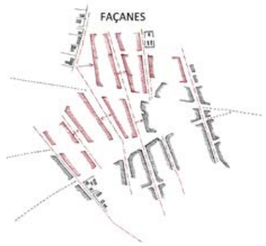
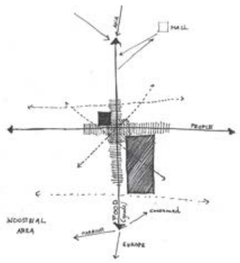
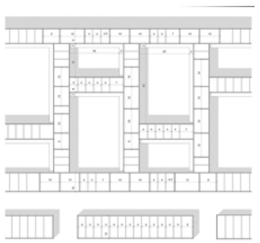
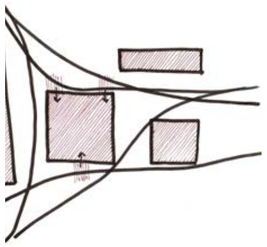




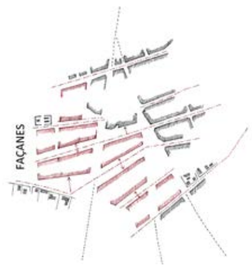




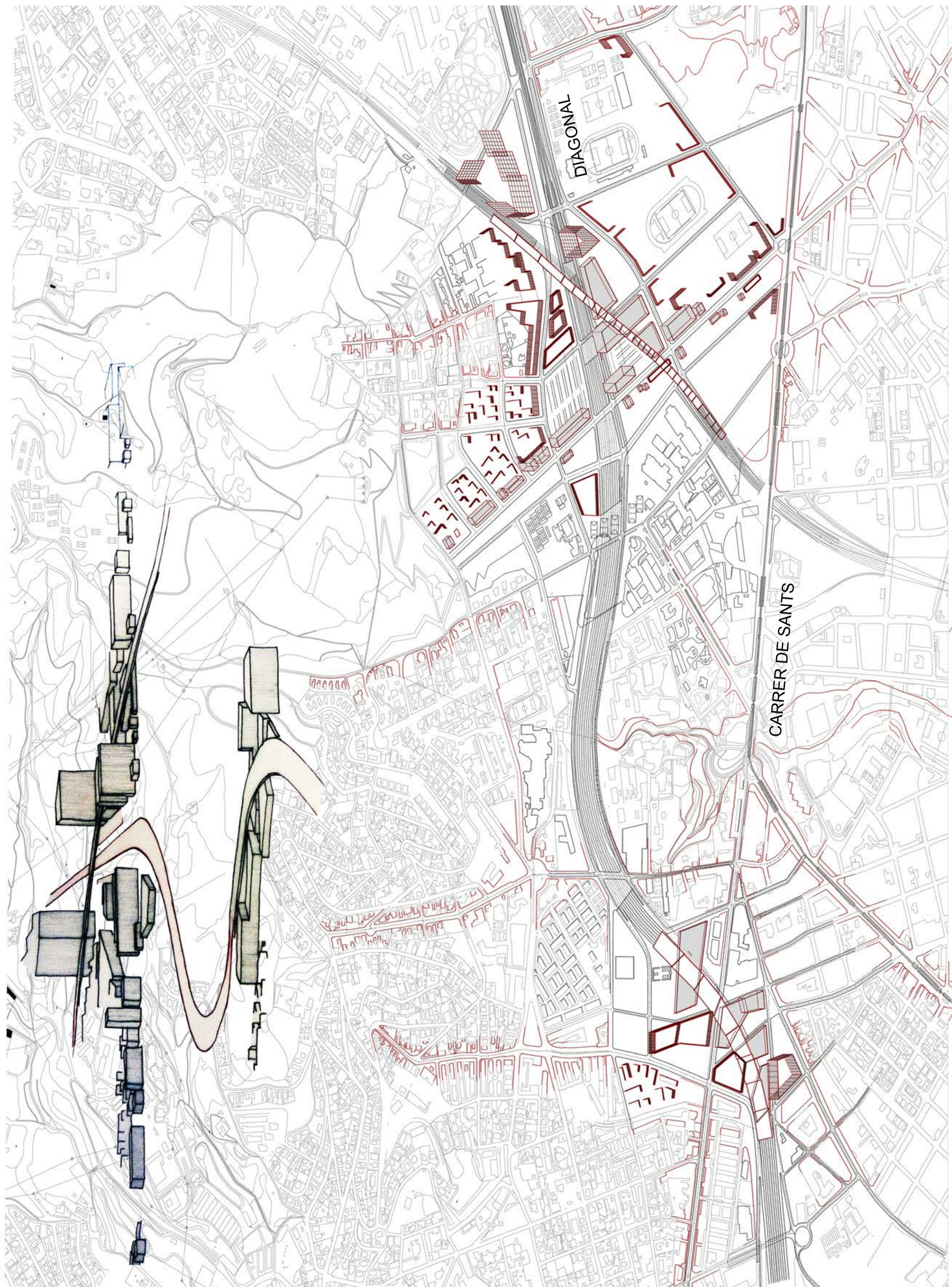
PORTFOLIO

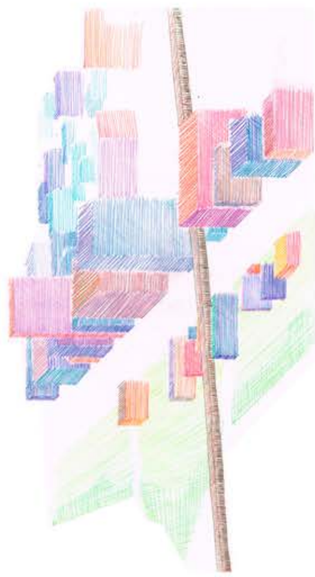
GLÒRIA SERRA COCH

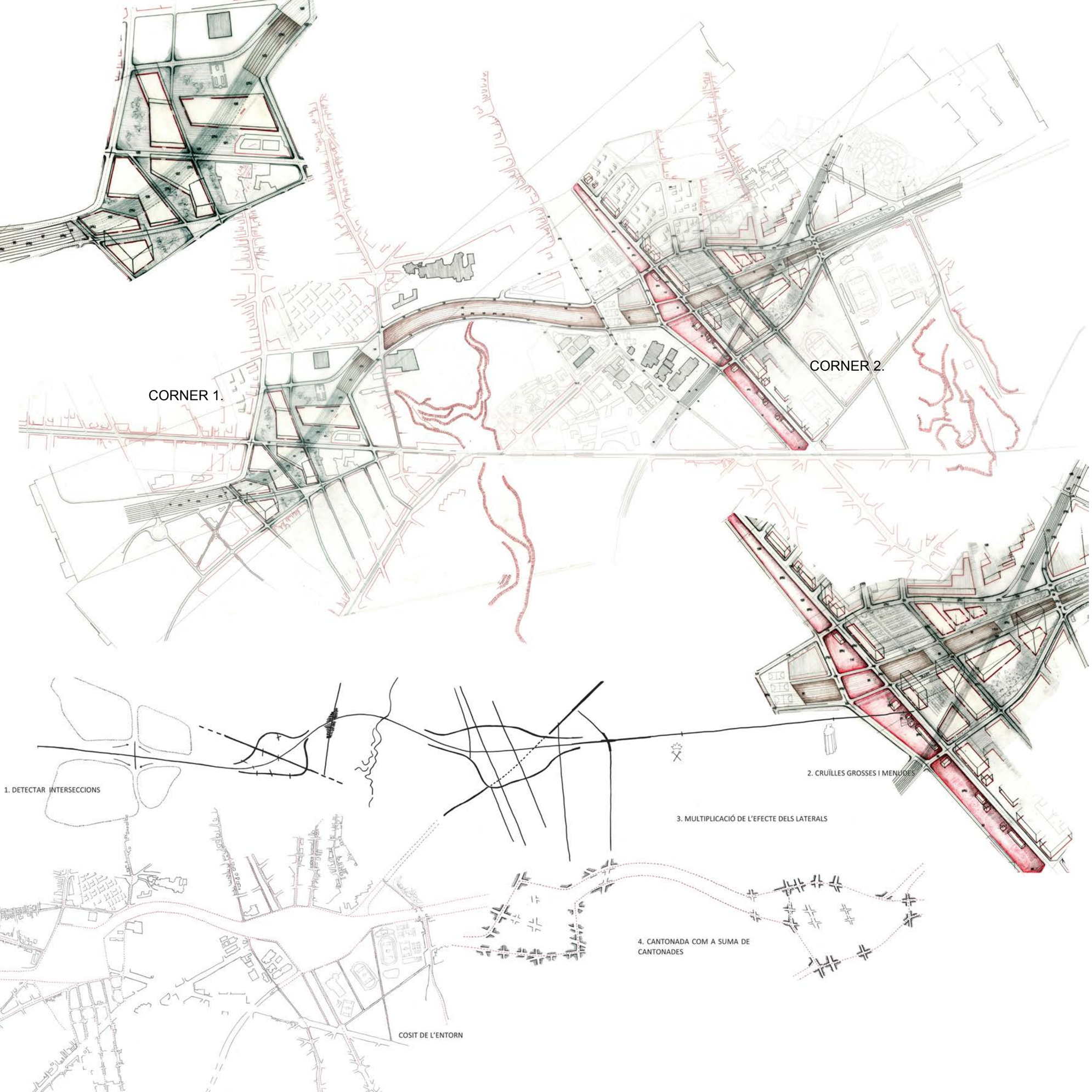
URBAN DESIGN 2009-2017

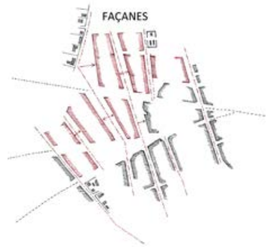


INTERSECTIONS. BARCELONA LINKS









INTERSECTIONS.
BARCELONA LINKS

Authors: Glòria Serra Coch and Marta Jo Juanola
Group project developed equally

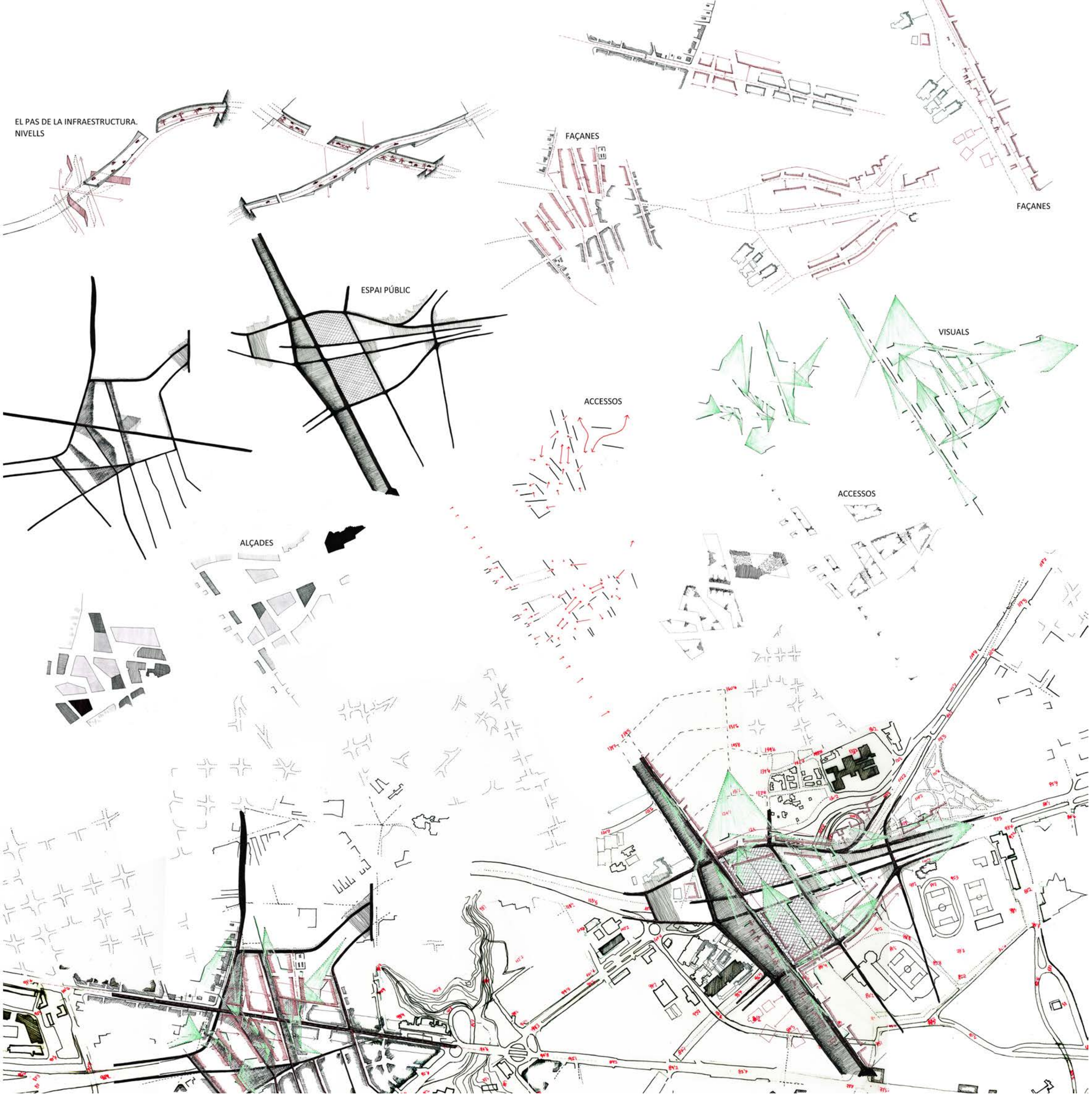
Urban Linking Intervention in the Area Diagonal - Esplugues of Barcelona

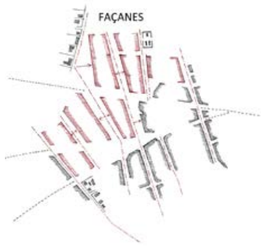
Barcelona
Urbanism VI. Tutor Jorge Perea
ETSAB 2013.
Spring Semester

This project was developed during the 6th and last course of Urban Design. It was selected as part of a publication *Barcelona Links* by the LUB, Urbanism Laboratory of Barcelona, which also coordinated the project's set up and development.

The book had the ambition of tackling the issue of Barcelona potential connections and, through different students' works, it adresses several specific locations in Barcelona where connectivity is the main concern and linking strategies might be the answer:

For links to be the answer, there has to be a tension between two or more polarities that are close enough together and well defined or consistent enough to draw out magnetic fields of action.





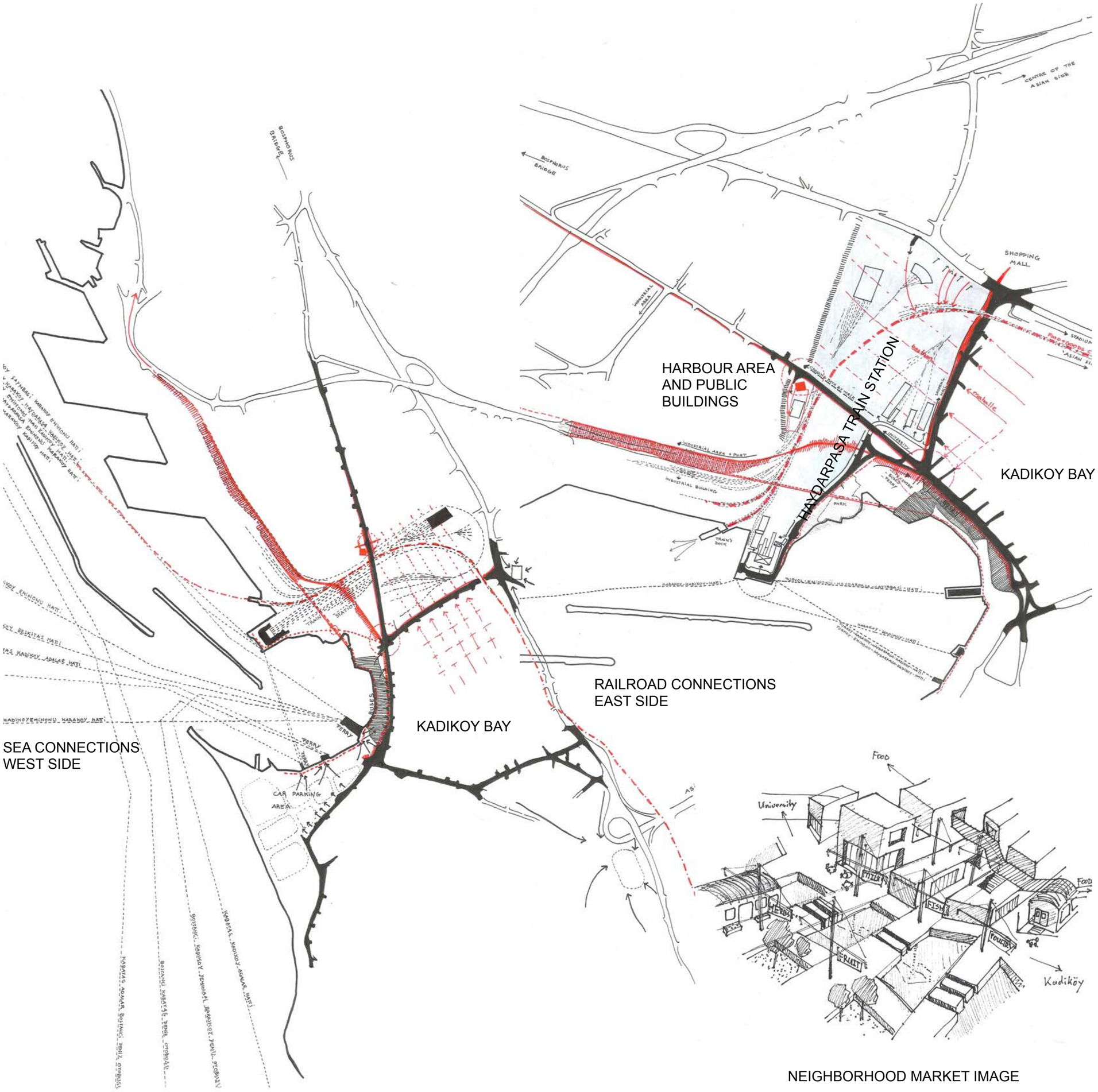
Cities entrances are always an intricate subject to address. When urban centres start to grow and their borders touch each other, nowhere land begins to appear. However, at the same time, new opportunities and other perspectives gain importance. This is the case of the west entrance in Barcelona, through the same street that traverses the entire city: La Diagonal. A gate and an ending at the same time, nowadays it is found in a situation of **disconnection and lack of urban hierarchy.**

The main strategy applied is based on **adding focuses.** The urban continuity of La Diagonal can be reinforced through, not only a longitudinal structure, but also intense ***interventions in specific areas***. The project works by creating two main focuses, born from two existing intersections, and extending and developing their field of influence with the aim of **transforming a border into a hinge.**

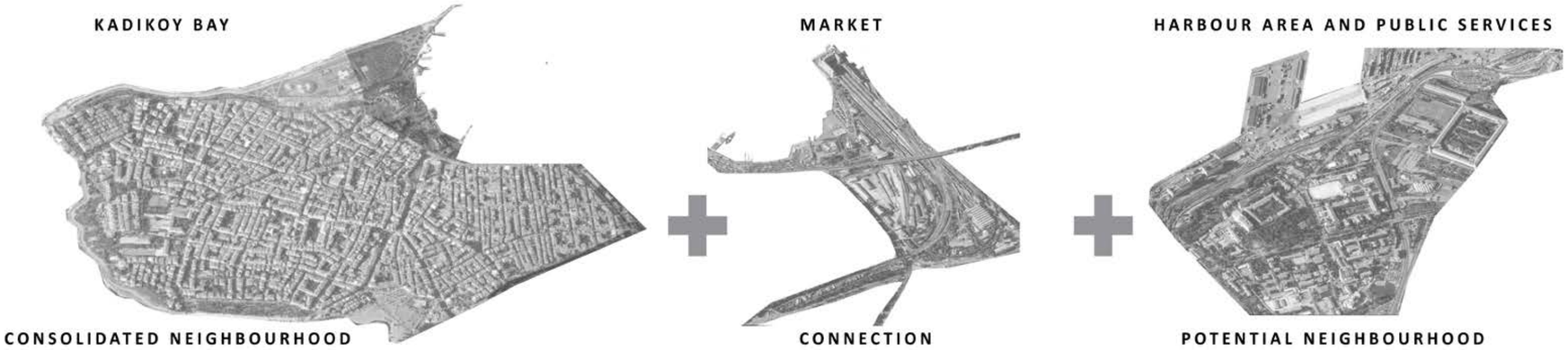
These two junctions develop a **structure at different scales**, achieving a system organized through great intersections built by smaller corners. At the same time, an area that was nowhere land is transformed into an activity centre of the city.

