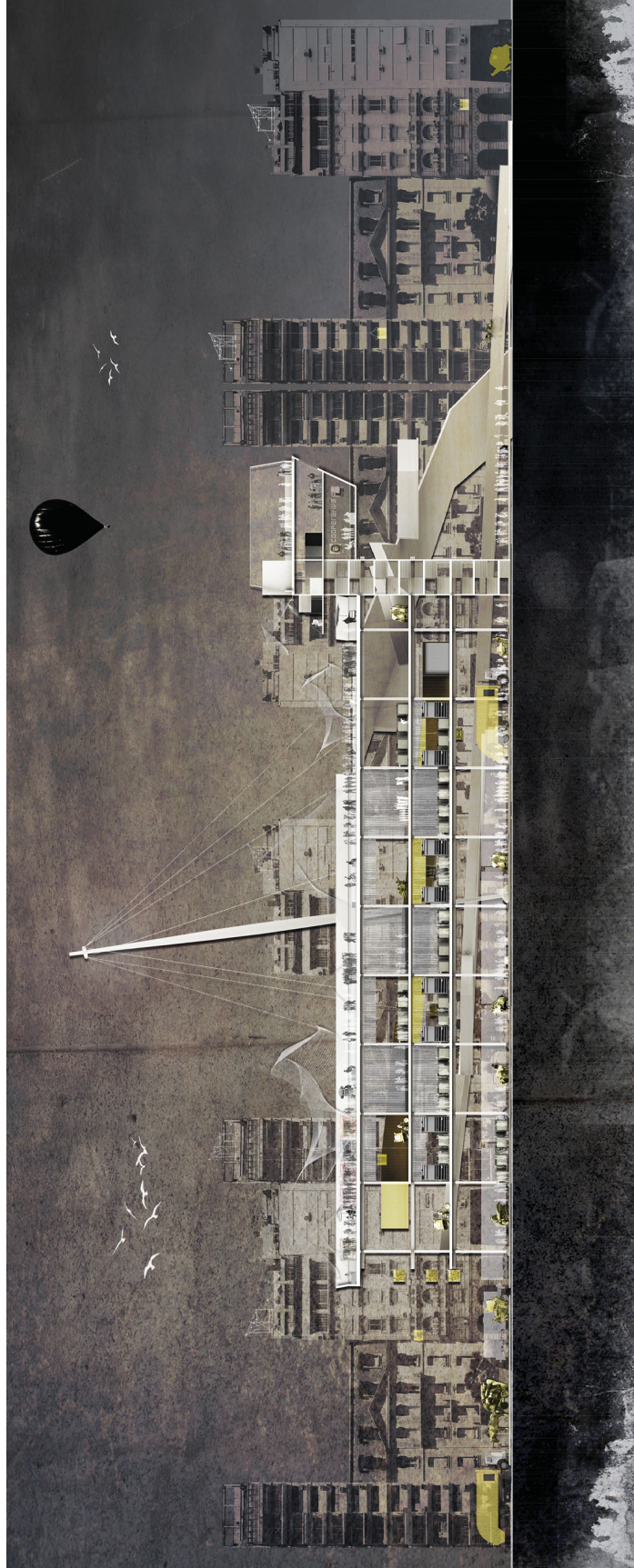
Exploded axonometric detail 1



Exploded axonometric detail 2



Exploded axonometric detail 3



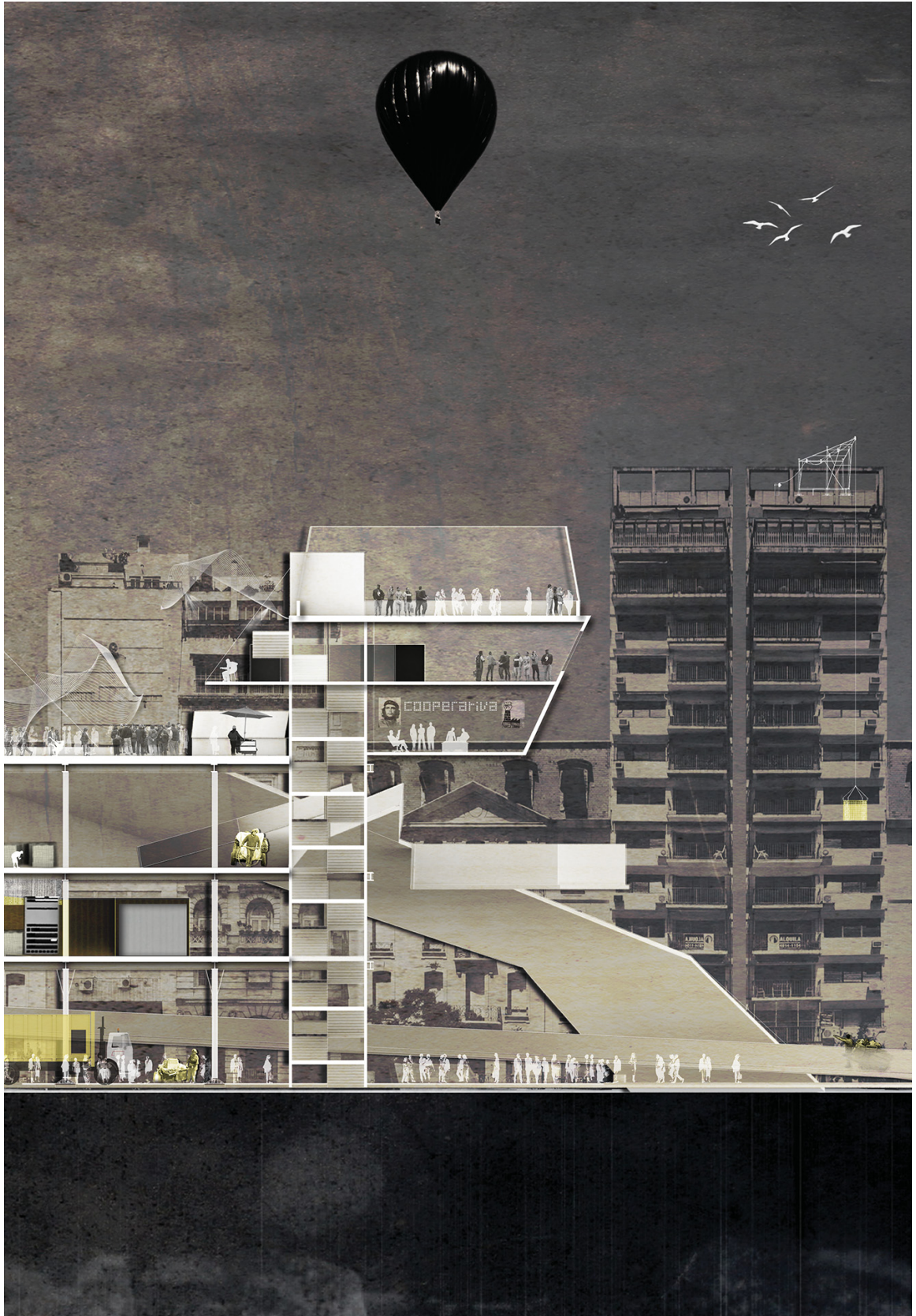
Longitudinal section showing the different activities taking place on each floor with the rooftop bugs in the background



Longitudinal section detail 1



Longitudinal section detail 2



Longitudinal section detail 3



1:500 'piano' model looking from Villa 31 towards Recoleta

Phase 6: Informal Growth

The *cartoneros* have come a long way at this point. They have their private spaces on the rooftops of the formal city as well as their communal work and public leisure spaces at the Co-op and the Plaza. At this point of the project, the formally built structures will activate informal growth, not to say that it has not already happened. The bridge has not only activated its built surfaces but also the surrounding areas within Park Thays and the connecting nodes in Villa 31. This growth is anticipated but unplanned.



