



PIRAIKI PENINSULA

ON THE SPECTRUM OF URBAN METABOLISM

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PROLOGUE

Statement_On Urban Metabolism

The city is not static.

The city is the life that makes it.

This is a manifesto of the dynamic of our urban environment.

Since 2007, more people are living in Urban environments than in rural areas. Cities consume most of the resources, cause the most environmental harm and produce the most CO2 emissions. At the rate that humanity consumes resources we would need 1.6 earths to meet our resource needs. It is thus evident that we need to achieve more with less within our cities in order to meet our resilience goals. Also, cities are the center of the human activity, nurturing the social, economical, political activity of the society and the conditions under which this happens is constantly redefined.

Urban metabolism shifts the focus of urban studies to what happens to the components of a city in their flow throughout it. This means that we study the movement of goods from the point they enter the city as resources, until they leave as waste. By viewing the cities as an organism that consumes resources and produces waste we can find ways to improve resource use and reduce environmental impact. The goal is for a city to not have linear metabolism, consuming and transforming into waste but to harness the waste as resources in a circular metabolism. We study the flow of people in an attempt to find their existence and movement within the area, examine their means of transportation as well as explore whether, in the same principle as goods, this part of Piraeus could potentially hold more people and circularize the human flow.

In a metaphorical manner, the city is compared to a living organism. We find that by using categories of the organic existence we provide an easier way to transmit and conceptualize knowledge around this dynamic. We thus consider the body of the city, as the static part and the flows as the ever changing dynamic and inconsistent part. The body part has been analyzed on the essential components that make it, the bones, which is an analogy for the urban fabric, the organs as the building usage and the landmarks, the muscles as the open spaces and parks that bind the city and the veins as an obvious reference to the flow carrying streets. The flows are categorized in the human flows, for both the residents of the area and the temporary visitors and the goods flows.

The five blocks that we were assigned for detailed surveying have been regarded as a case study on the systematic analysis of the metabolism of Piraeus. On this small area we have also conducted a small scale case study for the movement of the users of the certain area, which is mostly characterised by housing. These are all meant to show an approach rather than an absolute conclusion based on an extensive study.

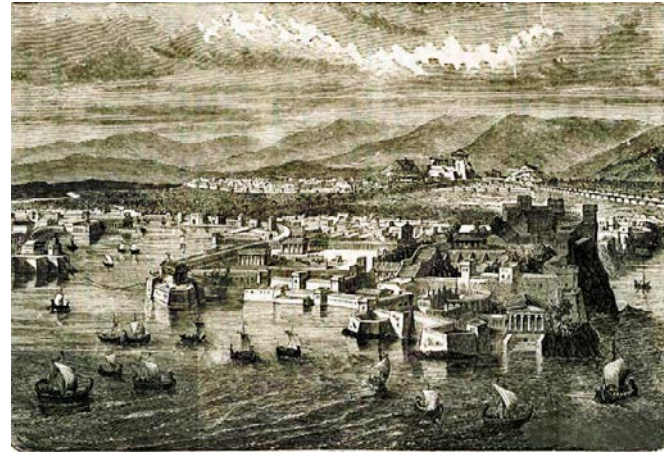
To meet the demands set of the project and provide the historical context, we found it to be the participating analogy as the DNA of the city, that holds the past scars and the future predisposition of the urban environment.

It should be noted that we have managed to get our concept as far as we found feasible within the margins of an academic project with the duration of a semester and the areal extent we were given.

DNA - Historical Context

Piraeus was the commercial and nautical port of Athens. It is said that the peninsula area was an island that was connected to the mainland from the river carried material of Kifissos. The area of the Piraiki Peninsula was called „Akti“ in antiquity, and was famous for stone quarries of the „Aktitis“ stone. Many elements have been found to prove the multiculturalism of the area, as expected for a commercial port.

In 494 BC, the walls of Konon were built around Piraiki, by Themistocles, protecting this area, the port of Zea and Munichia and, hence, Athens. The area of focus was unbuilt but was protected by the walls. All the functions were around the current Marina Zeas and Mikrolimano and the south of the harbor of Piraeus. The wall was built from the stones the area.