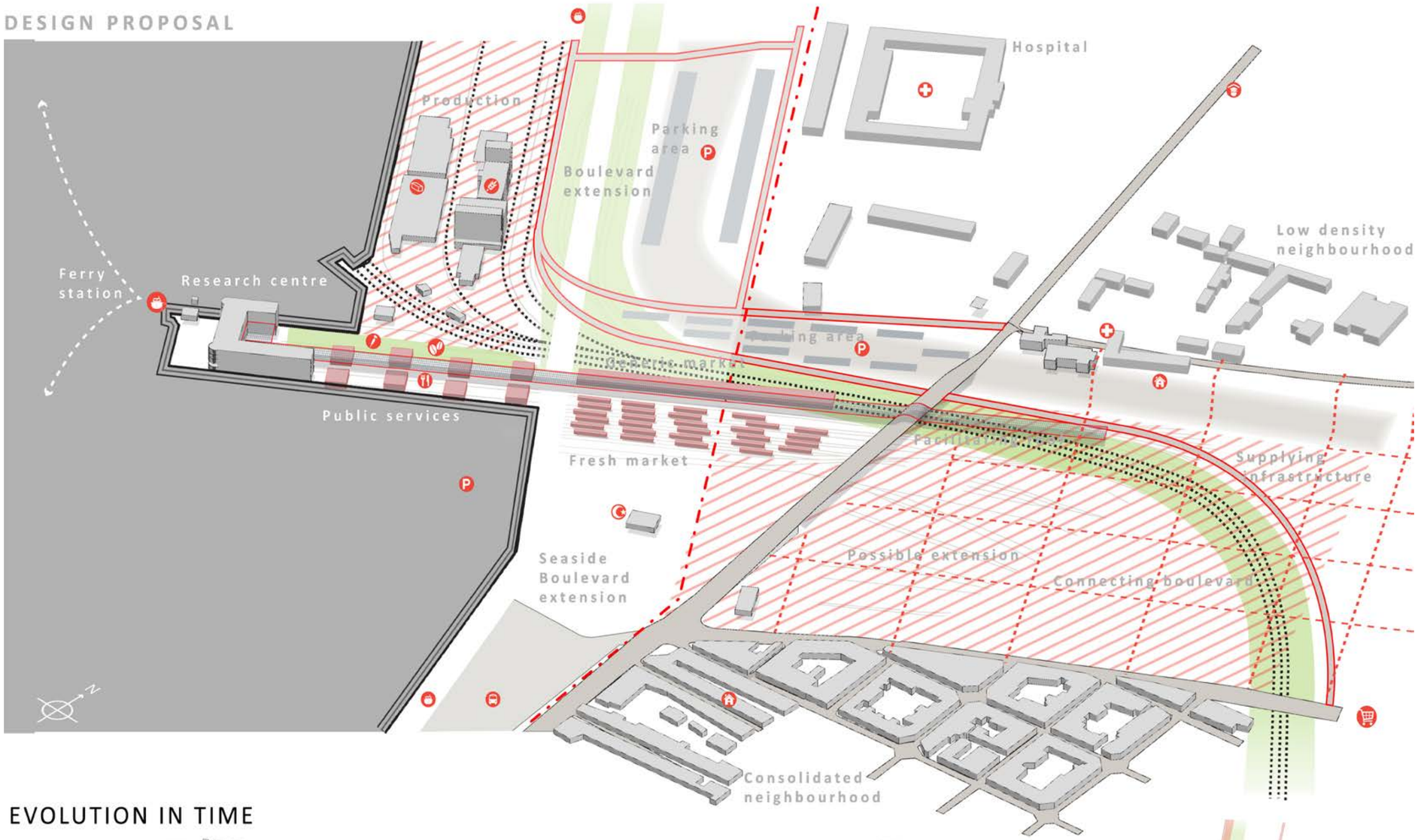
New uses are incorporated - offices, dwellings, great commercial areas - together with a **transportation hub** that ensures the scale leap of adherence between territorial and urban transportation.

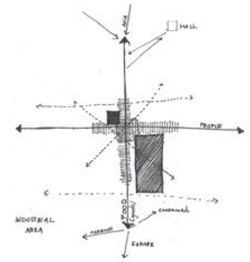
BUILDING THE CONNECTIONS



NEIGHBORHOOD MARKET IMAGE







BUILDING THE CONNECTIONS

Authors: Glòria Serra Coch and Max Brobbel

Group project developed equally

Recovery of the Hardaypasa Train Station and Transformation into a Public Market

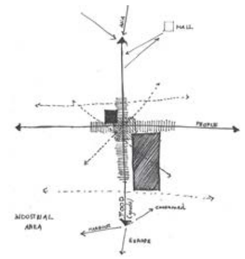
Istanbul, Turkey

Public Buildings Design Studio. Tutor Sien Van Dam

TU Delft 2013. Fall Semester

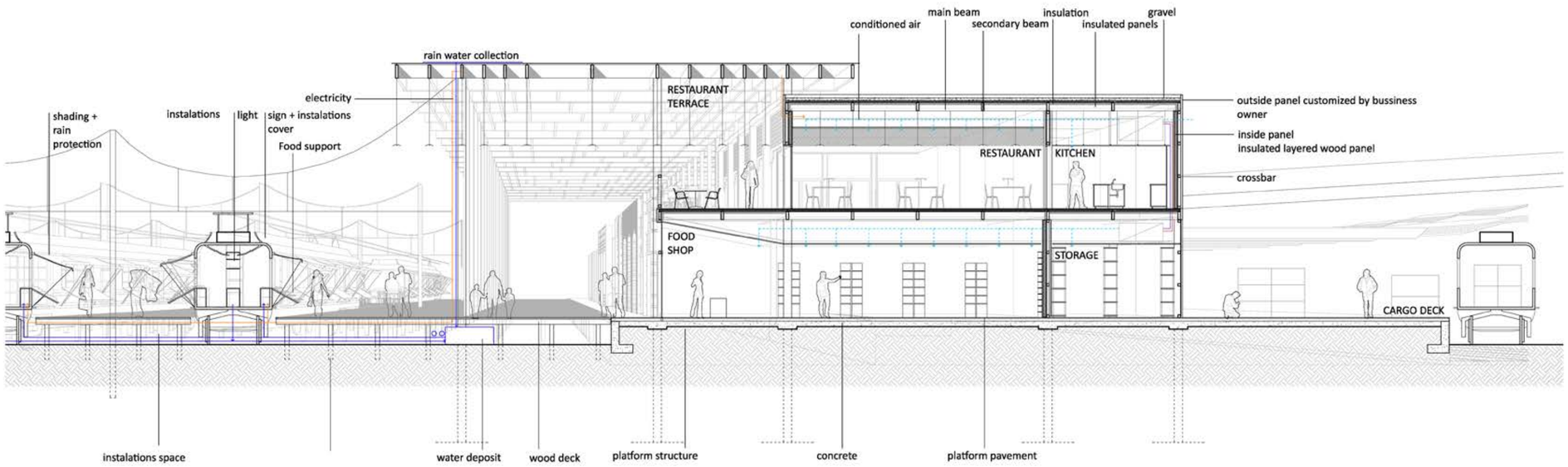
This project was carried out during the Erasmus Exchange in the Netherlands as a first year of Master Studio. Its main focus was given to **Public Buildings and their city impact.** Istanbul was chosen as the urban lab for all the studio projects. However, although the program of a market was proposed, no specific location was given but an area, where students were asked to choose the best setting for this project to be developed.

Our chosen was Kadikoy Bay, at the Eastern side of Istanbul, where we detected the presence of a **abandoned rail station.** Its terrains were under the pressure of immobiliary speculation, as the government intended to transform it into luxury hotels, but several neighborhood protestations had hindered this project. **What a better answer to this situation than bringing back the area to the people through a public market?**

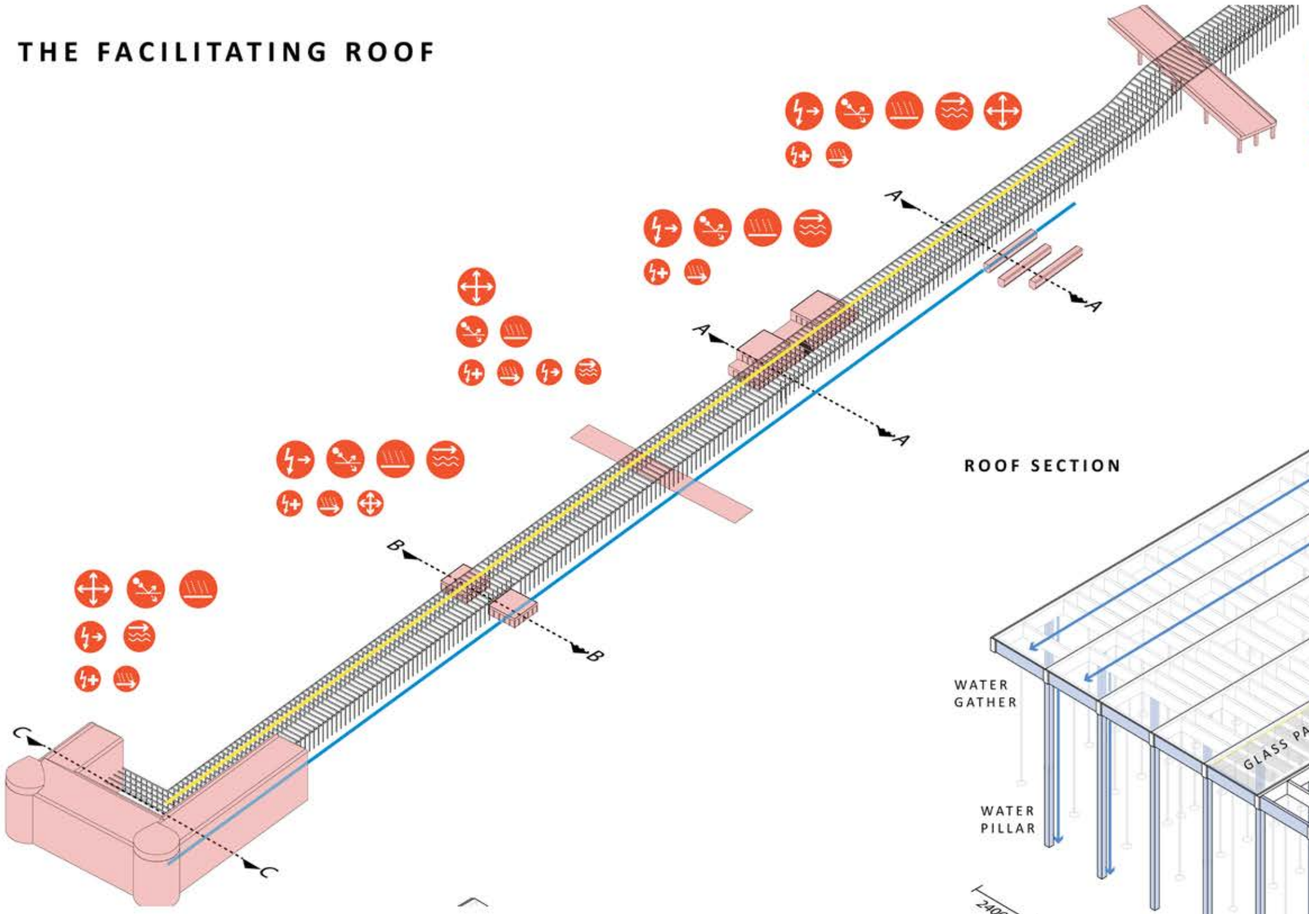


The **Hardaypasa train station**, situated in one of the most lively areas areas of the Asiatic bank in Istanbul, has been unplugged from the railway network due to the introduction of a new train station nearby. **What was a connection and meeting point becomes an abandoned space, a great empty area filled with train tracks.** The original station building is placed in a spectacular situation at the end of the peninsula, a location coveted by luxury hotels promoters. This area also acts as a border, a barrier between the lively Kadikoy bay and the nearby zone shaped by big bags of green, industrial and public building areas.

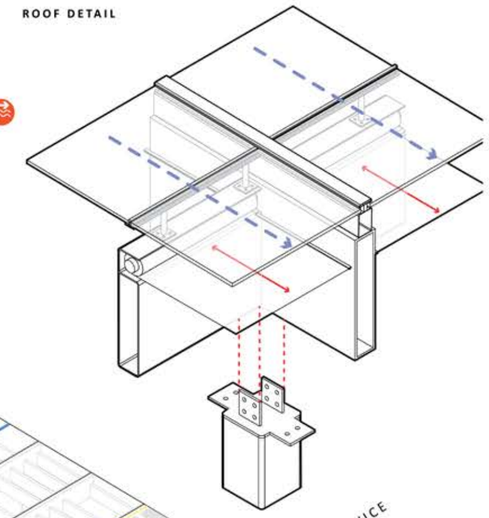
This projects aims to **connect at two scales**. On one side, it recovers the territorial connection by regaining the old rail network and giving it a logistics market use. On the other side, by creating a public building, it favours the transversal one that links the two previously disconnected areas filling-in the abandoned land.



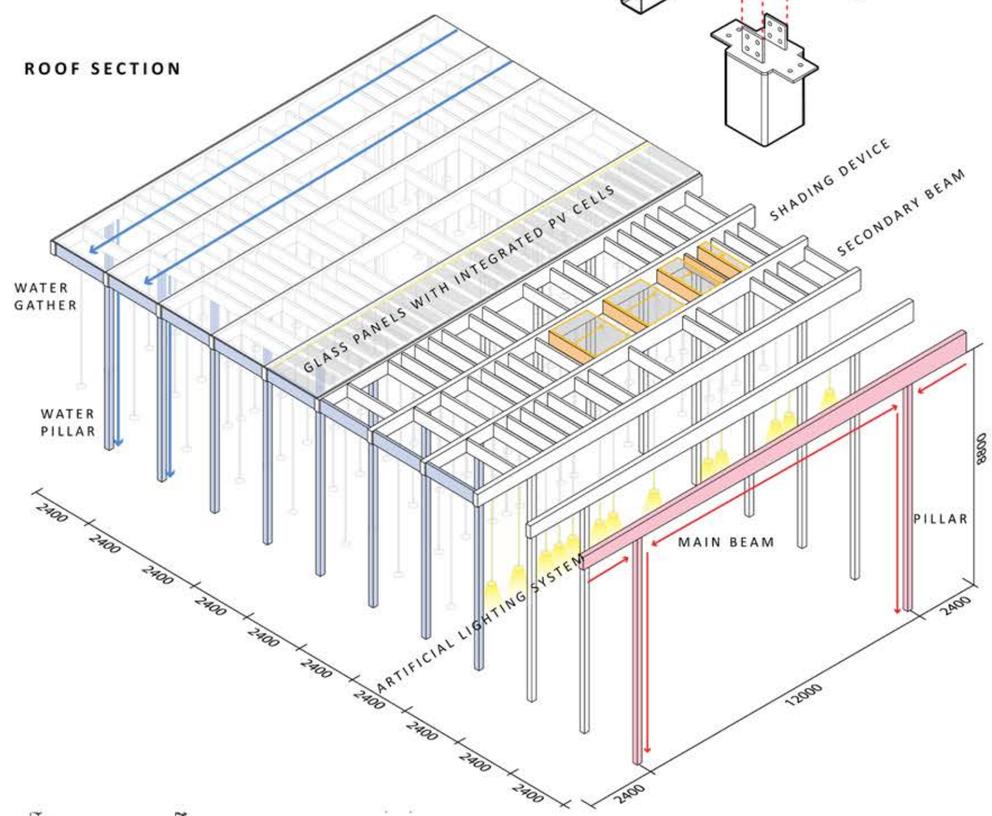
THE FACILITATING ROOF

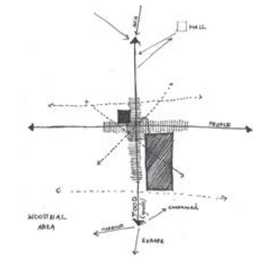


ROOF DETAIL



ROOF SECTION





The market works also in both scales, with a permanent and long range commerce related with a parking zone and a temporal market that offers proximity service to the neighbourhood. Together with the market, a residential expansion area is planned, in order to ensure a proper melding of the public building with the residential surroundings.

The intervention is developed in different consecutive phases to be able to cover an area of such magnitude and to allow the sewing with the existing tissue. The whole ensemble is supported through a **facilitating roof** that offers the needed services to the different elements it encounters, becoming the global relation element.

CIRCULATIONS

SUN PROTECTION

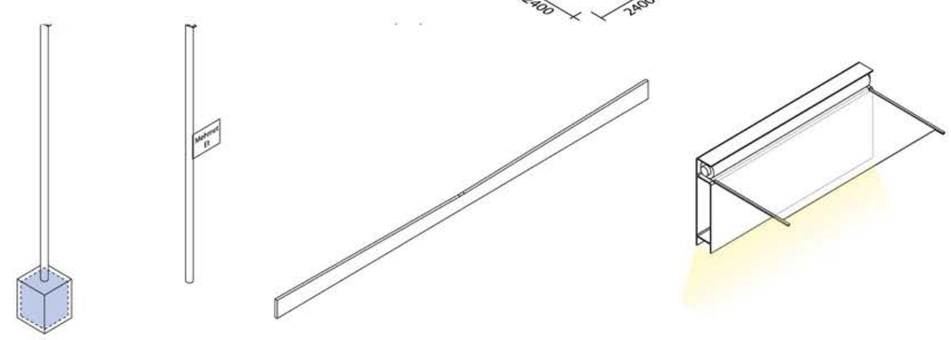
RAIN WATER COLLECTION

RAIN PROTECTION

WATER CIRCULATION

ELECTRICITY CIRCULATION

ELECTRICITY COLLECTION

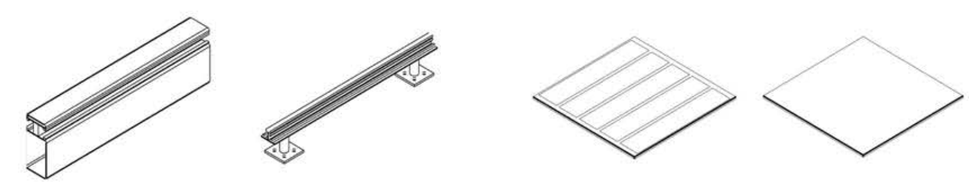


WATER PILAR WITH WATER STORAGE

REGULAR PILAR WITH SIGN INTEGRATED

MAIN BEAM

SECONDARY BEAM WITH INTEGRATED SHADING SYSTEM AND ARTIFICIAL LIGHTING SYSTEM SUPPORT



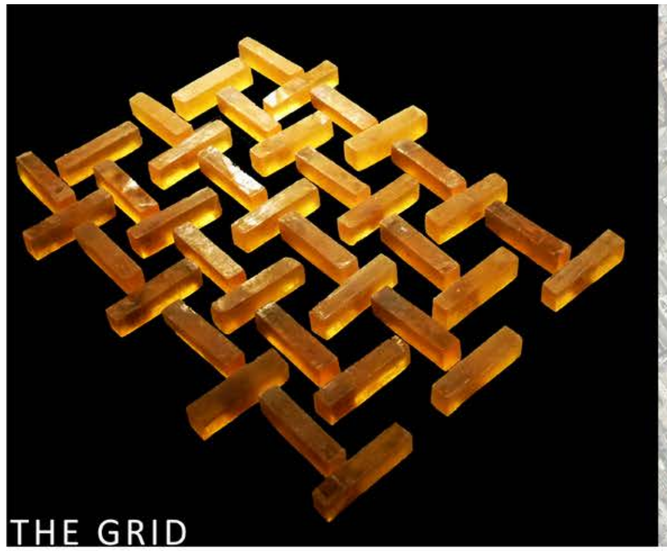
FRAMING IN THE DIRECTION OF THE MAIN BEAM

FRAMING IN THE DIRECTION OF THE SECONDARY BEAM

GLASS PANEL WITH **INTEGRATED PV CELLS** ACTING ALSO AS A SHADING SYSTEM

REGULAR **GLASS PANEL**

THE GRID AS INCEPTION



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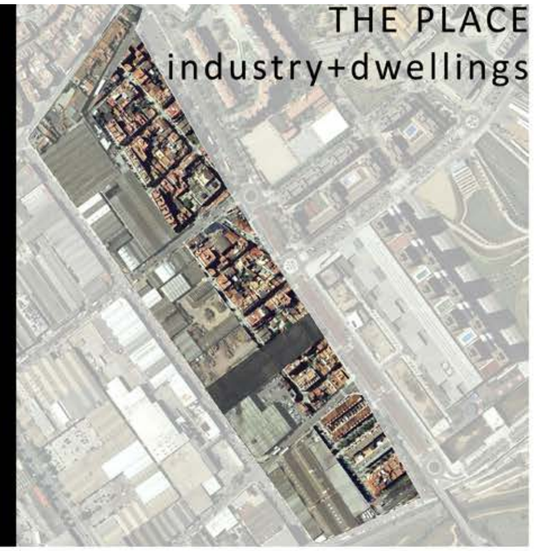
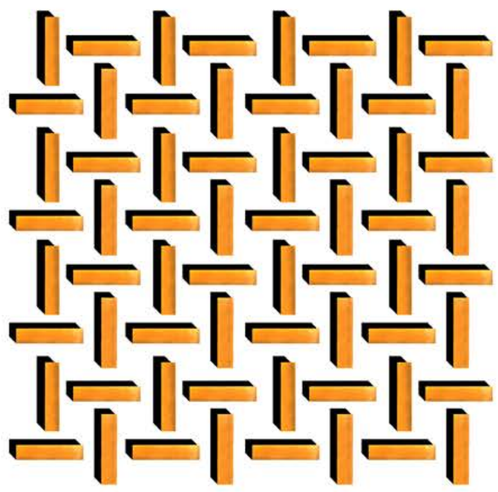
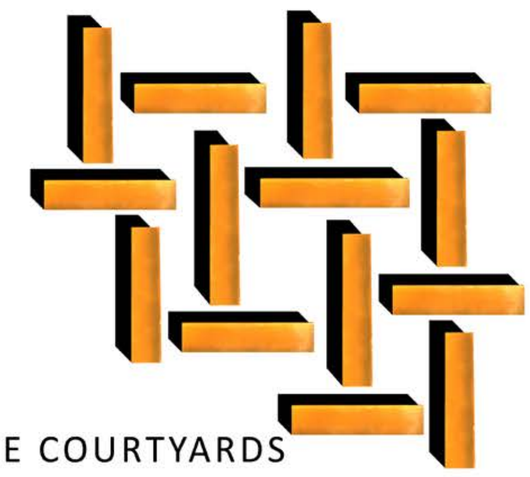
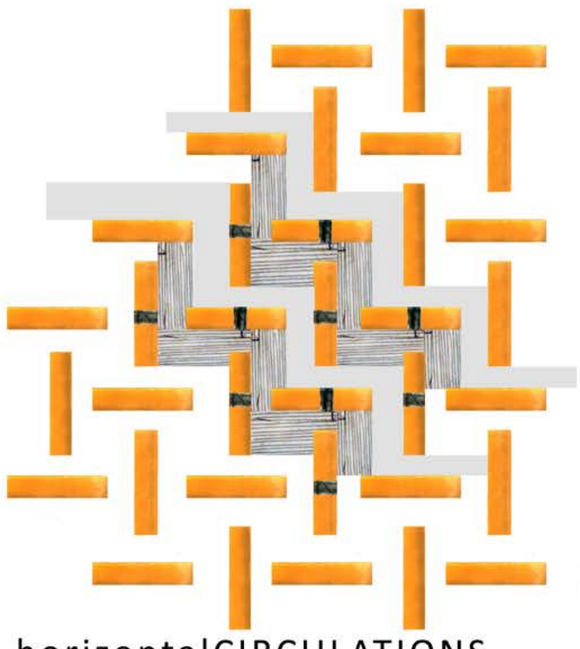