Detail of axonometric drawing showing the growth of activity around the bridge and the existing landscaping of the park



Phase 6 - This built infrastructure will activate some permanent and temporary growth around it. The yellow indicates the areas most likely to develop informally



View from the train platform



View from rooftop towards Plaza la Cartona and the Co-op



Train view towards the Co-op headquarters and the viewing platform above with Villa 31 to the left and Recoleta to the right



1:500 'piano' model showing the bridges from Villa 31 connecting to the Co-op and Plaza la Cartona



1:500 'piano' model looking from the informal side (Villa 31) towards the formal (Recoleta)



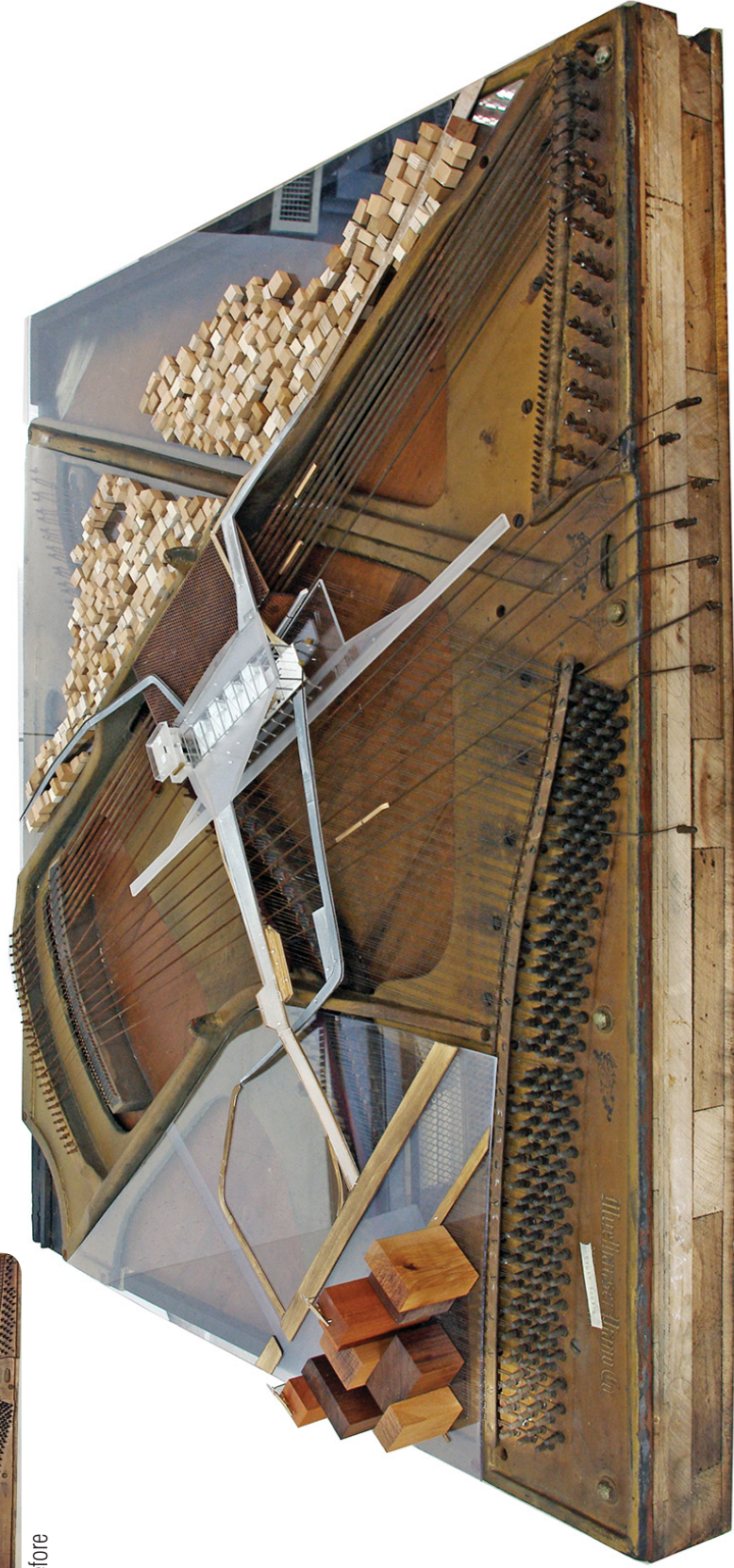
1:500 'piano' model showing the re-worked wiring in order to adapt to the chosen site