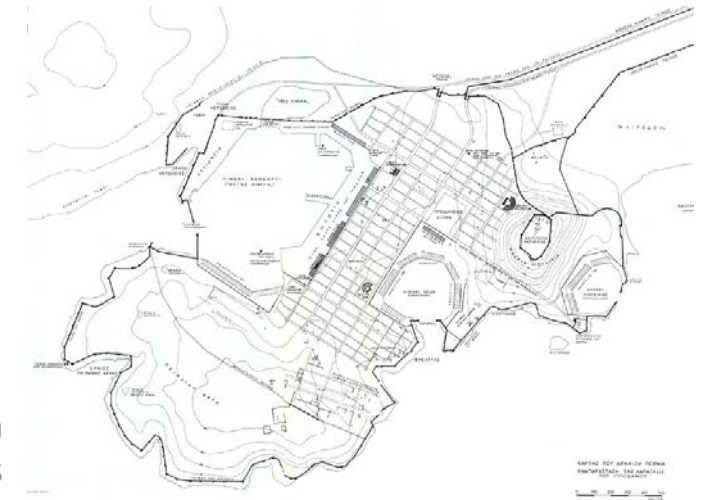


In the 19th century, began the eventual resettling of Piraeus into the modern time city we see today. The stones from the old and now ruined wall were used for the erection of old houses and for the realization of public works. The last samples of the quarries can be seen around Hadjikyriakio Foundation. Until the end of the 19th century, settlement reached the eastern boundary of our study area, the rest remaining a rough and rocky uninhabited area. In 1906-1907 the area of the Piraiki peninsula was considered one of the most beautiful walks in Athens but the inner land had become increasingly dangerous.

In 1922, with the Asia Minor catastrophe and the exchange of populations, the refugee district of the new Kallipolis was created and the inner circle of this territory began to be inhabited but with difficulties. During the first two decades the southwest of the peninsula remained inhospitable and was considered dangerous due to the dominance of marginalised peoples, like marijuana users, gangs and drug addicts. It is the area that the local "Rembetika" songs of the working class were thriving along with other major port and industrial areas around Greece. This kind of music was embraced by marginalised people and created a certain sub-culture. With the establishment of the Hellenic Naval Academy in the area at that time, many unpleasant conflicts occurred due to the current situation.

During the interwar period and after the seize of the illegal activity during the dictatorship of Metaxas, Piraiki had become the favourite swimming destination of all Piraeus. After the Second World War the mutation of the Piraeus into a fully developed city was gradually beginning with the pavement of the Themistocleus coastal road and Hadjikyriakou Avenue. Until 1960 the area has become saturated. In many places, the walls or coastal cave formations had been torn down or built to create public spaces (gymnasiums, pedestrian walkways ex.).

Since then, local government has been dealing with balancing the relationship of commercial uses with the ruins of the wall on the coastal area, as well as the prevailing housing district of the mainland. During these years, arbitrariness of all types grew increasingly. Today, Piraiki is in many ways a neglected area, but with the proper management the history and culture of this unique place can be highlighted.



Map of the city-port of Piraeus in the ancient times



Piraeus masterplan _1927



Piraiki aerial photo _1930



Piraeus aerial photo _1960

THE BODY

1. The Bones - Urban Fabric

- _static
- _shapes the city
- _skeletal structure

2. The Organs - Landmarks and building usage

- _concentration
- _network
- _distribution
- _space usage


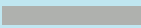

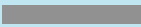
3. The Muscles - Open Spaces

- _not static
- _growing and shrinking
- _flexible
- _surrounds the bones
- _tissue

4. The Veines - Streets

- _transportation
- _connection
- _moving of flows

1. The Bones - Urban Fabric

-  Solitary Buildings and irregular Groups
-  Vertical Blocks
-  Diagonal Blocks
-  Irregular Blocks



1. The Bones - Urban Fabric

Four Categories



solitary buildings



vertical blocks



diagonal blocks



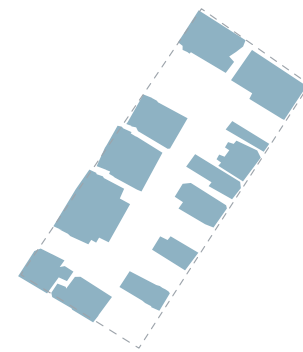
irregular blocks

The creation of blocks in the city can be put in the context of its historical development. The very well and clean cutting Hippodamian that was placed on, and despite the unwelcoming rocky slopes of the mountainous peninsula. This was done at a time when alongside Athens, Piraeus was planned by the prevailing Neoclassical movement in Europe. This foreign brought system meant that nothing less than the Romantacised idea of Ancient Greece would be adequate to the newly created country, despite the fact that at the time most of it was just pasture land. The „irregular blocks“ area is a clear example of the oposite: the lawless, unrully and arbitrary planning as a result of the necessity for the refugees to settle.