THE PLACE
industry+dwellings

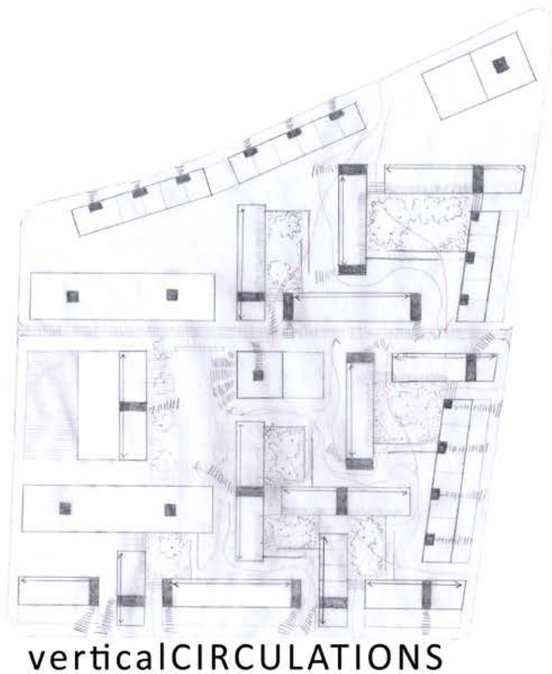




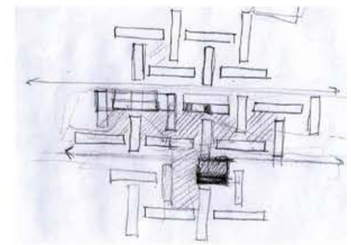
THE COURTYARDS

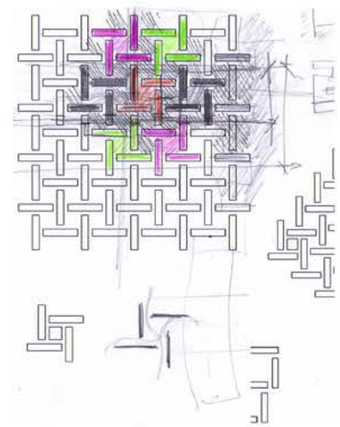


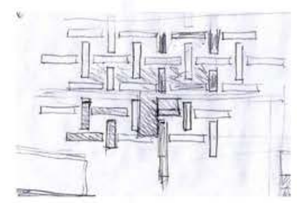
horizontalCIRCULATIONS

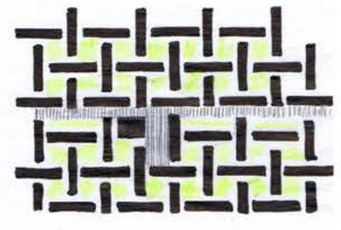


verticalCIRCULATIONS

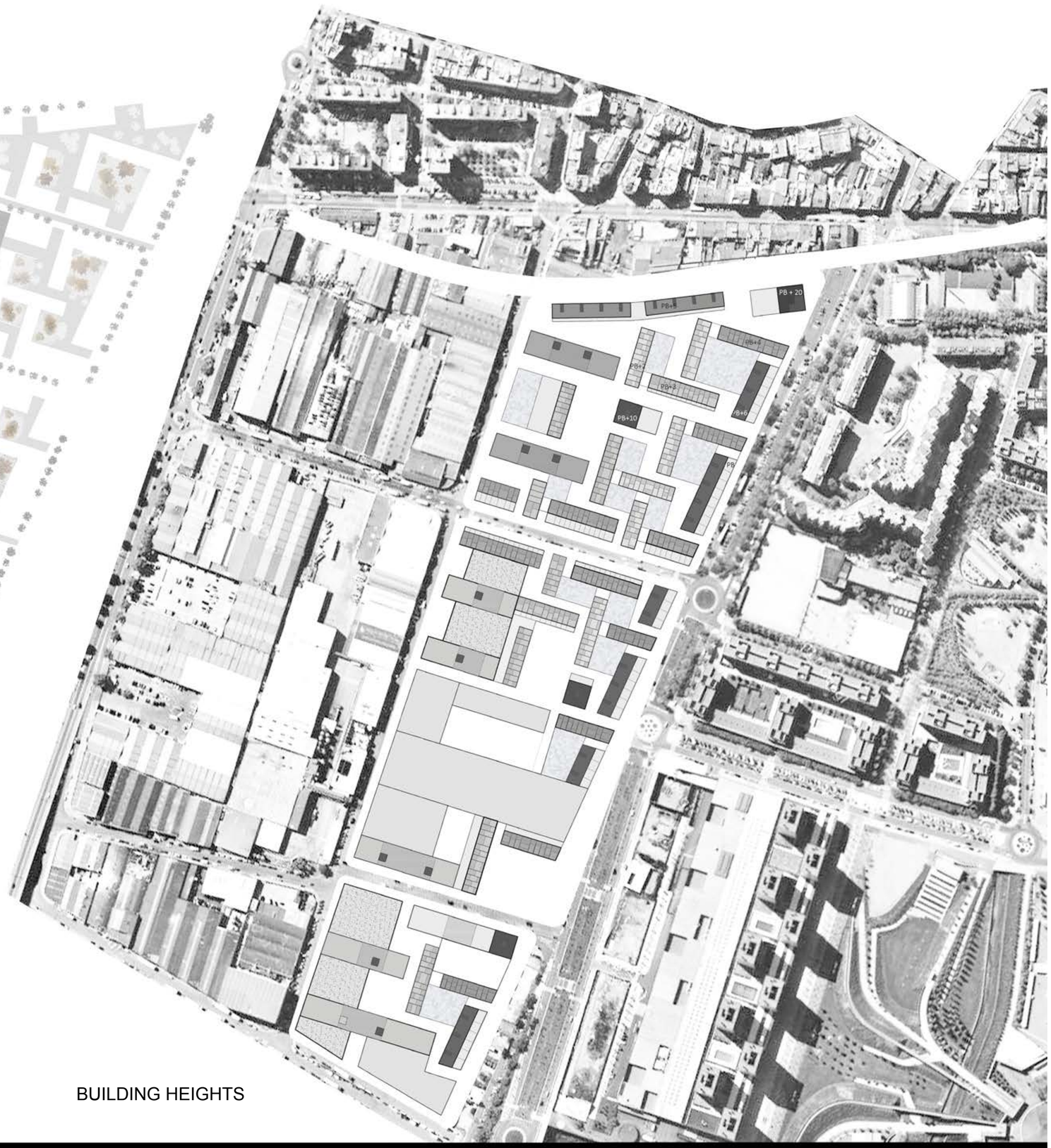




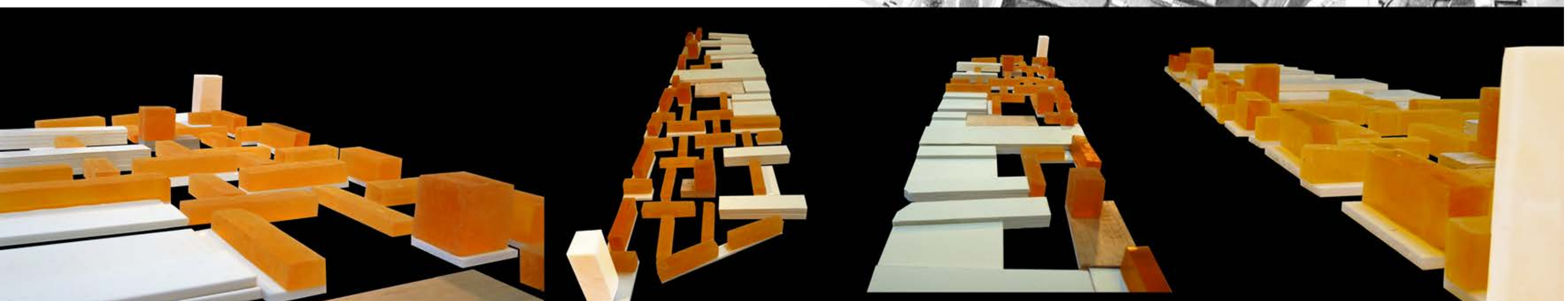




PUBLIC SPACE AND GREEN



BUILDING HEIGHTS



THE GRID AS INCEPTION

Authors: Glòria Serra Coch and Marta Jo Juanola

Group project developed equally

Transformation of the urban tissues adjacents to the road of Viladecans

Viladecans, Catalonia, Spain

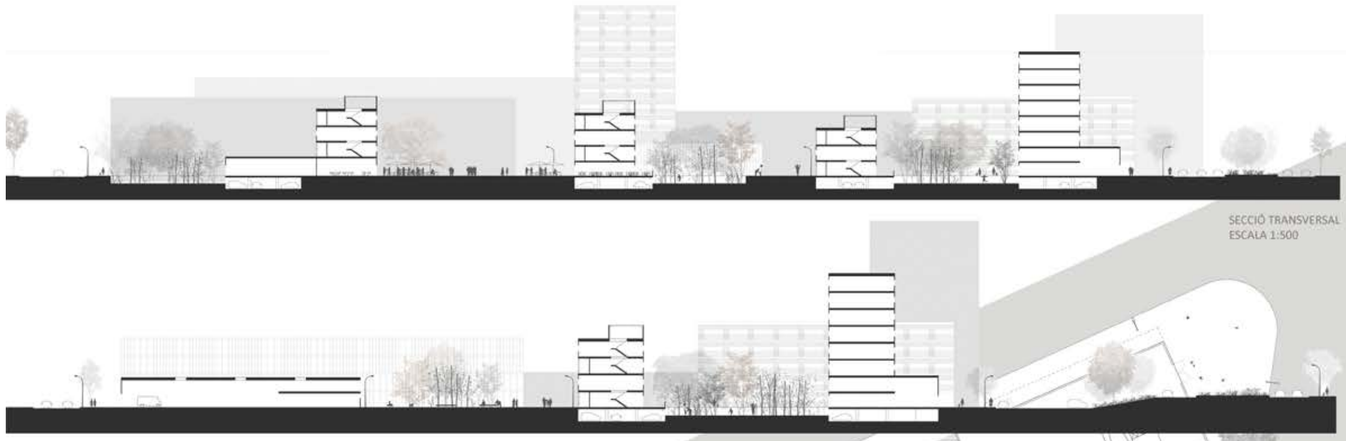
Urbanism IV. Tutor Sebastià Jornet

ETSAB 2012.

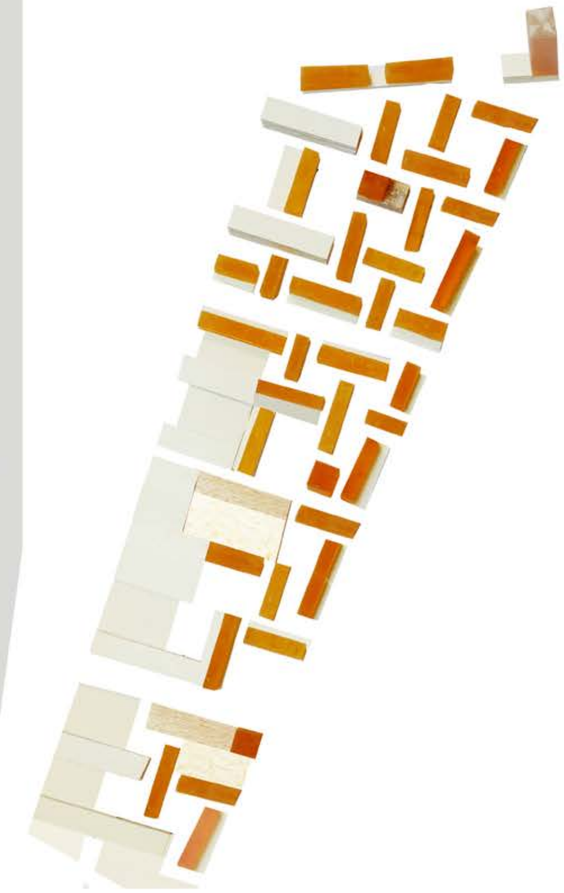
Spring Semester

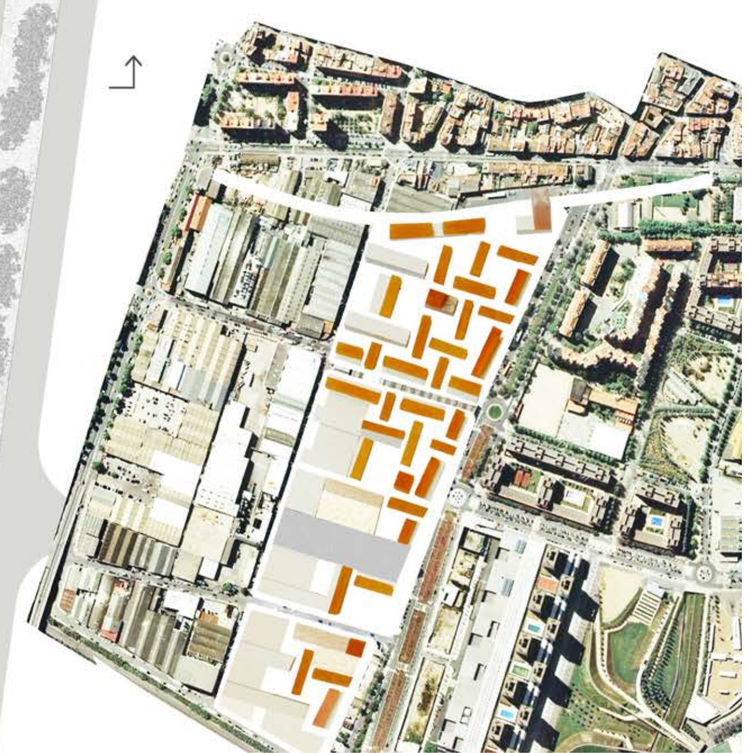
This project was developed during the third year at ETSAB. It iwas part of the urbanism course on residential growth and the main objective was to t**ransform an industrial area of Viladecans, a location close to Barcelona, in residential tissue.** The aim was to transform 50% of the area in dwellings, keeping half of the existing industry. The idea was that this first transformation would bring new dynamics that would induce the remaining industry to naturally transform into residential as well.

The exercice included a first analysis of the area current situation, the planning of the residential growth and the establishing of its related needed services (schools, commercial activity, public services, sport facilities...) With this information, actuation phases were determined, including the temporal vector in the project.



PUBLIC SPACE





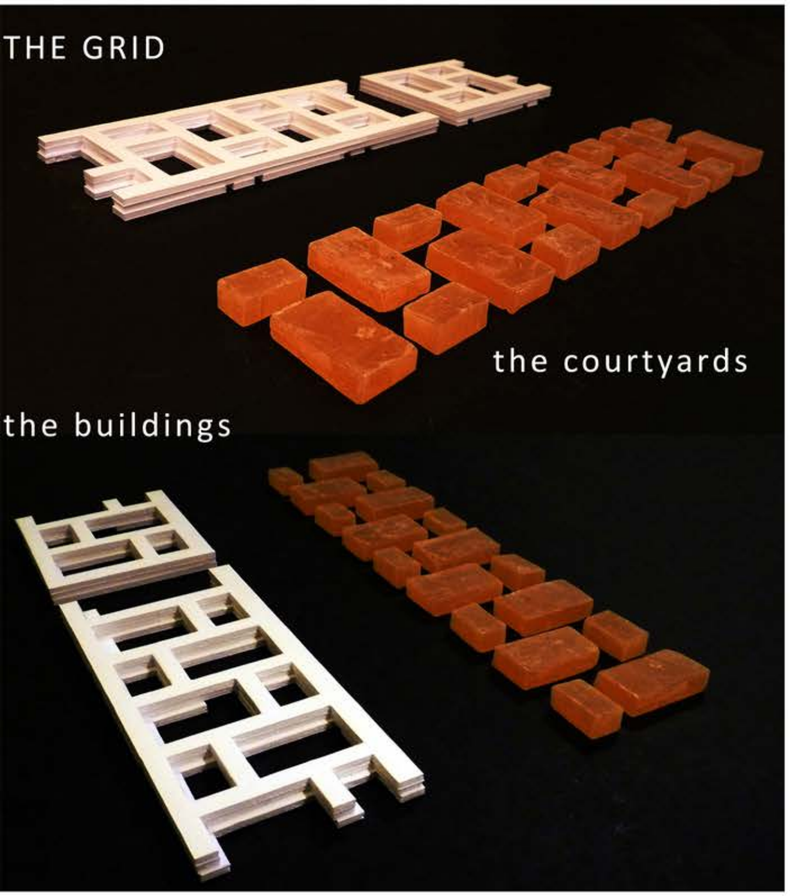
The urban project is based on the implementation of a grid that organizes the existing plot and allows its structuration. The urban grid size is established by dividing the industrial blocks, as residential tissues demand smaller street distances to favour walking. **The grid departs from a cell that it is repeated throughout the project while adapting to different circumstances.** This cell has its origins in the typical Barcelona block, with four exterior façades and a central courtyard. To give it the appropriate dimensions, an edification depth is planned ensuring crossed ventilation for each dwelling and two sun orientations.

This first cell evolves throughout the project by considering urban dynamics, mobilitiy patterns and public space. The next step is to open the block corners to allow an access to the inside courtyard. By shifting the building bands, new public spaces are created in relation with the central courtyard. When the cells are added one to another and a continous grid is formed, these lateral public spaces become central courtyards themselves, linked with the tissue. At the same time, the grid is flexible enough to allow the incorporation of singular elements in the tissue, like broader streets, corners, office buildings or public buildings.