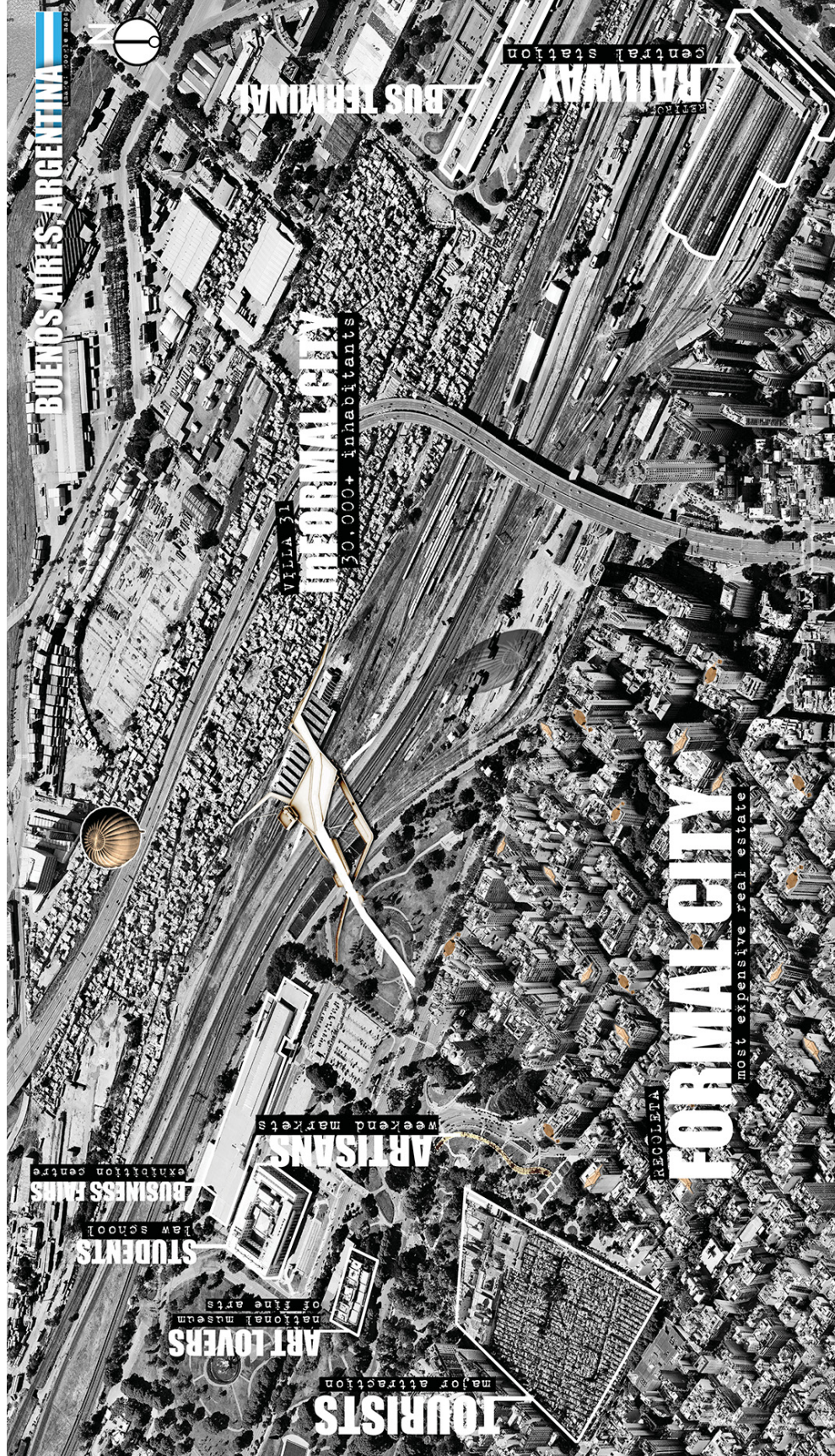
1:500 'piano' model of the design from the informal side



Before



1:500 'piano' model showing the proposal in context. All built from found scraps/objects on an old 'rescued' piano soundboard