How to build a Block



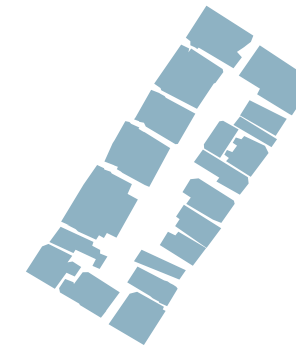
several building



bringing into order



filling the void

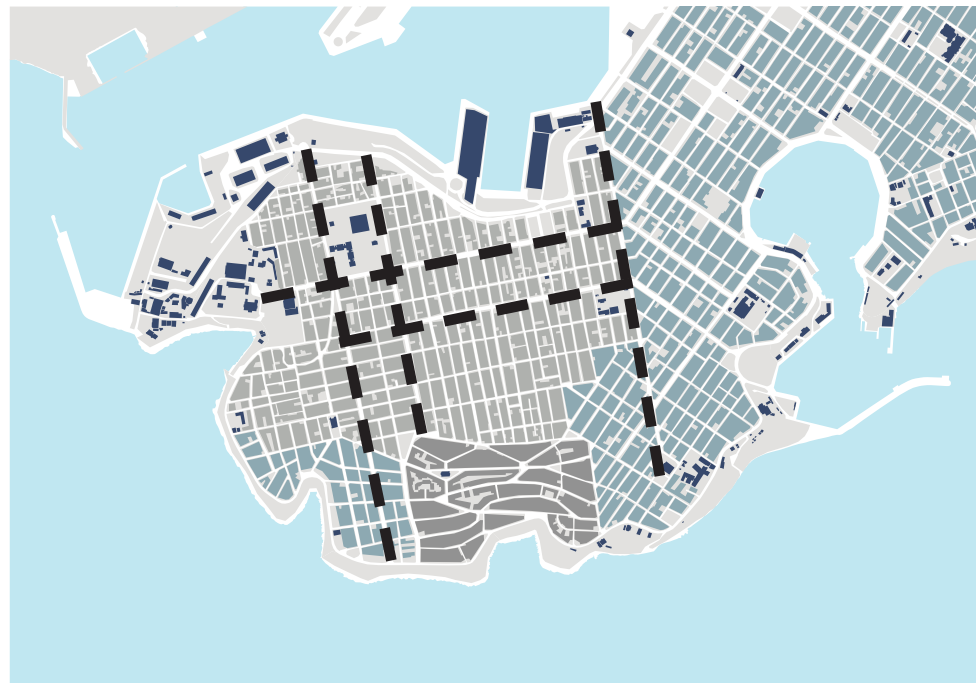


closing the fassade



the finished block

Evaluation



Axes

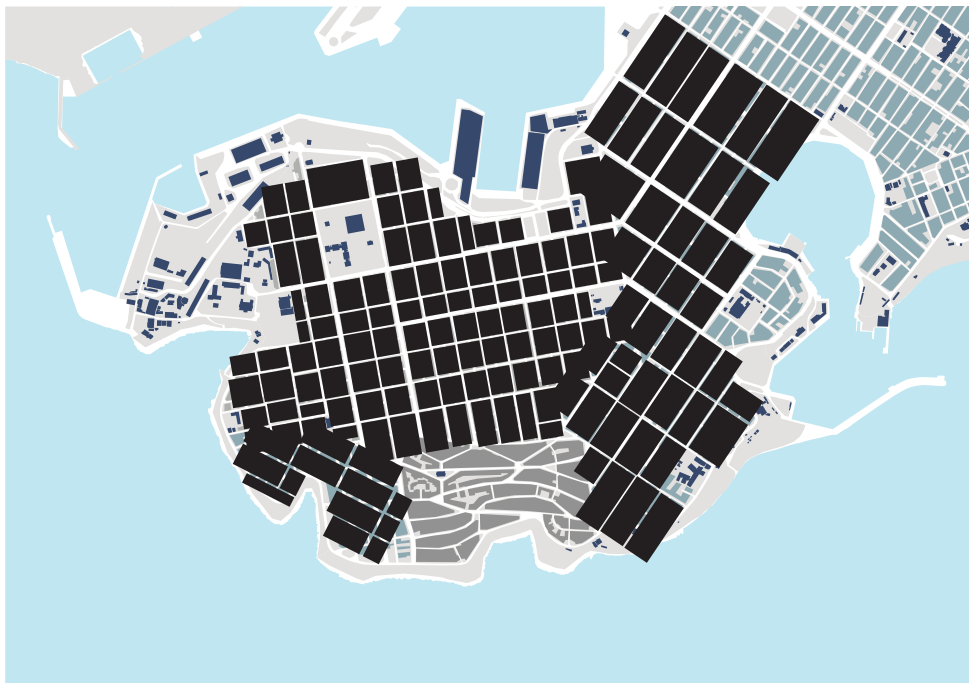
- orientation
 - direct way to the other side
 - view
 - main traffic
 - der
-
- concentration of traffic on single roads,
 - > traffic gets easily stuck
-
- loud, pollution
 - cuts in the typology