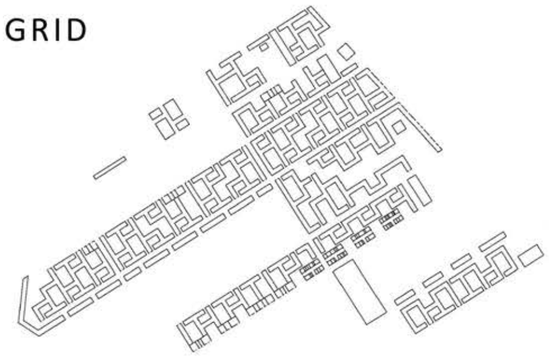
In this way, a residential tissue that incorporates t**wo scales in the grid is created. A larger scale for car related mobility and a smaller one adjusted to pedestrian needs.** While the first one responds to traffic parameters, being larger and allowing only determined routes, the pedestrian has the aim of achieving **free public space dyamics, by merging streets, public squares, communitarian courtyards, paths into a unique flexible ensemble of public space.**

THE BREAKING OF THE GRID

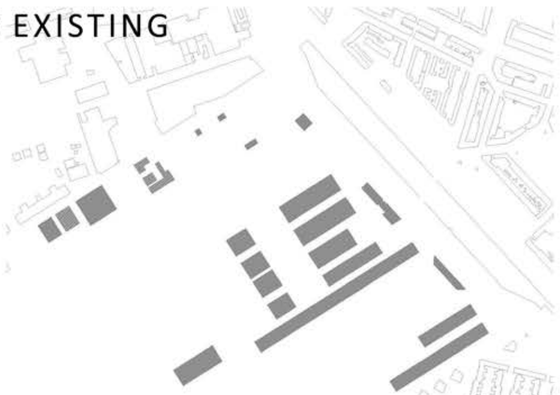
Rotterdam.CONNECTING NORTH AND SOUTH

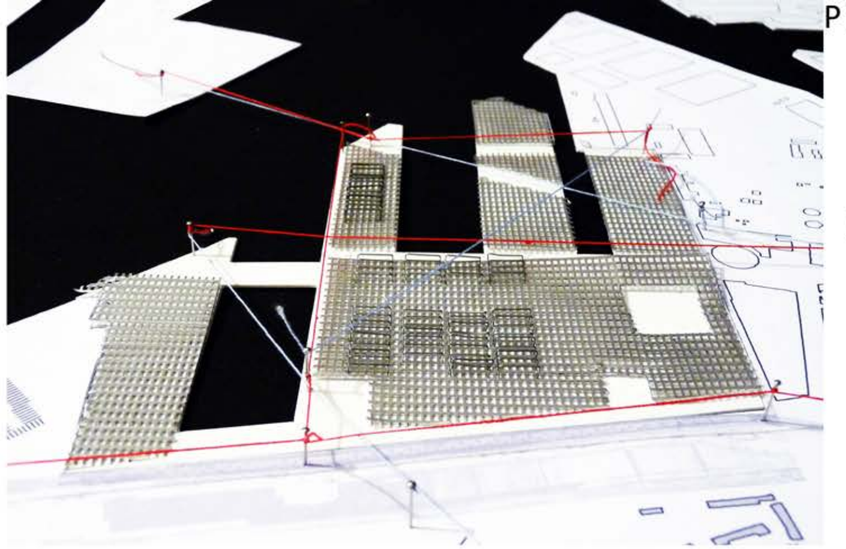


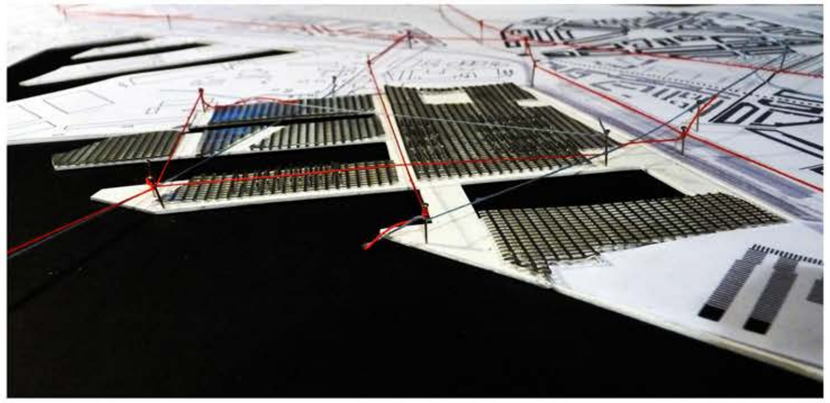
THE GRID

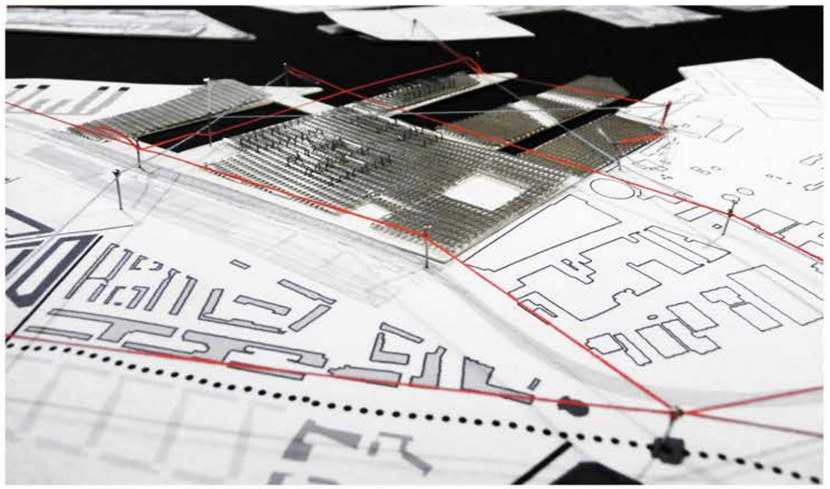


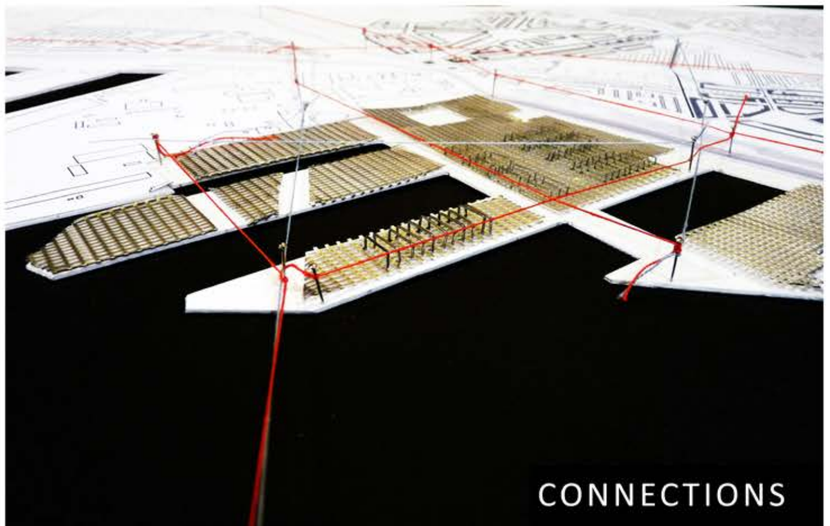
THE EXISTING



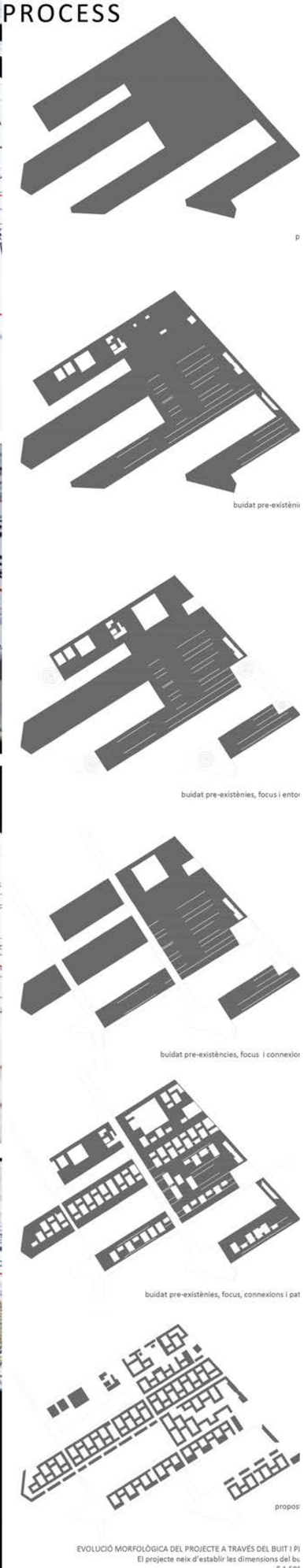




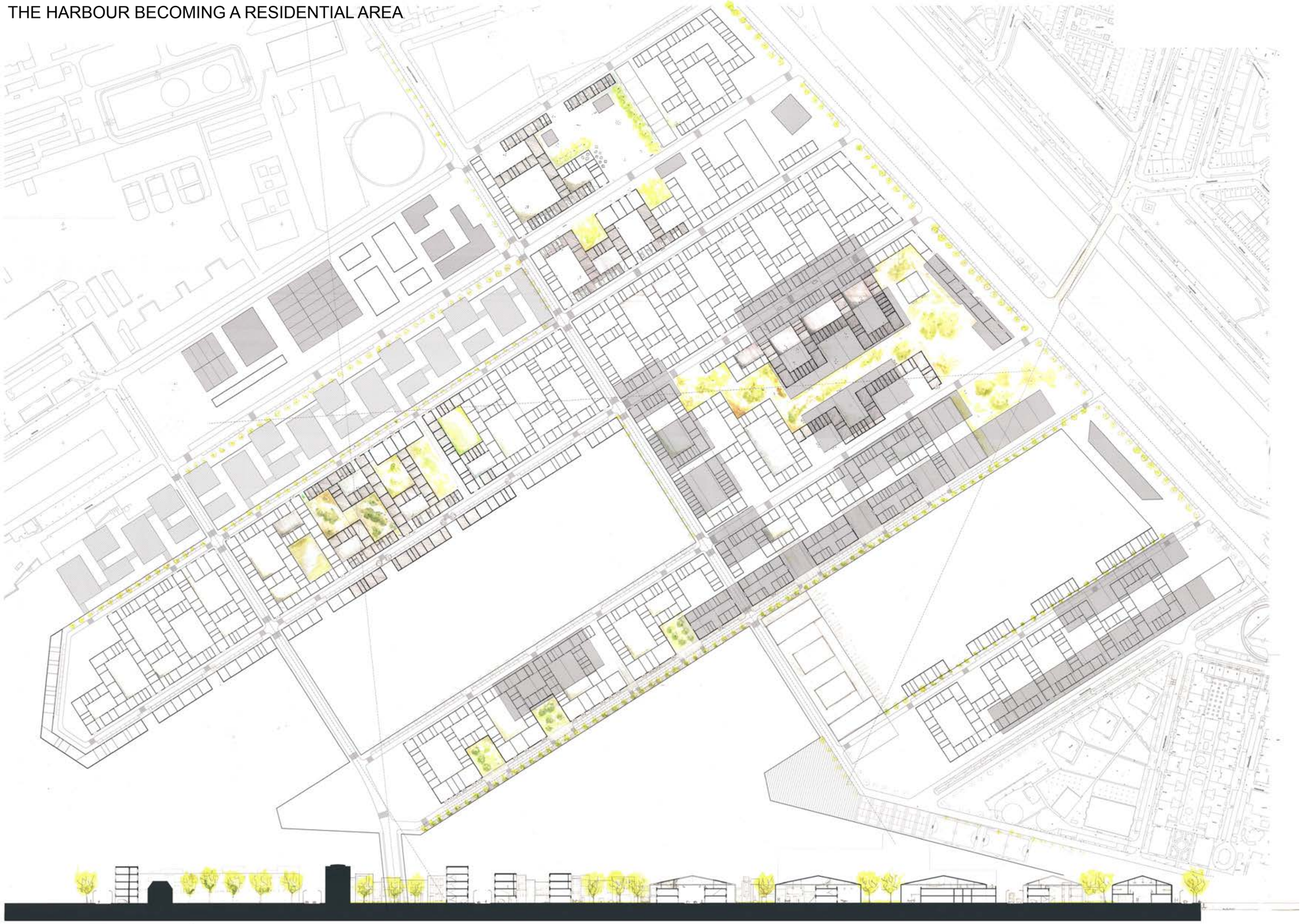


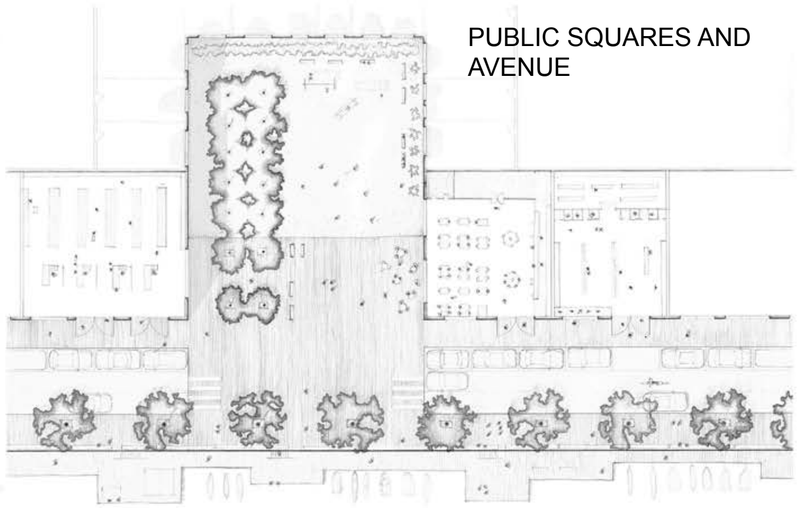


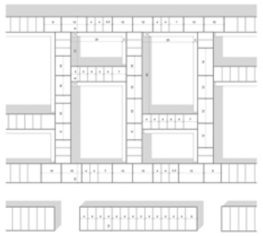
PROCESS



THE HARBOUR BECOMING A RESIDENTIAL AREA







THE BREAKING OF THE GRID

Authors: Glòria Serra Coch and Marta Jo Juanola

Group project developed equally

Realignment of a Portuary Area in Rotterdam and transformation in a Residential Extension

Rotterdam,The Netherlands

Urbanism V. Tutors Manuel Bailo and Sebastià Jornet

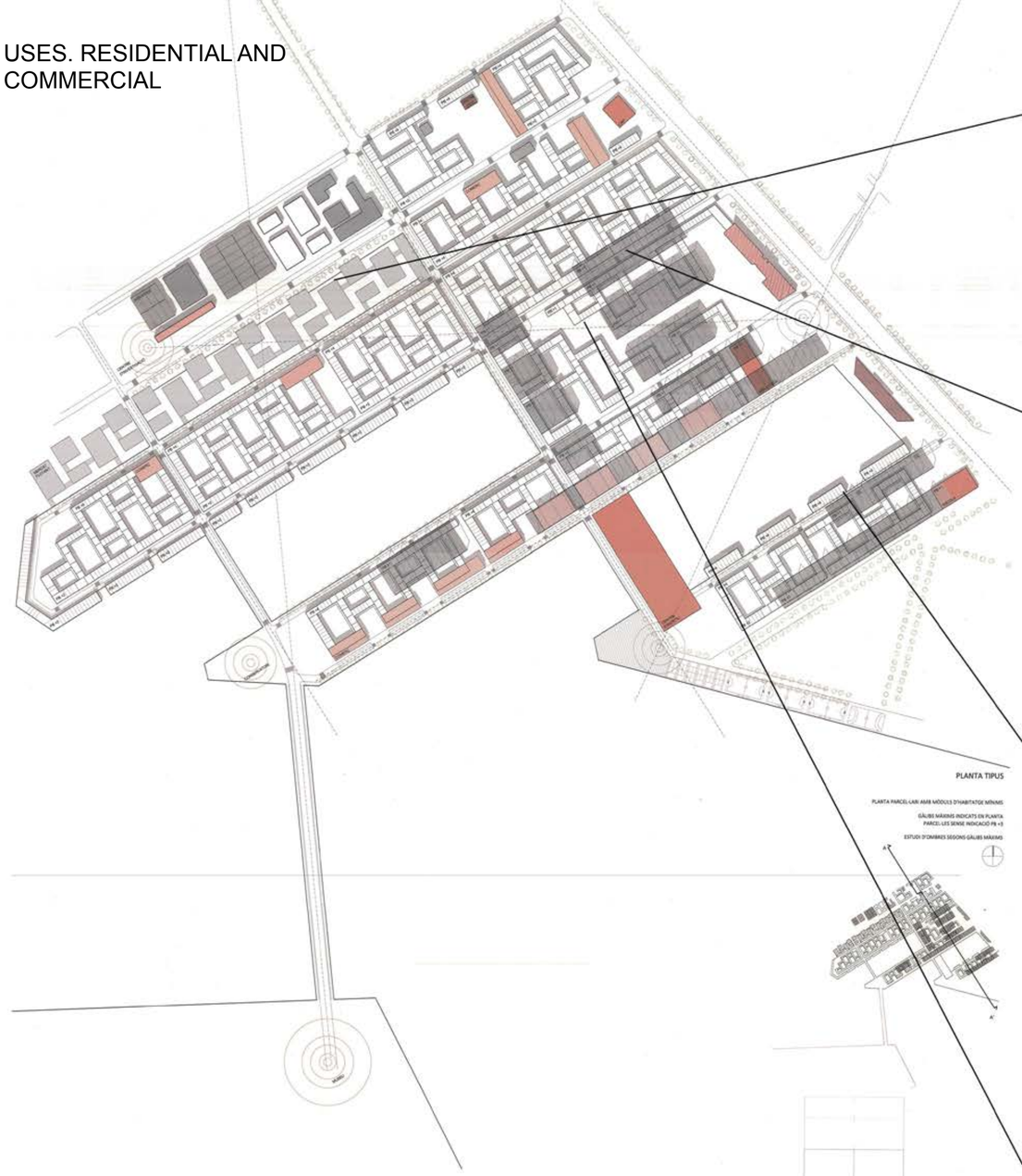
ETSAB 2012.

Fall Semester

This project was carried out during the fourth year at ETSAB. It was part of the second urbanism course on residential growth and the main objective was to **transform a part of the Rotterdam harbour into residential tissue.**

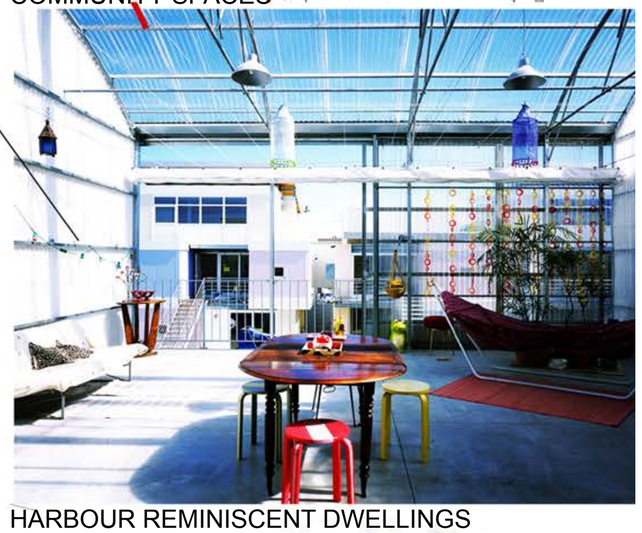
Rotterdam is the third biggest harbour in the world and the first in Europe. The shore is, therefore, mostly an industrial area where containers are scattered next to big warehouses. **The projects aims to transform a portion of this industrial shore area into a new neighbourhood, mostly residential.**

USES. RESIDENTIAL AND COMMERCIAL

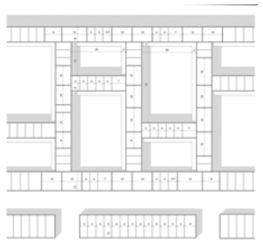


FLOATING MARKET

COMMUNITY SPACES



HARBOUR REMINISCENT DWELLINGS



In the large scale, this project has the objective of **fastening the North and South banks of the Niewe Maas**, currently only communicated in three points. In this way, the intervention aims at becoming the first step of a physical and social sewing of the two banks, with the objective of balancing the differences existing nowadays.

The main idea regarding the implantation in the territory is the **fusion of the existent structures with a new implanted grid,** which is built through the juxtaposition of empty spaces instead of solid parts. The combination of two courtyards, one bigger than the other, and their extensive repetition builds **a tissue that, when meeting the existing, modifies its structure to adapt.**

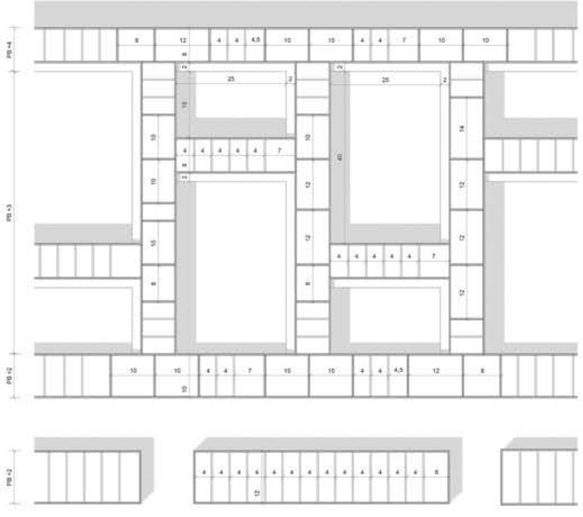
This breaking of the regularity of the grid is what gives interest to an area that could have the risk of losing every opportunity of singularity inside an extensive repetition.

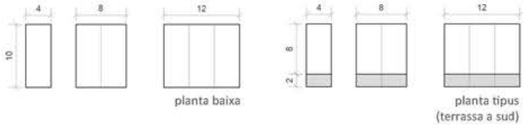
Public buildings are placed in the strategic points of the area including two main typologies, neihbourhood-based services and city scale attracting points, like a school, a museum or a sportive centre. **These public centers are connected through traces made by avenues, parks and visuals.**

The **existing warehouses are re-used to develop housing typologies that incorporate common spaces and ateliers for the targeted sectors valuing them.**

Finally, a great commercial avenue is developed in the shore and a temporal market is given place in floating water platforms.