Aerial view of the site with the proposed design (base map from Google 2013)



Before



After the first cycle of metamorphosis



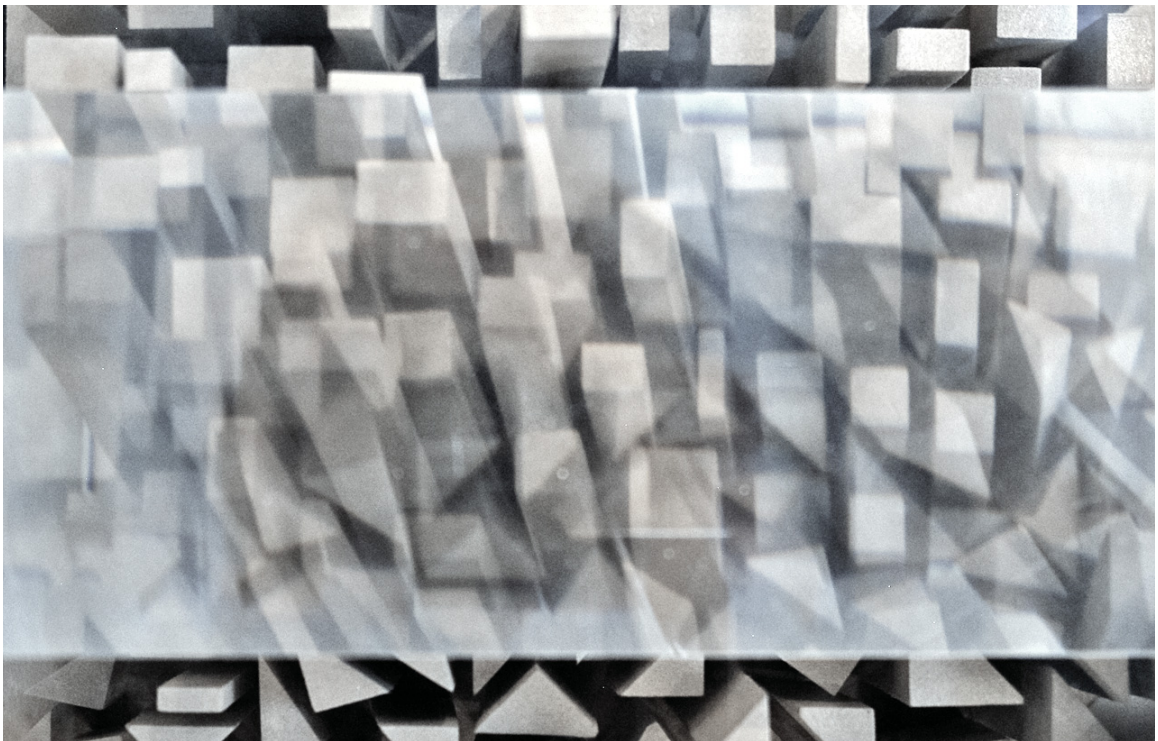
Recoleta with the rooftop bugs



Villa 31 with the three bridge extensions



The proposal in context



Blurring boundaries (for the related final video, see Moghaddamnik 2013)

CHAPTER 7: CONCLUSION

Urban recycler Valter Dos Santos explaining to Brazilian artist Vik Muniz the effects of one can or one person (Walker 2010)



The case of the *cartoneros* within the formal city of Buenos Aires and the problem with waste management was simply a means by which the more complex concern could be explored here. This was the social imbalance that exists within this city and many cities around the world and a criticism towards designers and architects who consciously stay away from this topic. The same principles should apply when designing for both the rich and the poor. Unfortunately, often times the boldest and the most acclaimed structures and designs are for the wealthiest. What does this really say about the society that we are living in? Do we continue on this path towards more inequality and injustice, or can we as architects, designers or citizens take a stance and be that one seed that is needed for a social metamorphosis?

The architect is a designer of space, not of living. The spirit of invention demanded by perpetual transformation thrives best in space shaped by its own invention. (Woods 1992)



Final 'Defence' presentation July 9, 2013 (for the related final video, see Moghaddammik 2013)

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