Solitary buildings

- lighten the typology
 - easy to move around
 - single building is in focus
 - open spaces around it
 - creates local landmarks that provide character and help orientation
-
- only situated on the coast or churches in the centre
 - periphery-buildings, occupy a big area on the coast
 - no buildings for housing
-

There is a contradiction between Urban Fabric and Traffic. Both categories are connected to each other. The Urban Fabric shapes the way of the traffic.

Evaluation



Vertical and Diagonal Blocks (Hippodamian System)

- - high variety in the block (office, housing, school, shop,...)
- > short ways
- easy to find a way around one block
- clear sense of the city
- unblocked views that reach the sea from the inner peninsula
- - density
- hard to orientate (every corner looks the same)
- - straight view
- no chance for open spaces unless directly planned
- closed character, you cannot see what is behind the facade



Irregular Blocks

- - small passages breaks the block -> short cuts
- buildings along the elevation
- interesting diversity in the urban fabric
- - some streets make a turn -> longer ways
- block size makes for longer trips to get from point A to point B
- because of the elevation, hard to climb some streets
- structure irregular -> hard to orientate, problematic for cars

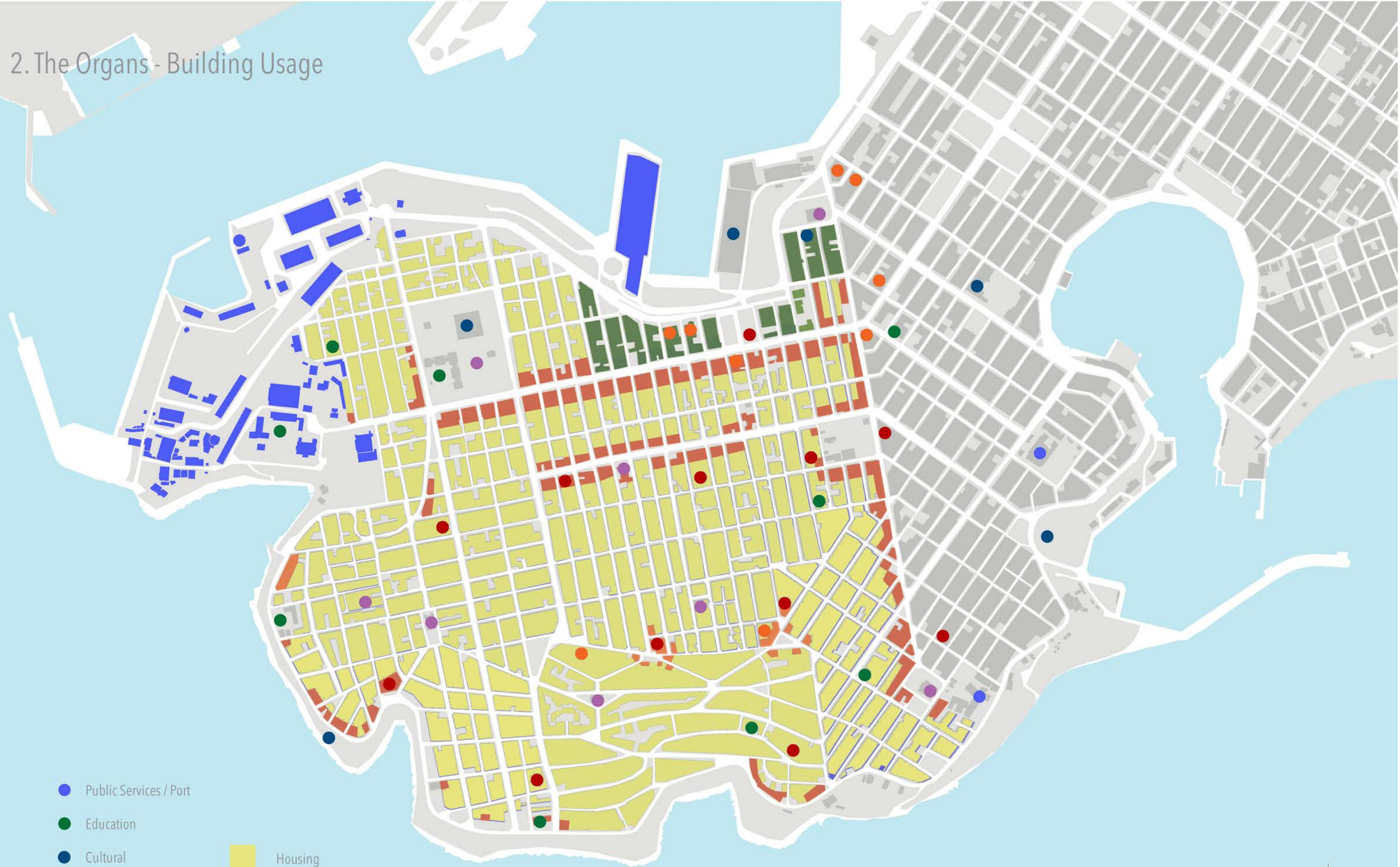
Historical settling of the city is evident. Refugee settlers from Asia minor populated the area before proper urban planning was enforced.