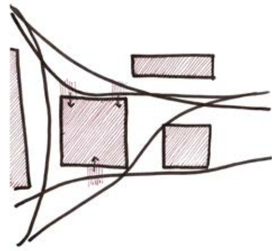
DWELLINGS TYPOLOGIES



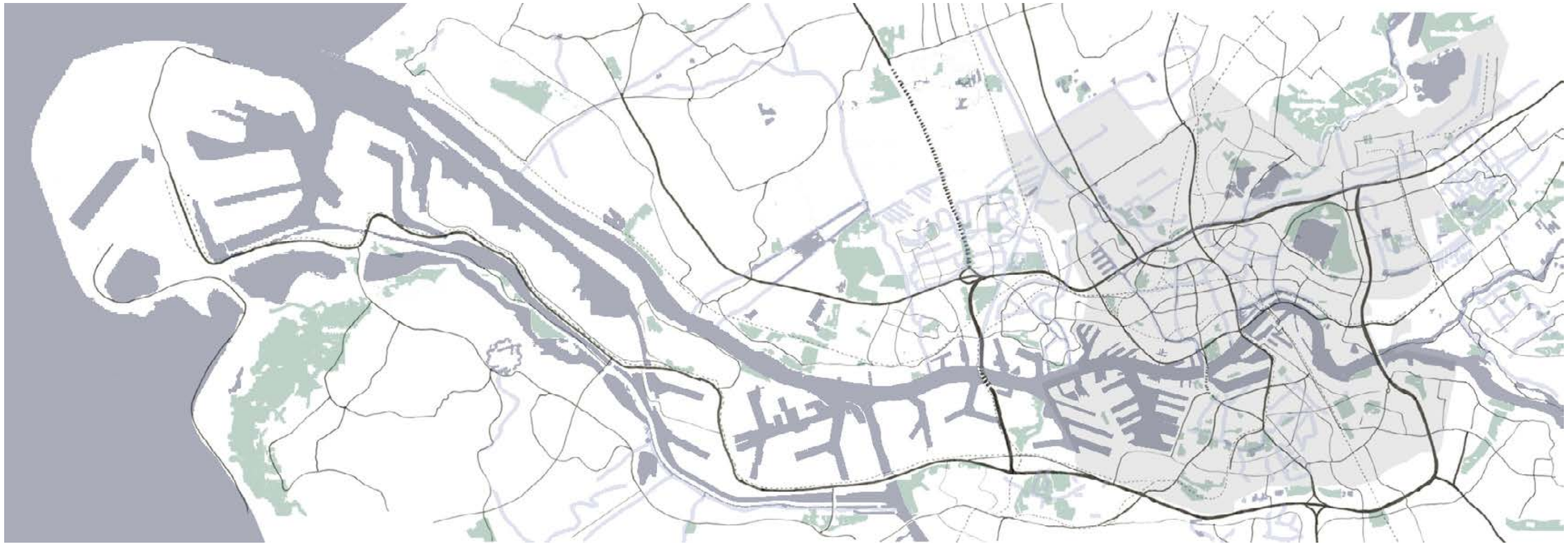


GREEN AXES

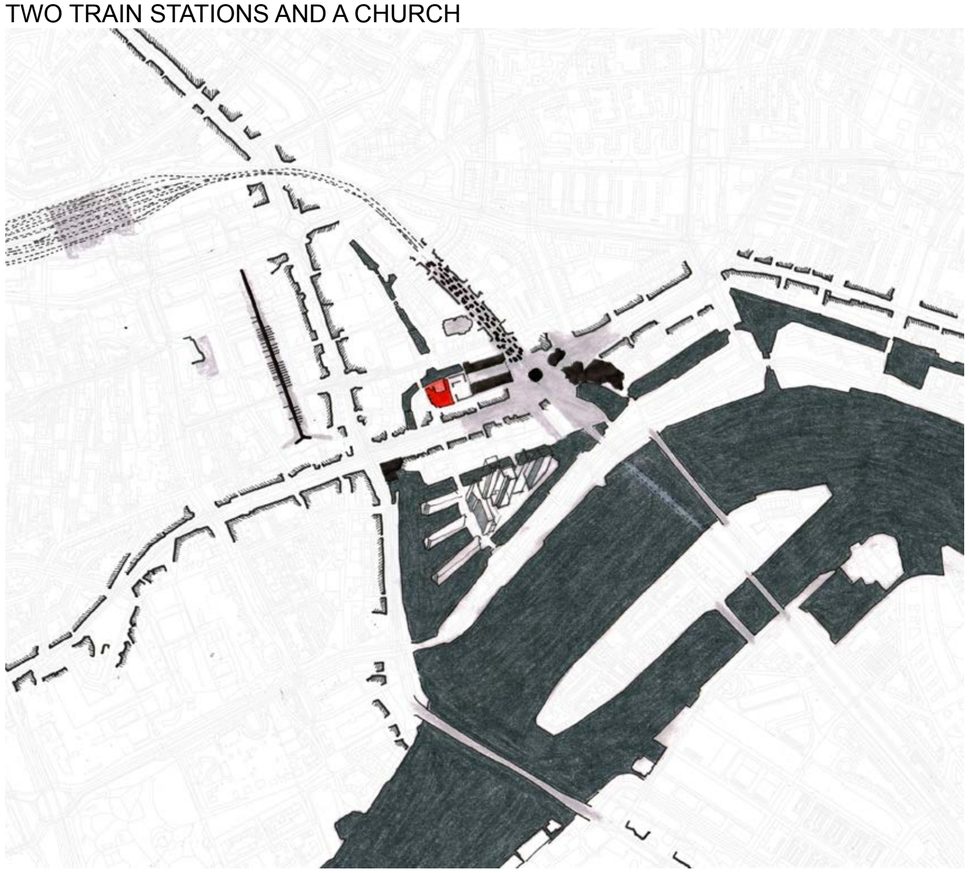
RE CONNECT-COVER-USE



ROTTERDAM AND ITS HARBOUR. A PRODUCTIVE, MULTICULTURAL AND MODERN CITY

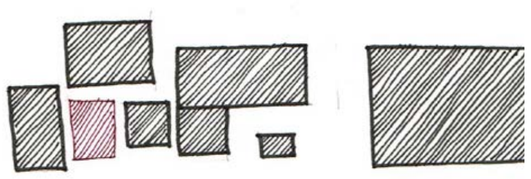


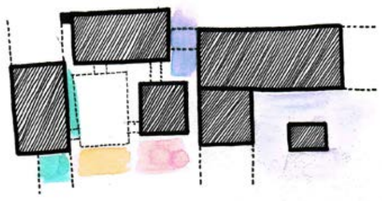
TWO TRAIN STATIONS AND A CHURCH



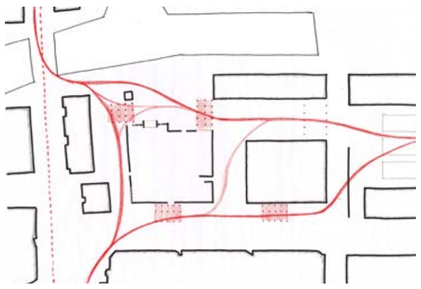
THE CENTER - A CROSSROAD OF TRANSPORTATION INFRAESTRUCTURE

A MOSAIC OF SQUARES - A SYSTEM OF PUBLIC SPACES

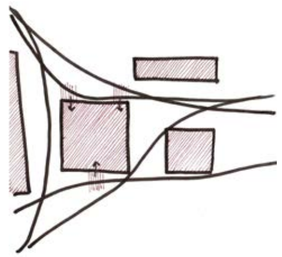




CONNECTIONS - ROUTES AND ACCESSES



THE PATH BETWEEN THE TWO STATIONS. AN ALTERNATIVE ROUTE TO TRAFFIC



RE

-CONNECT-COVER-USE

GRADUATION PROJECT

Author: Glòria Serra Coch

Cultural Exchange Center

at Het Steiger

Rotterdam, The Netherlands

Jury: Estanislau Roca, Cristina Pardal, Ibon Bilbao, Fermín Vázquez

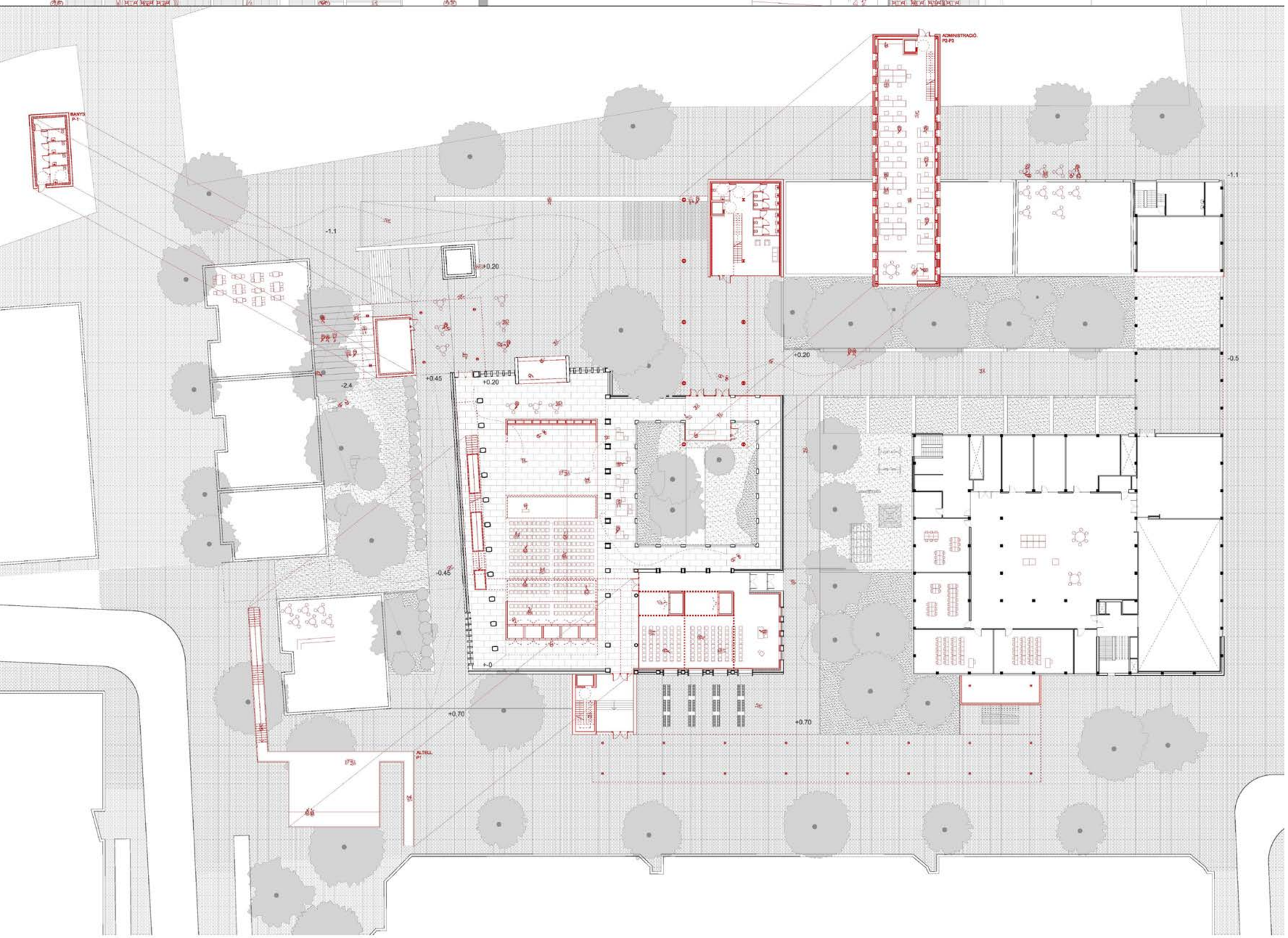
ETSAB 2015

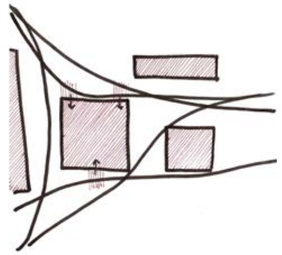
This project was developed during the last year of the Architecture degree in Barcelona. In the School of Barcelona, Graduation Projects are carried out independently of other coursework without any continous tutoring. The students are expected to be able to follow all the stages of the project by themselves, having three reviews during the whole process.

This project was based on the **analysis of Rotterdam Religious Heritage** carried out in the Netherlands the year before, aming at giving a **specific solution to the detected situation: the progressive deterioration of the Religious architectural heritage throughout the city.**

The project, located in an monastery from the 1960's in the centre of Rotterdam, adresses different scales with the aim of intervening in the existing, an existing building, an existing context, an existing urban tissue...

MULTICULTURAL SQUARE





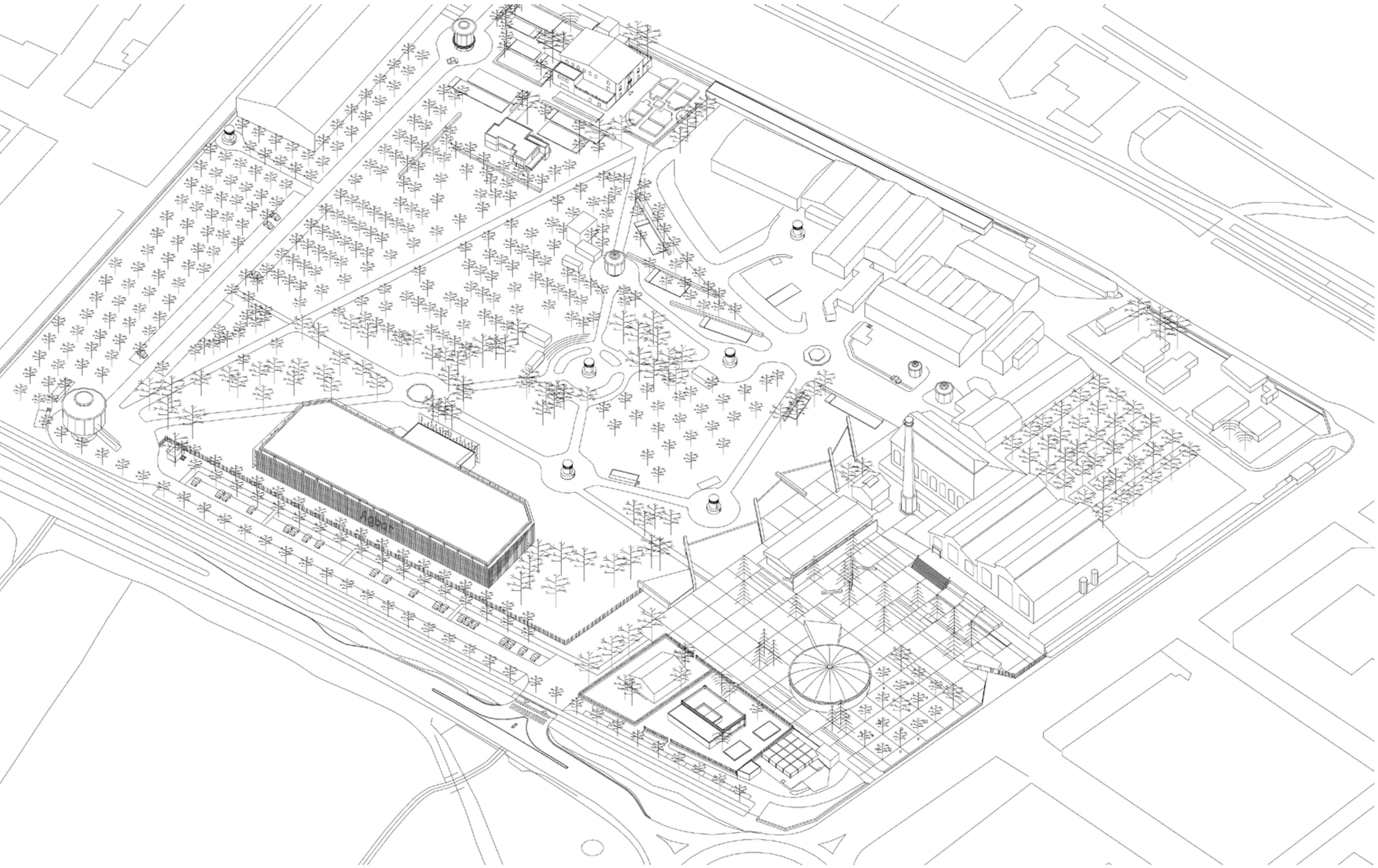
A new program is placed in the old religious building, applying the change of use as a method to rescue the building from the lack of attendence and maintenance. Due to the existing multiculturality of the city, a *Cultural Exchange Center* is proposed as a first colonization of the building.

Regarding the urban scale, the objective is to f**avour partially existing circulations and connect, in a pedestrian friendly way, the intinerary between the two main stations of the city.** Therefore, an existing path is acknowledged, **a route alternative to the great traffic axes, based on the pedestrian circulations and the presence of cultural and commercial elements.** The intervention facilitates these circulations by connecting a part of the itnerary, which now is blocking the flow, and adding an extra focus to the series.

It is through these circulations that t**hree generating elements are placed, which give an entrance to the project and organize the public space**, acting as a nexus from the exterior urban space to the interior one. To achieve a global intervention, the whole block where the church is located is considered in the intervention, acting as a mosaic of squares connected with eachother. The program also participates in the sharing concept, and the cultural centre placed in the old church and the school next to it exchange spaces and activities.

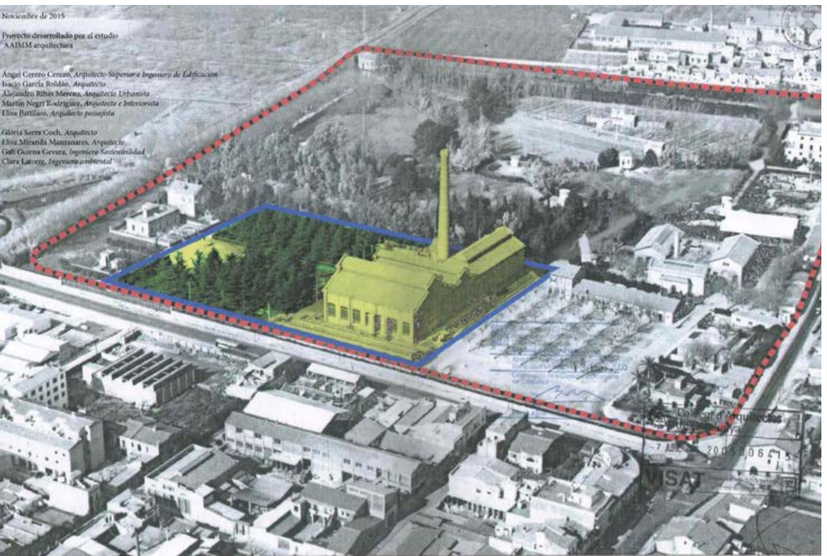
All in all, **the project introduces elements that give service to the existing space to allow its colonization**, ensuring this public area to become part of one of Rotterdam's pedestrian main routes.

CORNELLÀ AGBAR PARK

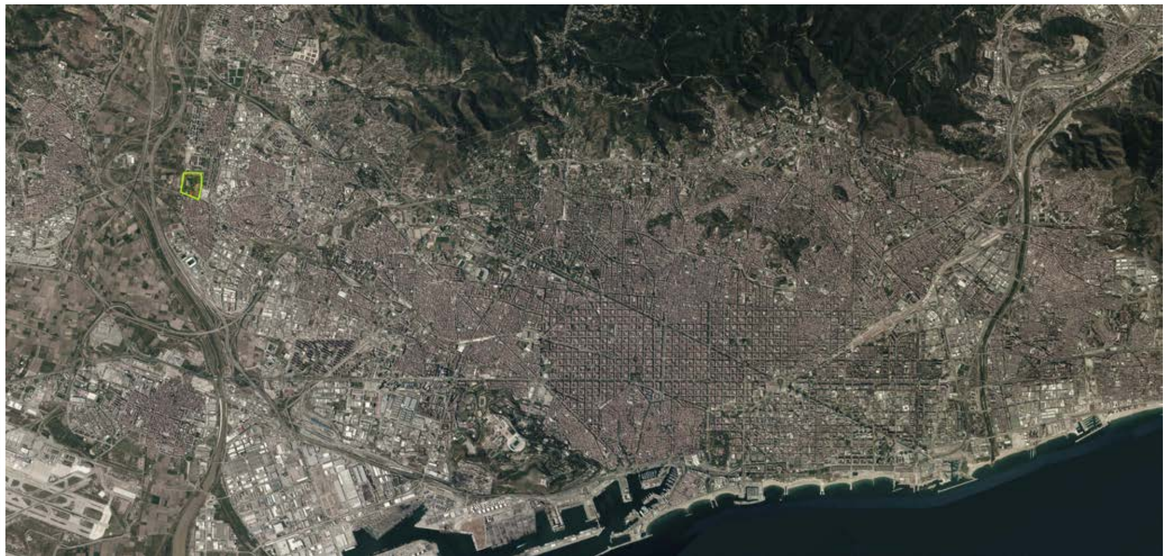


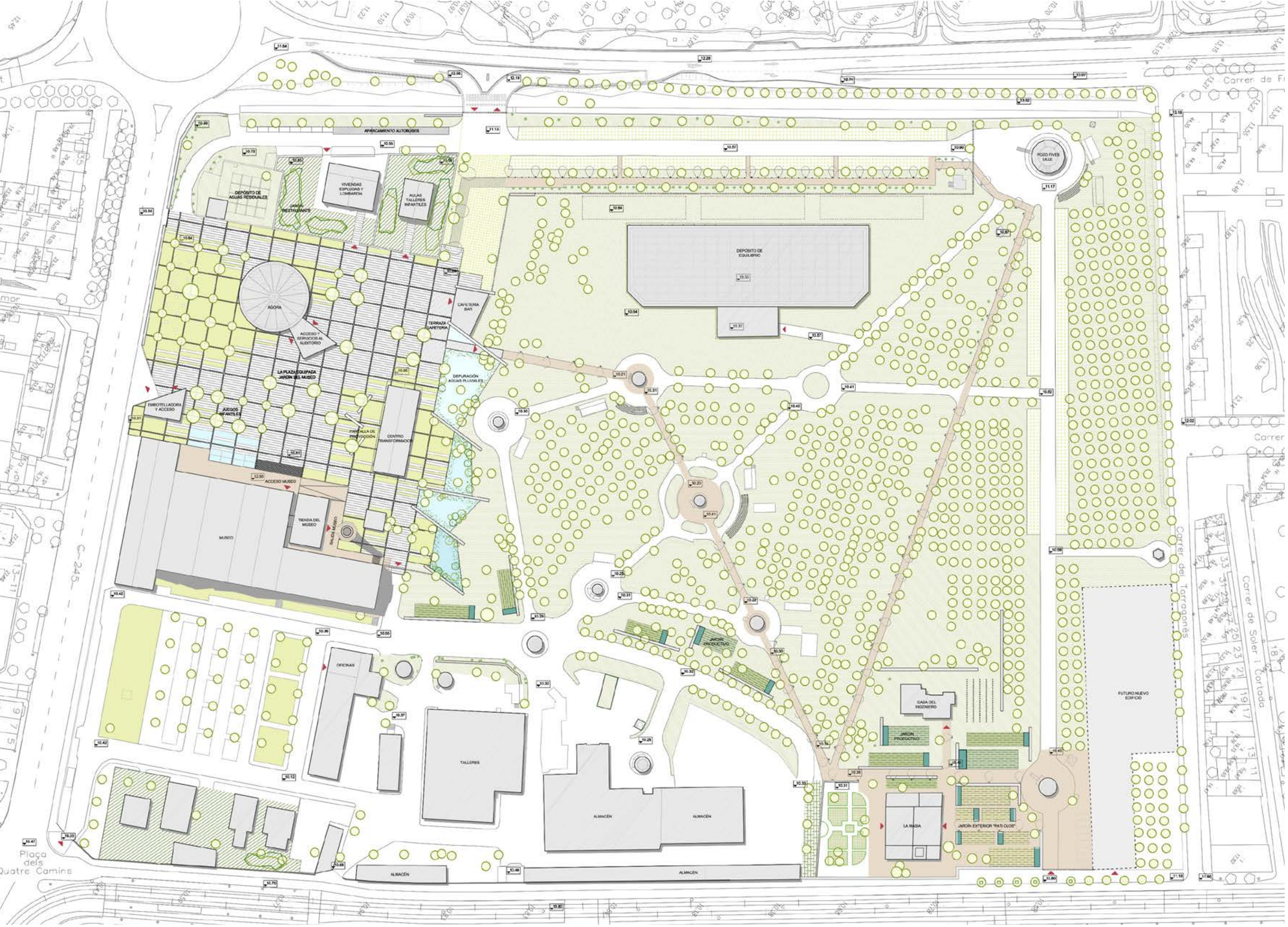
WATER PARK IN CORNELLA

HISTORICAL IMAGE. PRODUCTIVE PHASE



LOCATION: BARCELONA METROPOLITAN AREA





WATER PARK IN CORNELLÀ

Authors: AAIMM Architecture Office

Collaboration in the development of this project during 3 months

Transformation of an industrial plant of the Barcelona Water Company (Agbar) into a park

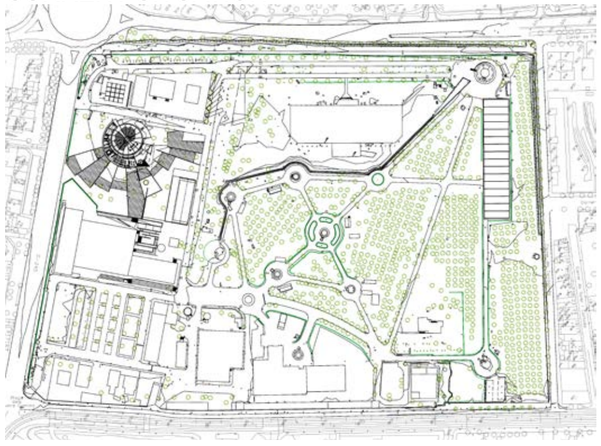
Cornellà, Barcelona

AAIMM 2015.

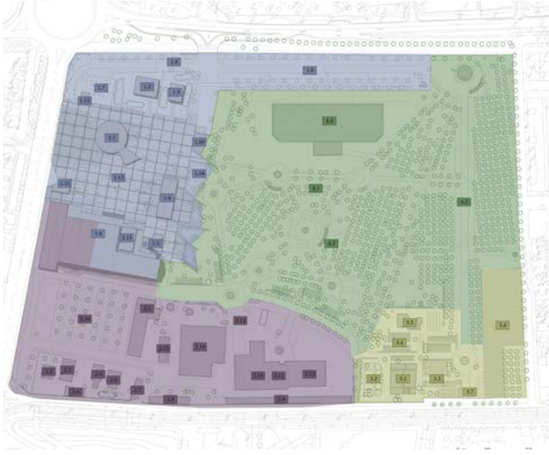
This project is being developed by AAIMM Architecture Office, which was commisioned by Agbar to give a new perspective to this area. The Master Plan has the objective of **highlighting the value and virtues of the place as its architectural heritage, the lanscape recovery in its natural state, the instrinsic relation with the environment, ecosystem and urban surroundings.**

My participation in the project was centered in the **advancement of the main master plan** ideas on one side and development os specific areas of the park on the other side. Specifically, I elaborated the **general water management plan and its relation with the park element**, such as water basins or superficial currents. I also developed the **main guidelines for new buildings in the park with the aim of ensuring their integration and sustainability.** Finally, I collaborated in the **design of the main entrance square of the park**, which acts as the public gates.

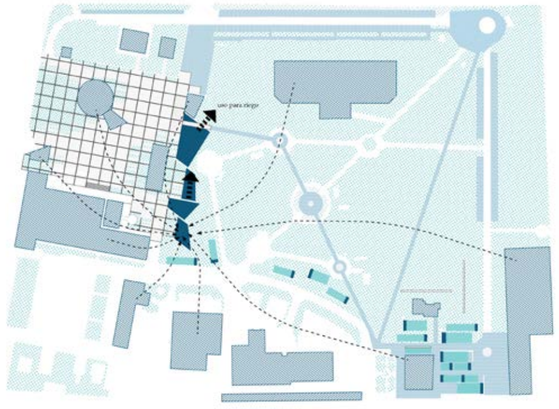
CURRENT SITUATION



USES AND PHASES



WATER MANAGEMENT STRATEGY



Utilitarism, functionality and users participation are key aspects of the project. Sustainability and sinergy are given a central role in order to obtain a smart park built by different related entities creating a sensitive landscape. Closed cycles are promoted to connect consumption with natural cycles and increase the park's self-sufficiency.

The main thread of every intervention is water, explored through three different perspectives: understanding, showing and interacting. The supporting elements of the guideline are the *landscape* on one side and *energy* on the other.

Objectives:

Recovery of the park and its instrinsic patrimonial value.

Development of an open space to be visited and a corporative image appropriate for events, conferences and other activities.

Reconsideration of the water in the park through its main environmental characteristics and as a principal image element, representative of the company.

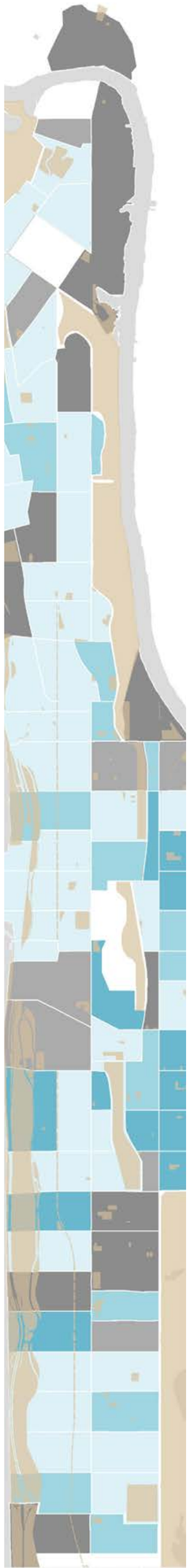
Introduce a didactic perspective through elements explaining the park's ecosystem, the closed cycles strategy and natural water depuration principles.

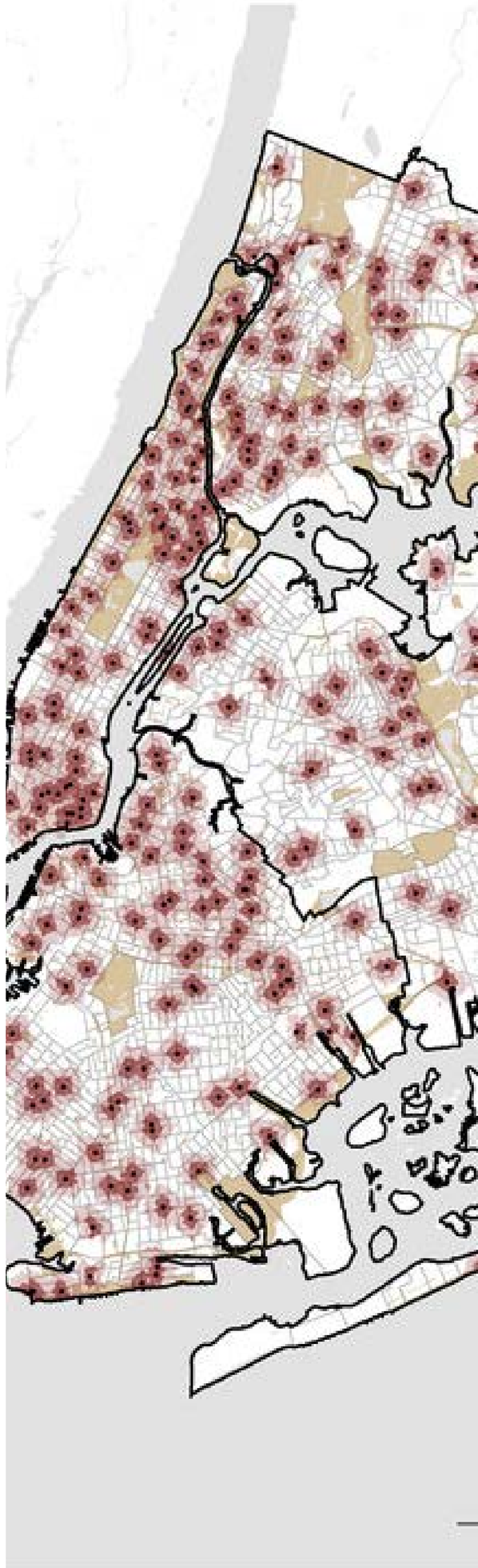
The essence of each decision taken in the project is based on the *scale journey*, which consists on planning and designing at the same time in every involved scale, from the detail to the general.

PORTFOLIO

GLÒRIA SERRA COCH

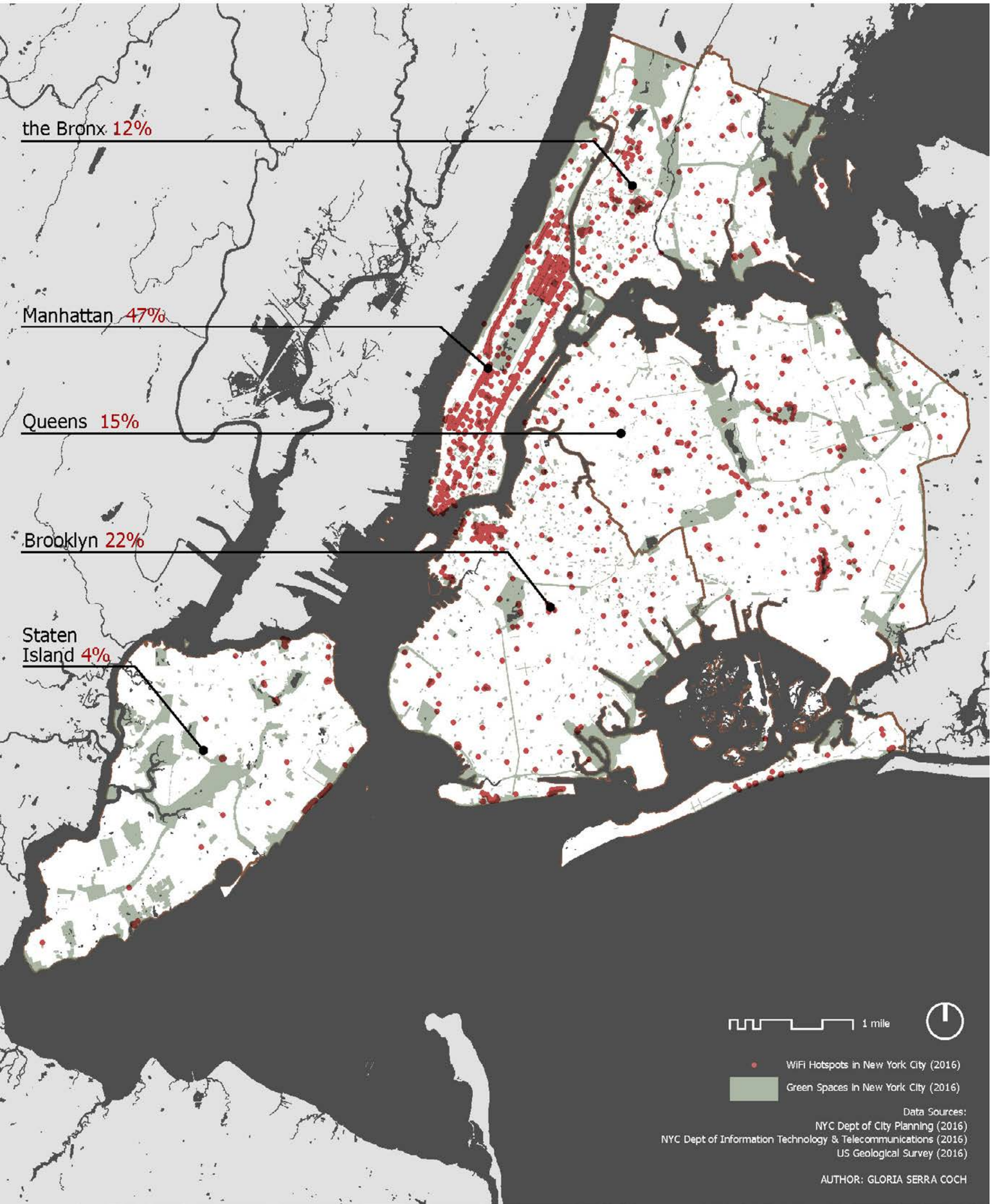
URBAN PLANNING 2017-2019

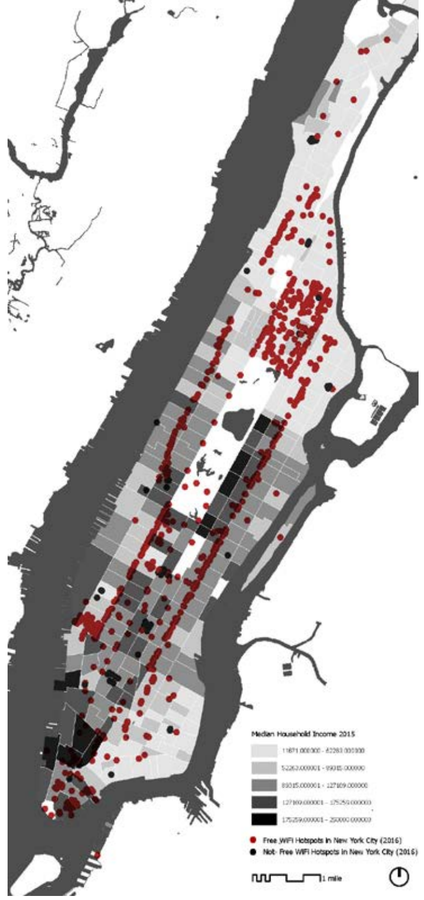


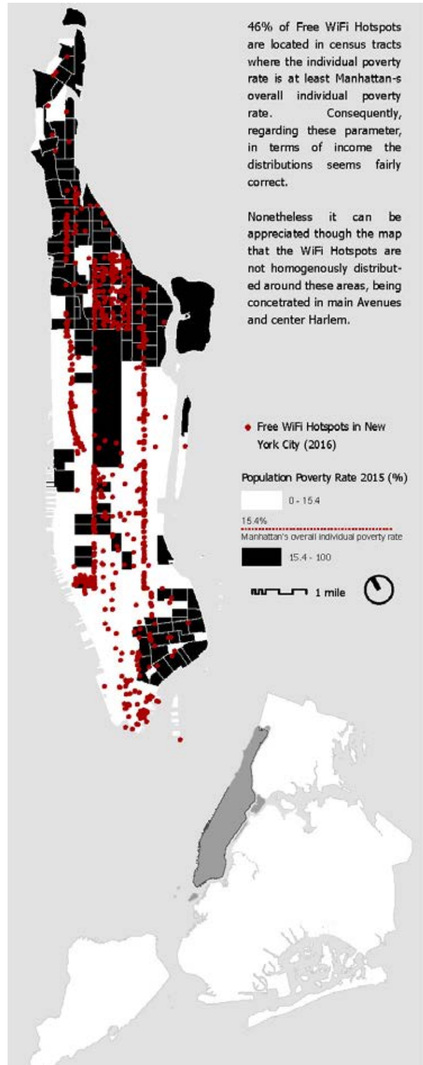


NEW YORK CITY CONNECTIVITY. 2016

WiFi Hotspots Distribution Around Boroughs







NYC CONNECTIVITY

WiFI Hotspots

Distribution around

Boroughs

Glòria Serra Coch

New York

Geographic

Information Systems.

MS Urban Planning.

Columbia University.

2017.

Fall Semester

You are working with a local, community-based non-profit organization in New York City. The organization has, in recent years, been actively championing programs and policies designed to bridge the "digital divide" by providing access to broadband Internet infrastructure for low-income communities. Given the City's recent push for public Wi-Fi (consider LinkNYC, open Wi-Fi in major parks, etc.), you've been asked to help determine your organization's specific positions on the successes and shortcomings of these efforts.

• What is the spatial distribution of the city's public Wi-Fi hotspots?

• Do some boroughs seem favored over others?

NYC CONNECTIVITY

LIBRARIES IN QUEENS

LIBRARIES IN QUEENS

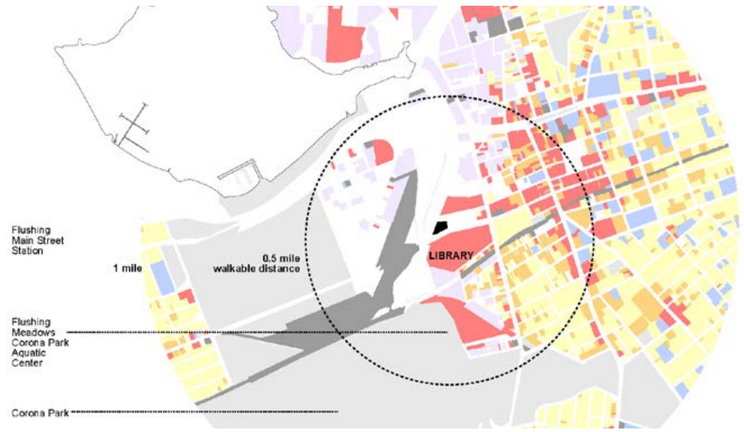
Finding 3 sites to build new public libraries in Queens. Suitability Analysis

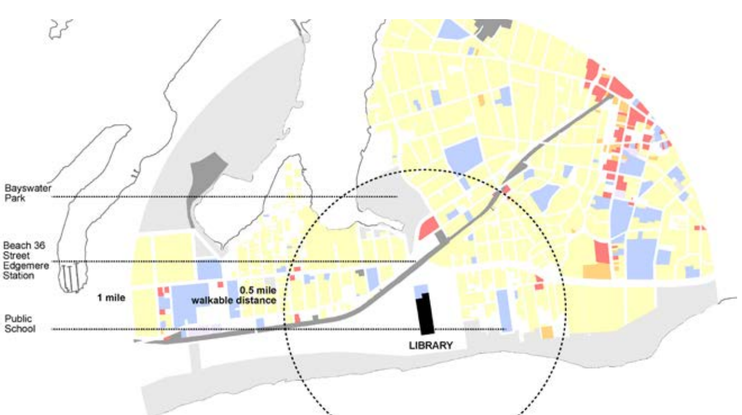
Glòria Serra Coch

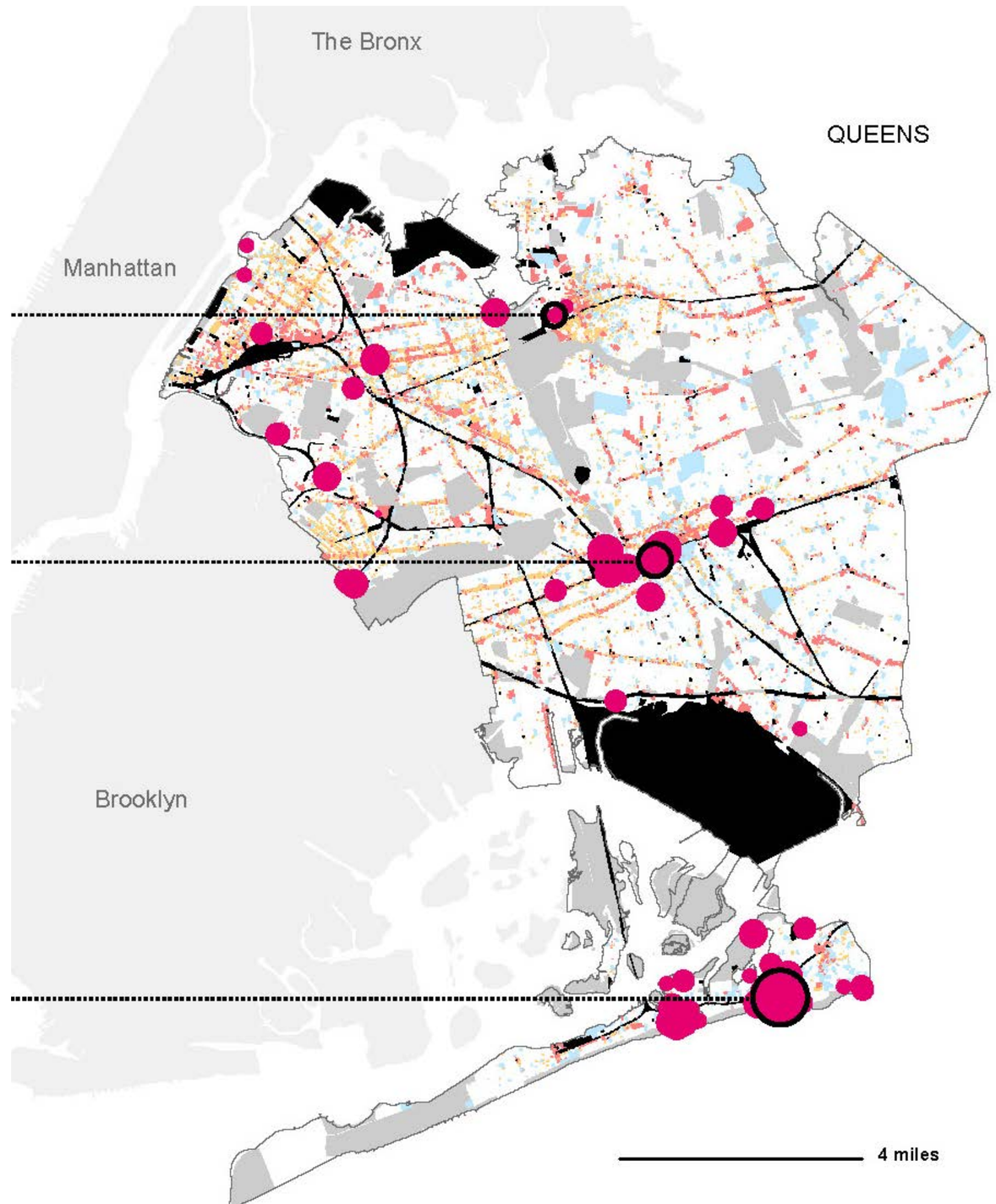
New York Geographic Information Systems.