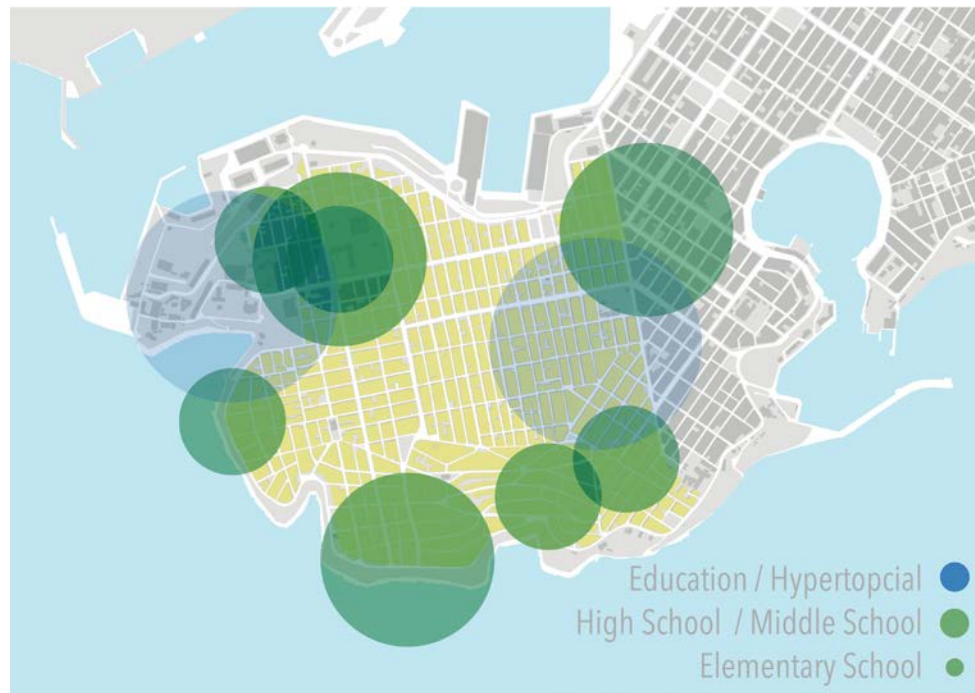
2. The Organs - Building Usage

- Public Services / Port
- Education
- Cultural
- Religion
- Supermarket
- Bank

- Housing
- Office
- Commerce



Evaluation



Educational Buildings

- Educational buildings developed on the outskirts of the peninsula
- Schools don't cover the whole area with walking distance