MS Urban Planning. Columbia University. 2017.

Fall Semester







It's 2014 in New York City, and you work for a strategic planning firm that's been recently contracted by the Queens Public Library system to help consider new opportunities for system-level engagement and services that meet the needs of different and changing communities.

You have been tasked with performing a preliminary site suitability analysis. The question you must answer is *"Considering the new development in Queens, the current distribution of libraries,*

JOHN SNOW CHOLERA MAP

REMAPPING JOHN SNOW CHOLERA MAP.

Soho, London 1854

Glòria Serra Coch

New York Geographic Information Systems.

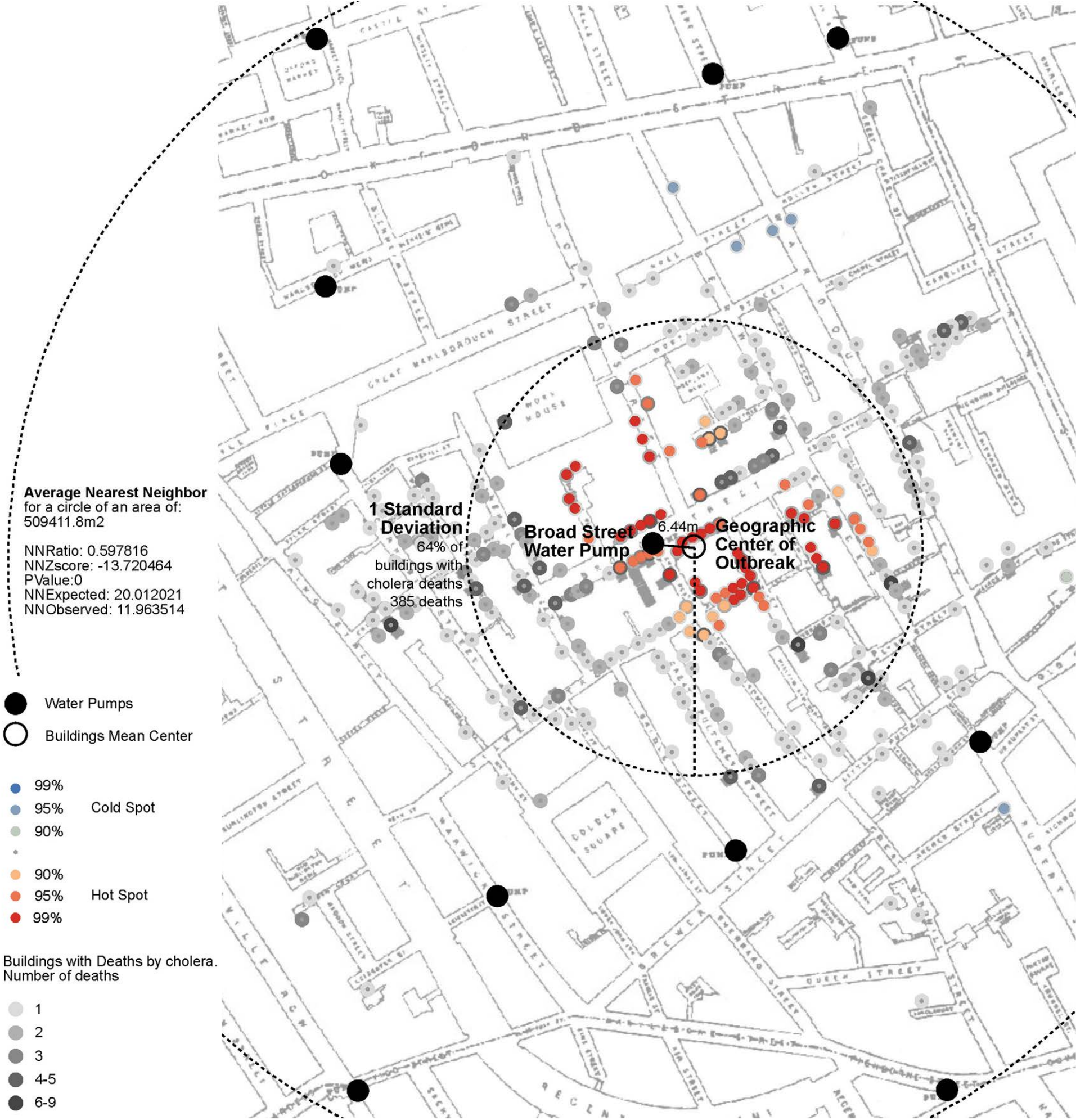
MS Urban Planning. Columbia University. 2017.

Fall Semester

How far is the Broad Street water pump from the geographic "center" of the outbreak?

How concentrated around this epicenter were cholera related deaths?

Were cholera-related deaths in fact "clustered" around the water pump or were they spread across the neighborhood (either evenly or randomly)?



SENIOR FRIENDLY NYC

SENIOR FRIENDLY NYC.

Senior Access to Senior Centers

Glòria Serra Coch and Kenneth Warner

New York Geographic Information Systems.

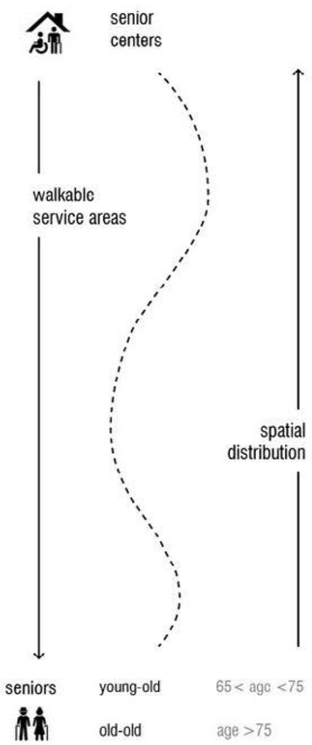
MS Urban Planning. Columbia University. 2017.

Fall Semester

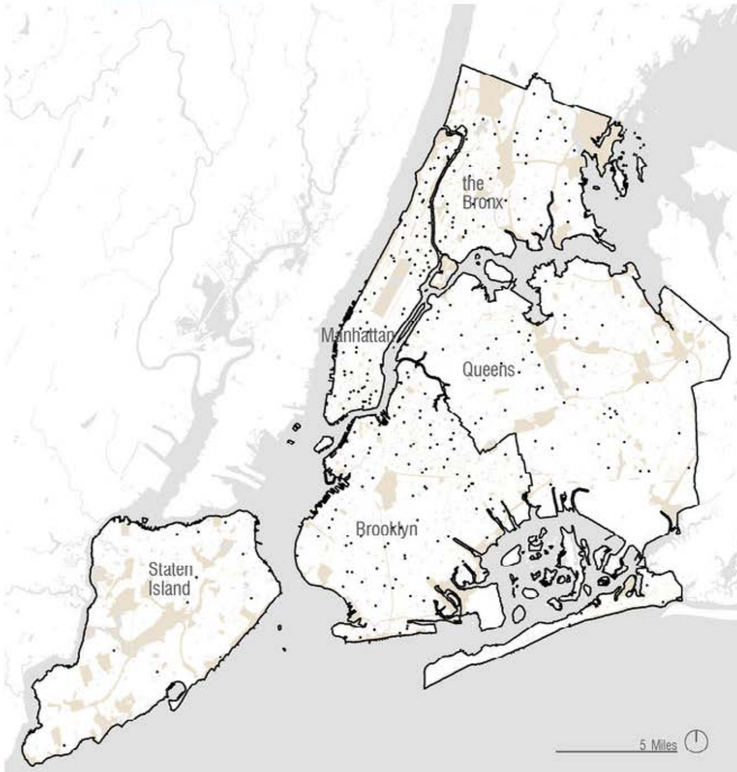
do seniors live within walking distance of senior centers?

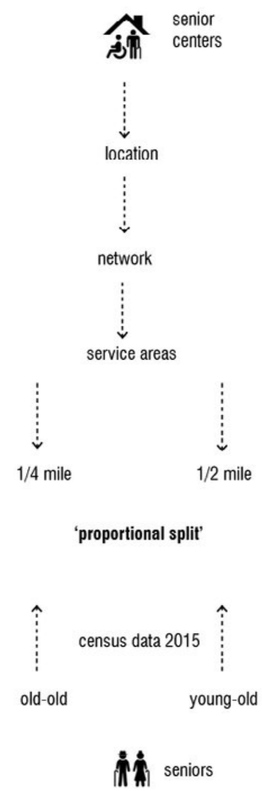
how does the number of seniors living within walking distance vary by senior center?

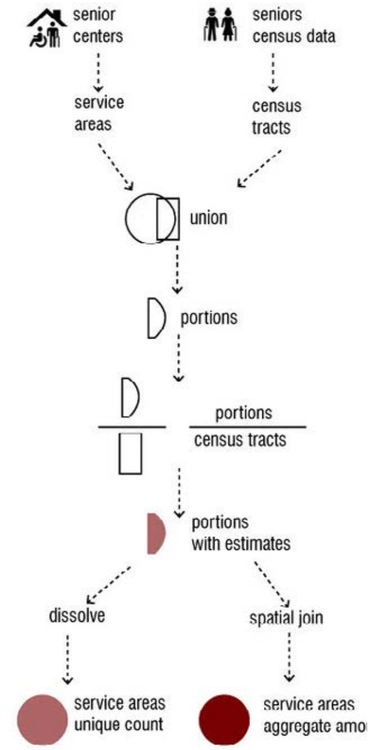
to what extent are senior centers located within clusters of seniors?



location of senior centers in New York City

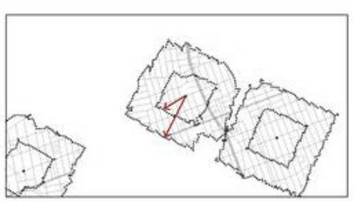




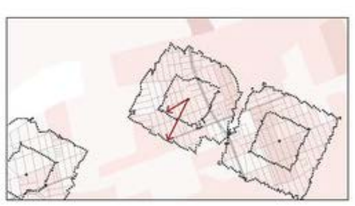


1.
location of senior centers

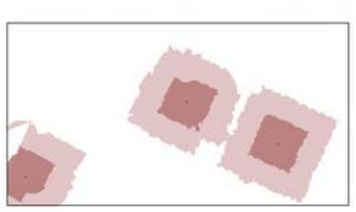
2.
pedestrian street network



3.
service areas
1/4 + 1/2 mile

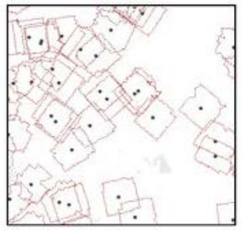


4.
census data
ACS 2015



5.
estimation.
proportional split

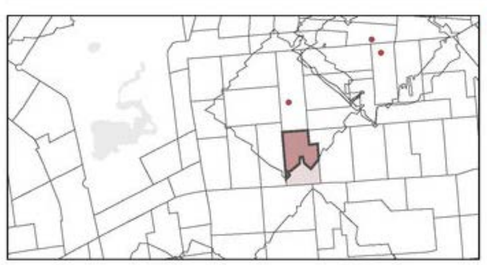
service areas



census tracts

1.
service areas: 1/2 mile + 1/2 mile
census tracts: % young-old + old-old

2.
portions:
geometry service areas
attributes census tracts + service areas



3.

$$\frac{\text{area portion}}{\text{area census tract}} = \text{proportion}$$

X

pop. young-old = **estimate pop. young-old**

pop. old-old = **estimate pop. old-old**

4.
service areas:
geometry service areas
estimates senior population

SENIOR FRIENDLY NYC

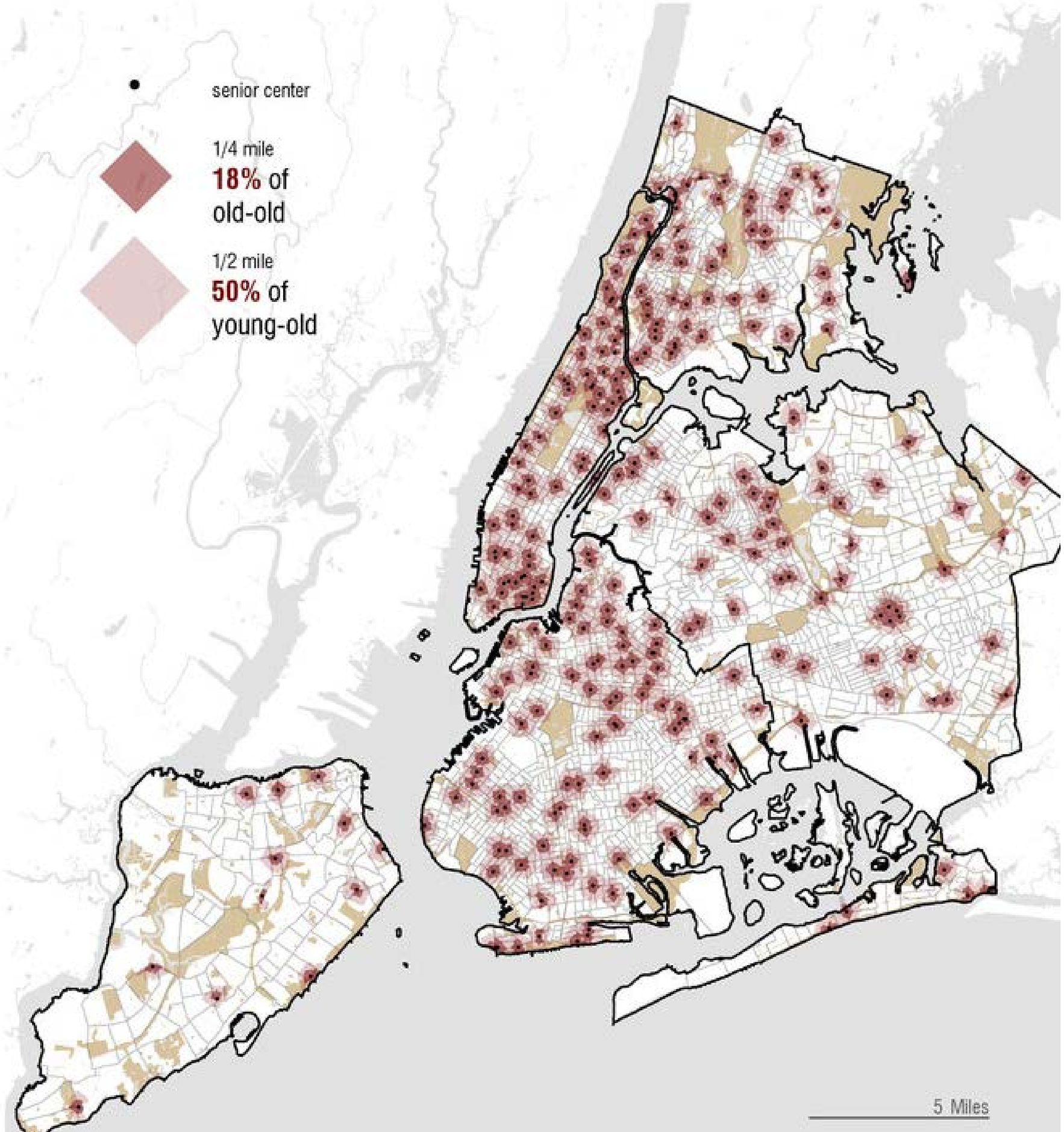
We conceptualize two types of seniors according to recent developments in the field of geriatrics: Young-Old Seniors and Old-Old Seniors.

The Young-Old—aged 65 to 75 years old—are those seniors who are more likely to live independent, active lifestyles. This age group often seeks to enjoy the early days of retirement while still young and free (to a degree). The Old-Old—over 75 years old—more often need higher levels of skilled care and assistance.

Our study characterizes the spatial relationship between senior centers and seniors in New York City using two complementary procedures. The first direction of our methodology starts with all senior centers and creates service areas that capture the population within a comfortable walking distance of each center. The accompanying direction begins with a spatial statistical analysis of New York City's population by age, and compares the resulting description with the locations of all senior centers.