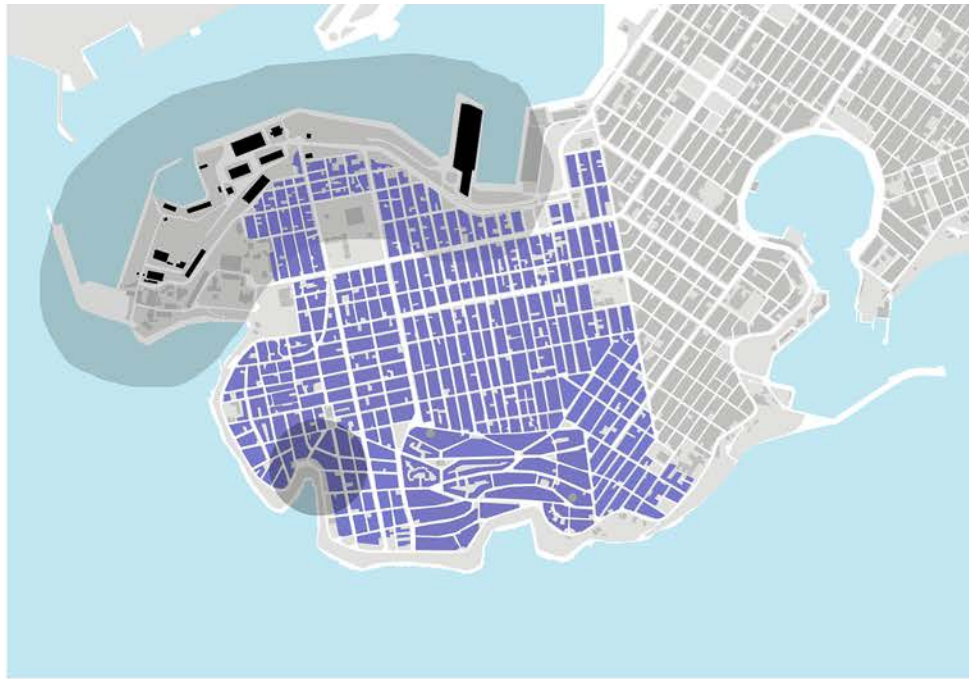


Housing - Commerce Overlap

- no zoning
- ground floor commerce
- develops:
 - on main roads
 - seaside promades
 - around squares
 - in the intersection between systems

The area has a prevailing housing characteristic. Within the dense residential tissue, the commercial uses that develop, serve local needs. We found little to no hypertopical commerce, maybe with the exception of some restaurants on the seaside, that are granted their hypertopical significance due to the sea view. However, the seaside strip of offices that developed along the northern coast, in proximity to the already hypertopical port, gather as well a significance that brings people from all over Athens to work. The prevailing marine economy is centered in Piraeus.

Evaluation



overlapping of housing and port influence



overlapping of commercial/offices and port influence

Hypertopical Cruise Port

- - influx of tourists and ship
- - personel to the local market
- - specialized offices in relation to port
- - sound and air pollution from the cruise ships
- - scale mismatch
- - private use of the coastline



Local Fishing Port

- - provides access to water
- - infrastructure for leisure
- - supplies local market with food
- - boosts atmosphere for locals and visitors
- - smell from fish
- - occupation of natural coast



3. The Muscles - Open Spaces



Evaluation



Concentration on the coastline

- - beltwalk around Piraeus, contains natural coastline, beaches and several water accesses
- - attractive to tourists and people
- - close to the water -> fresh air and microclimate, atmosphere of peace, points of interests
- - no green spaces in the centre
- - homogeneous typology in the centre
- - concentration of leisure time activities and people on the edges
- -> risk of an over-usage, water pollution
- - The Naval Academy campus and the port fence off the continuous seaside walk on its north part.



Harbour Connection

- - belt of green spaces that connects the north coast with the harbour -> attractive to people
- - parks in good conditions and close to each other create a basis for a network
- - representative character (scenery)
- - side streets are less green (less important?)
- - concentration and linear metabolism of visitors

The harbor connection as an axis creates a strong zone that also separates and isolates the rest of the peninsula from the main port promenade. That is an important factor for the tourist flows.

Evaluation



Non accessible Green Spaces

- - safety
- - good conditions of the vegetation
- - biggest central green spaces not accessible for people
- - blocking land that could be used by people
- - overcapacitates the existing open spaces (coastline)

Concentration of Trees

- - lack of trees make for more space to walk on the footpath
- -> less interruptions
- - creates an network
- - more trees in representative streets, some streets will play a subordinate role
- - few and narrow tree lines that lack the ability to sustain green corridors for biodiversity
- - already narrow and blocked pedestrian

Due to the density of the city, the green spaces are really absent. The only green spaces are on the periphery, however due to the fact that this area is a hill, as well as the fact that it is surrounded by sea, the airflow creates a healthy microclimate. The existence of seabirds and some rare roads with trees create the idea of a green corridor that could bring more animal life within the neighbourhoods.

4. The Veines - Traffic

- Main Roads
- Coastal Roads
- Private Roads
- Bus Rutes and Stations

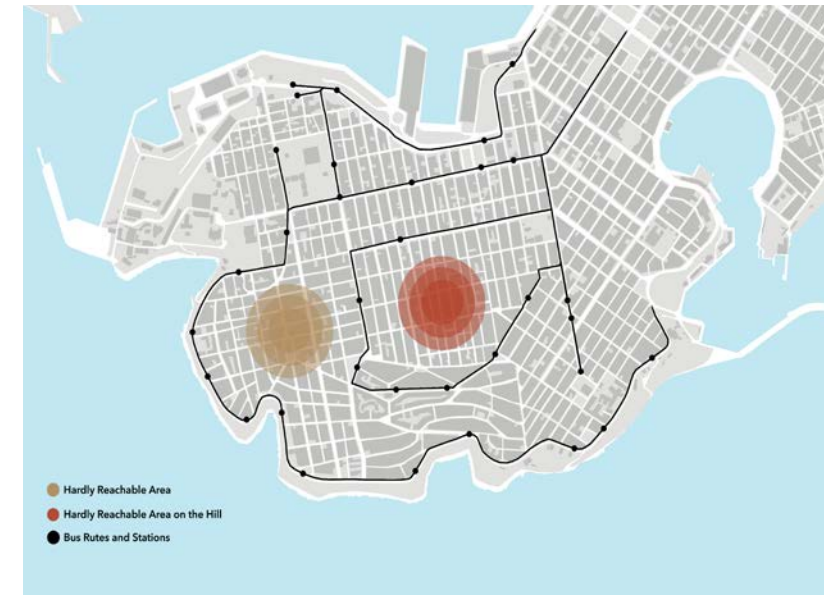


Evaluation



Road Characterising

- - easily reachable coastline
- - main roads make an easy navigation
- - more traffic on the outer circle makes the hill more quiet and safe for „living on the street“
- - sound and air pollution
- - coastal port avenue disconnects the city from the sea on the human scale
- - main roads create barriers for the pedestrians due to size
- - no bicycle lanes
- - no pedestrian roads
- - existing public transport leaves areas that are not served
- - most busses have local character, connecting to the Piraeus train station



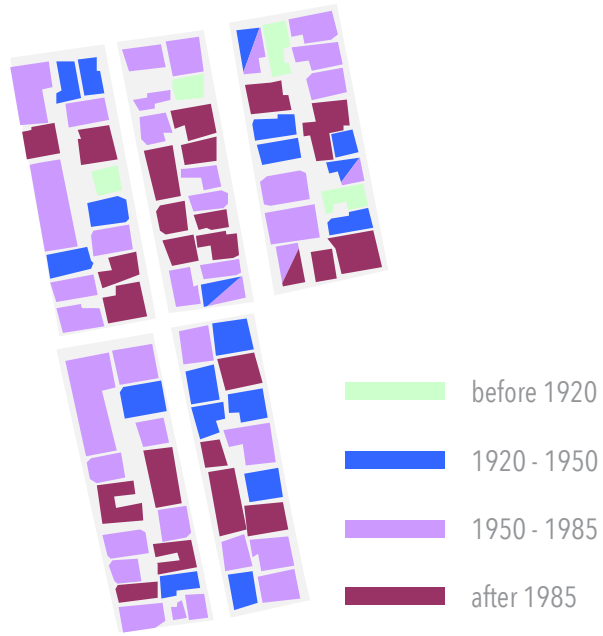
Existing Public Transport - poorly served areas highlighted