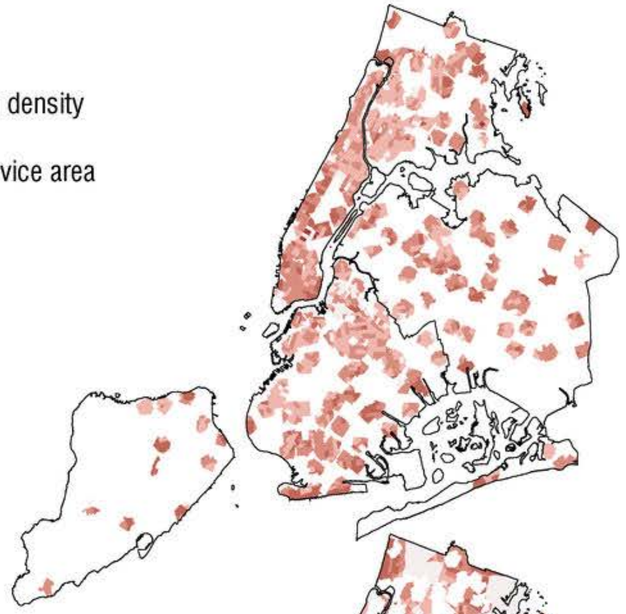
Our analysis uses two definitions of comfortable walking distance: ¼ mile for Old-Old Seniors, and ½ mile for Young-Old Seniors.

service areas of 1/4 mile and 1/2 mile around senior centers

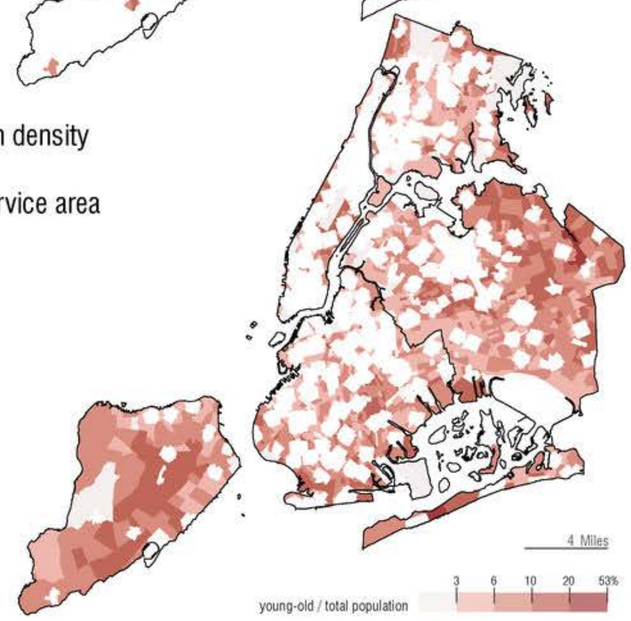


SENIOR FRIENDLY NYC

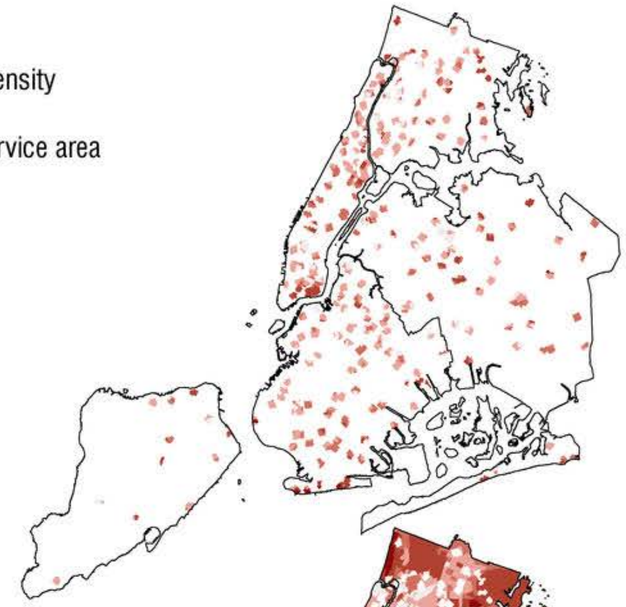
young-old population density
within
1/2 mile distance service area



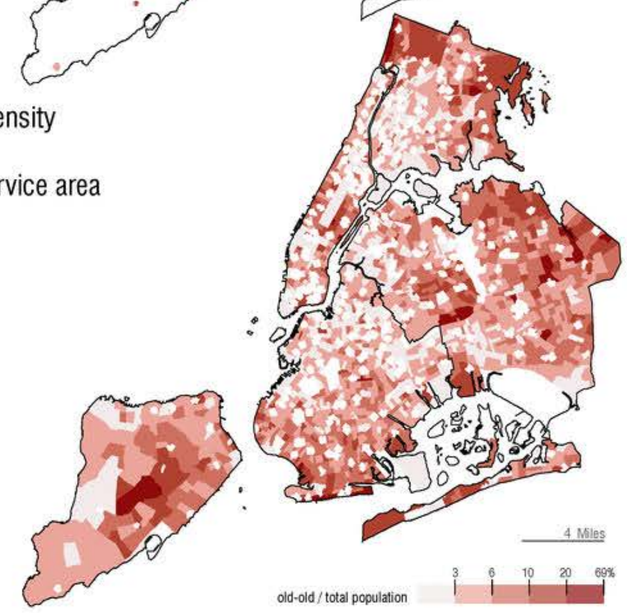
young-old population density
outside
1/2 mile distance service area



old-old population density
within
1/4 mile distance service area



old-old population density
outside
1/4 mile distance service area

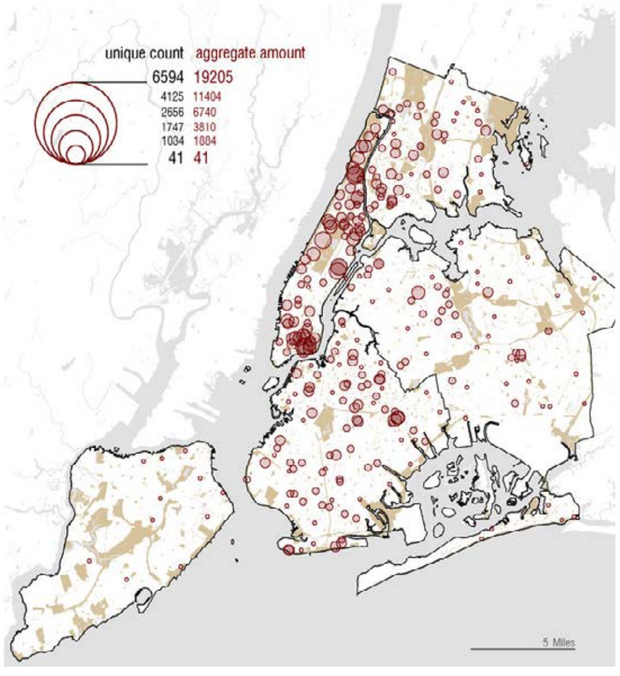


Under the assumptions and definitions of this anlysis, 50% of Young-Old Seniors live within a ½ mile walking distance of senior centers and 18% of Old-Old Seniors live within a ¼ mile walking distance of senior centers.

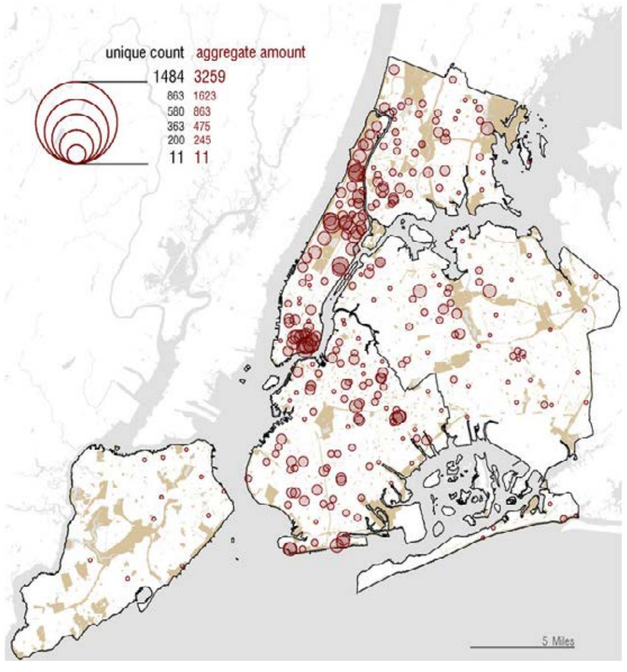
Our analysis found that the number of seniors served per senior center varies widely, ranging from 41 to 6,594 young-old seniors (unique count) per senior center. Consequently, senior centers around the city potentially serve very different number of target population.

According to our analysis, around 20% of senior centers are located within clusters of high-senior population census tracts. 60 senior centers (21%) are located in hotspots of Young-Old Seniors, and 55 senior centers (19%) are located in hotspots of Old-Old Seniors.

number of young-old seniors per senior center. walking distance of 1/2 mile



number of old-old seniors per senior center. walking distance of 1/4 mile



SENIOR FRIENDLY NYC

SENIOR FRIENDLY NYC.

Senior Access to Senior Centers

Glòria Serra Coch, Angel Felix Lopez Zamora, Mai Uchida, Justin Romeo.

New York Advanced Spatial Analytics.

MS Urban Planning. Columbia University. 2018.

Spring Semester

How different methods and neighborhood definitions can render diverse neighborhood boundaries and how well neighborhood tabulation areas approximate those boundaries in Queens?

We introduce two main approaches to the concept of neighborhood: **People,** or a neighborhood defined by the characteristics of the residents and **Place**, defined by the characteristics of the built environment.

These two main definitions are sub-divided into **Similar** and **Diverse** approaches based on the level of shared or distinct characteristics of the variables.

1. APPROACH

How different definitions and methods can render diverse neighborhood boundaries and how well Neighborhood Tabulation Areas (NTAs) approximate those boundaries in Queens?

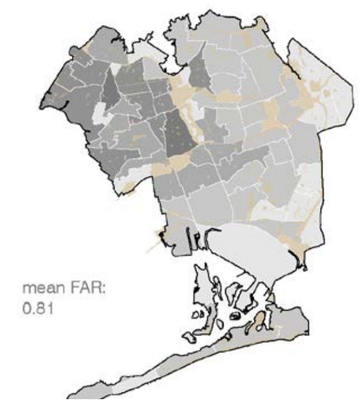
NTAs

number of Neighborhoods: 55

Mean Area: 1203 acres

Mean Perimeter: 47915 feet

Floor Area Ratio (FAR)



A neighborhood is an area of the city that comprises people and place characteristics.

Although this separation has been useful to analyze patterns across the methods, our final neighborhoods' map combines the 4 methods.

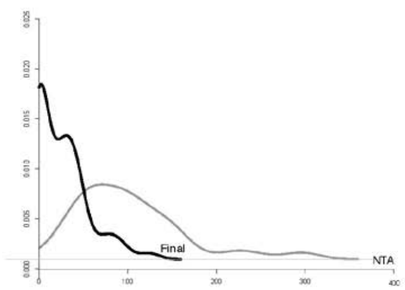
The boundaries were produced by departing from the NTAs and modifying them when our methods were pointing out an inconsistency.
Then we classified the areas in:

(a) non-neighborhood

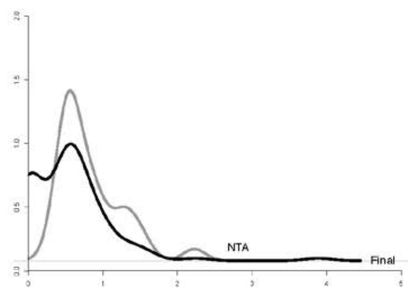
(b) potential neighborhood with improvements

(c) neigborhood

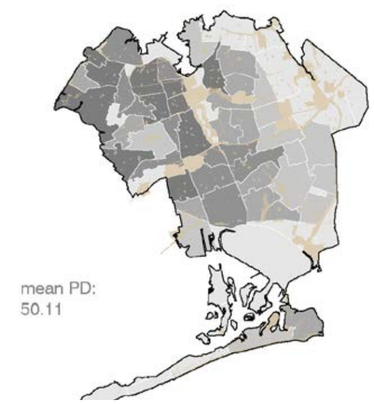
Population Density



Floor Area Ratio (FAR)



Population Density



2. RESULTS

3. COMPARE ACROSS

PEOPLE

a neighborhood is defined by the people living there

selected demographics of ACS 2016

Population Density
Age
Race
Education attainment
Income
Poverty Rate
Unemployment rate
Employment sector
Foreign born

METHOD 1. SIMILAR

where people are similar

clustering
grouping similar demographics

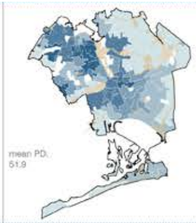
Calinski-Harabasz
Pseudo F-Statistic

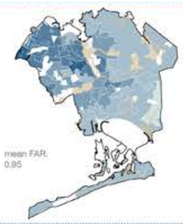
$(R^2/n-1)/(1-R^2/n-n)$

number of Neighborhoods: 55

Mean Area: 1022 acres

Mean Perimeter: 46223 feet



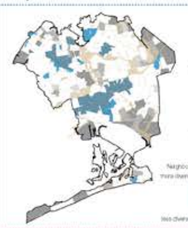


METHOD 2. DIVERSE

where people are diverse

land use dissimilarity index
multi group Shannon entropy index
$H = \sum_{i=1}^{n} [(E - E_i)/E]$

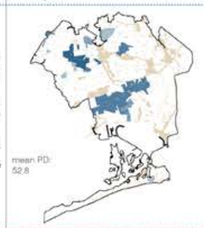
+ Iterative
Getis-Ord GI* Hotspot

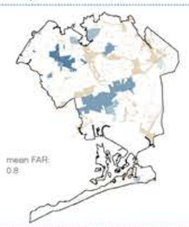


number of Neighborhoods: 21

Mean Area: 404.8 acres

Mean Perimeter: 11866 feet





PLACE

a neighborhood is defined by its built environment characteristics

Land use PLUTO 2016
grocery stores
Reference USA
NYC DoITT

Land Use Data
Building Footprint Area
Building Footprint Width
Building Foorpint Lenght
Building Height
Lot Area
Lot Width
Lot Lenght
Street Width
Street Lenght

METHOD 3. SIMILAR

where the built environment is similar

clustering
grouping similar built environment

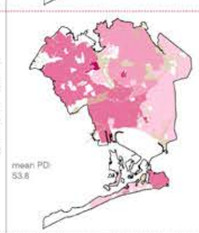
Calinski-Harabasz
Pseudo F-Statistic

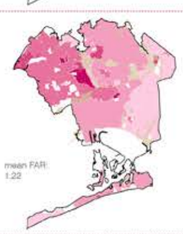
$(R^2/n-1)/(1-R^2/n-n)$

number of Neighborhoods: 55

Mean Area: 1035 acres

Mean Perimeter: 35150 feet





METHOD 4. DIVERSE

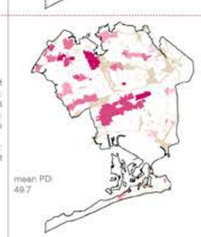
where land use is mixed +there are accessible grocery stores

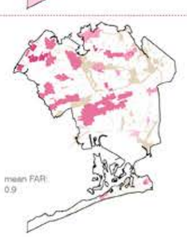
1/4 mile service areas from residential lots
+count of grocery stores
+land use dissimilarity index
+ Iterative
Getis-Ord GI* Hotspot

number of Neighborhoods: 58

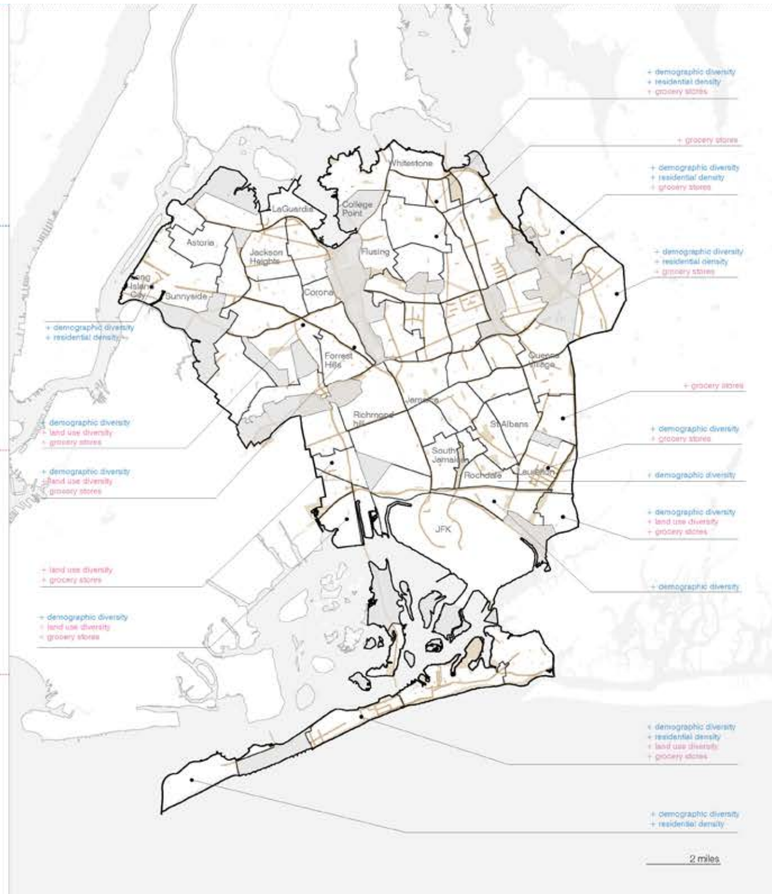
Mean Area: 175.27 acres

Mean Perimeter: 13380 feet





4. CONCLUSION



HARLEM. NEIGHBORHOOD CHANGE

NEIGHBORHOOD CHANGE AND DISPLACEMENT. A Case study for the Entire Region

Glòria Serra Coch, Caitlin Bone, Cheryl Lim, Danting Luo, Eddy Almonte, Eunjee Son, Michael A. N. Montilla, Mofe Alli, Varand Onany, Yufi Priadi

New York Studio

MS Urban Planning. Columbia University. 2018.

Spring Semester

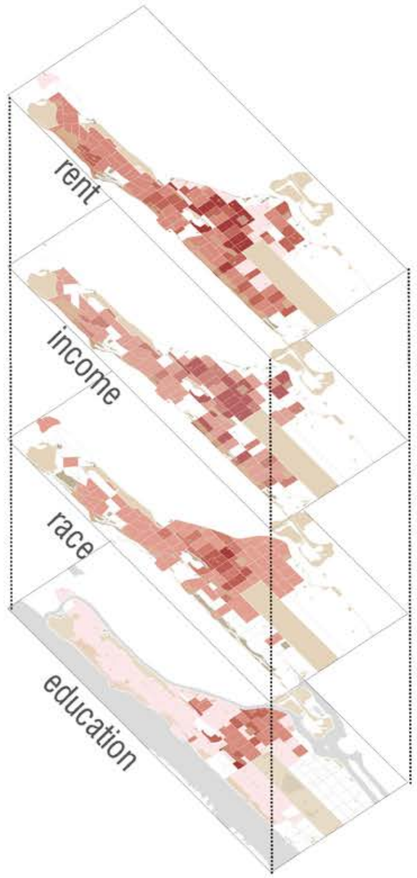
Harlem is a perfect case study for neighborhood change because of its status as the quintessential African-American neighborhood, and because of the gentrification it continues to experience. To form a thorough narrative of how neighborhood change has affected Harlem (and the surrounding region), we used a combination of quantitative and qualitative methods that provided us with a mix of perspectives and data.

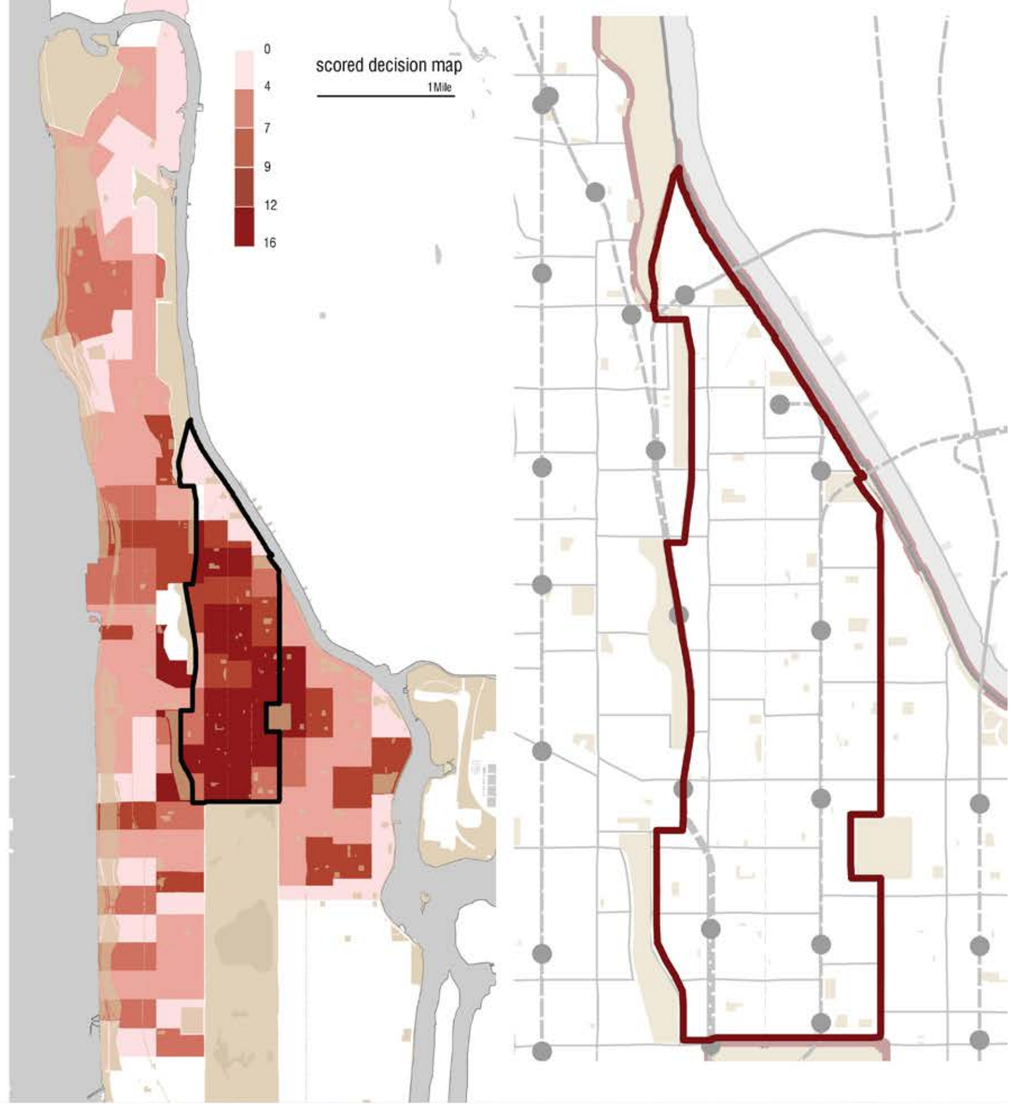
These methods resulted in an in-depth profile of a neighborhood experiencing change, and informed recommendations provided at the end of this report.

From Greater Harlem to CB10

Multicriteria Decision Analysis. (MCDA) map algebra.

areas with higher % of 'neighborhood change' that might lead to displacement





DEMOGRAPHICS

1990 decennial
2000 decennial
2010 ACS 5 yrs
2016 ACS 5 yrs

education attainment

race

median household income

age

unemployment rate

employment sector

individual/family household

BUILT ENVIRONMENT

property value
1990 decennial
2000 decennial
2010 ACS 5 yrs
2016 ACS 5 yrs

rental price
1990 decennial
2000 decennial
2010 ACS 5 yrs
2016 ACS 5 yrs

Land use
PLUTO 1999
PLUTO 2002
PLUTO 2010
PLUTO 2016

housing vacancy rates
1990 decennial
2000 decennial
2010 ACS 5 yrs
2016 ACS 5 yrs

business type
Reference USA

HARLEM. NEIGHBORHOOD CHANGE

Here, the GIS analysis aiming at showing how demographic characteristics had changed in harlem within the study time framework is displayed.

The first step included a multicreteria decision analysis that analyzed the percentage point change from 1990-2016 of several demographic variables in order to choose the area that displayed a more representative change.

After this selection, more in detail studies, such as surveys, interviews and Systematic Social Observations were performed in the choosen area: Community District 10.