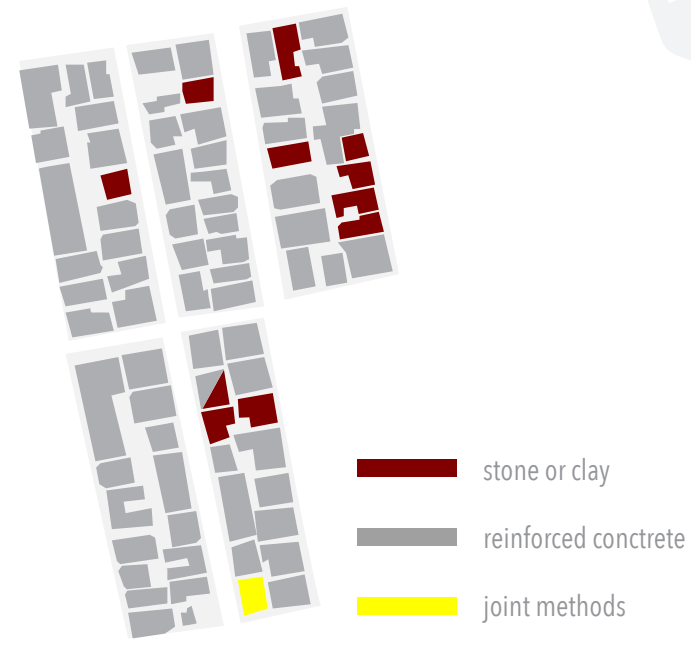
Tram System - under construction (Monorail suggested)

Characterising 5 Blocks

Time of Construction



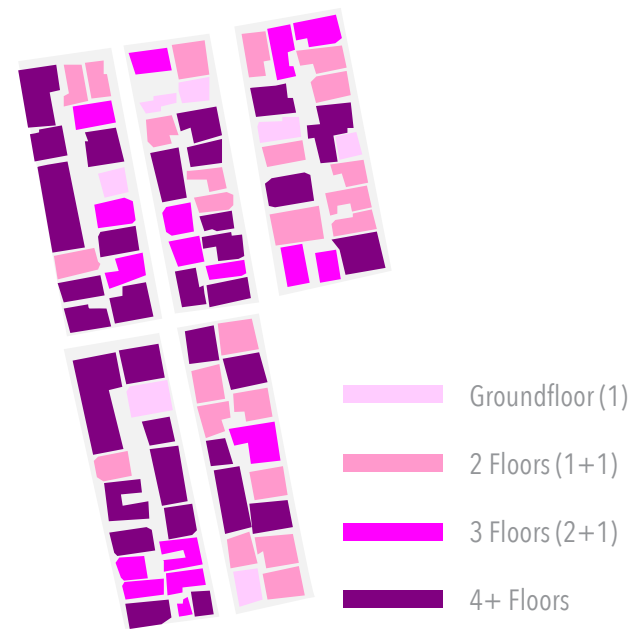
Type of Construction



Conditions



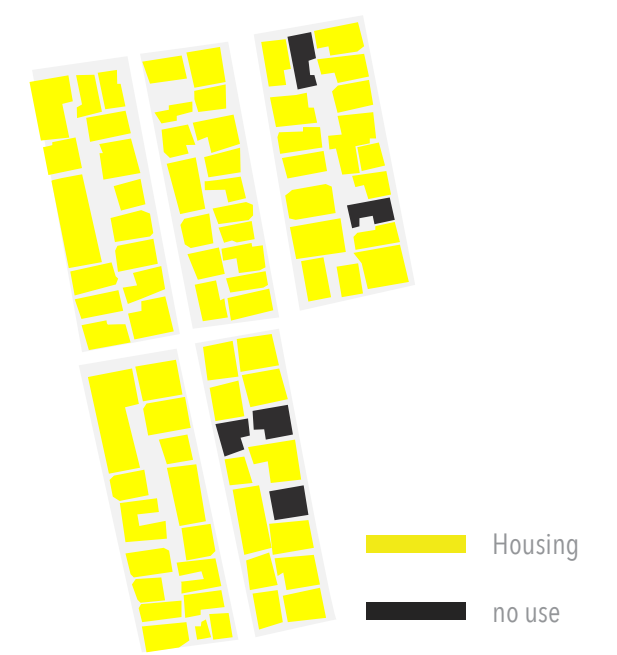
Floors



Usage - Ground Floor



Usage - Other Floors



THE FLOWS

_Tourists Flow

daily trips
cultural tourism
commercial tourism
maritime tourism
island tourism
culinary hotspots
walking routes
evaluation

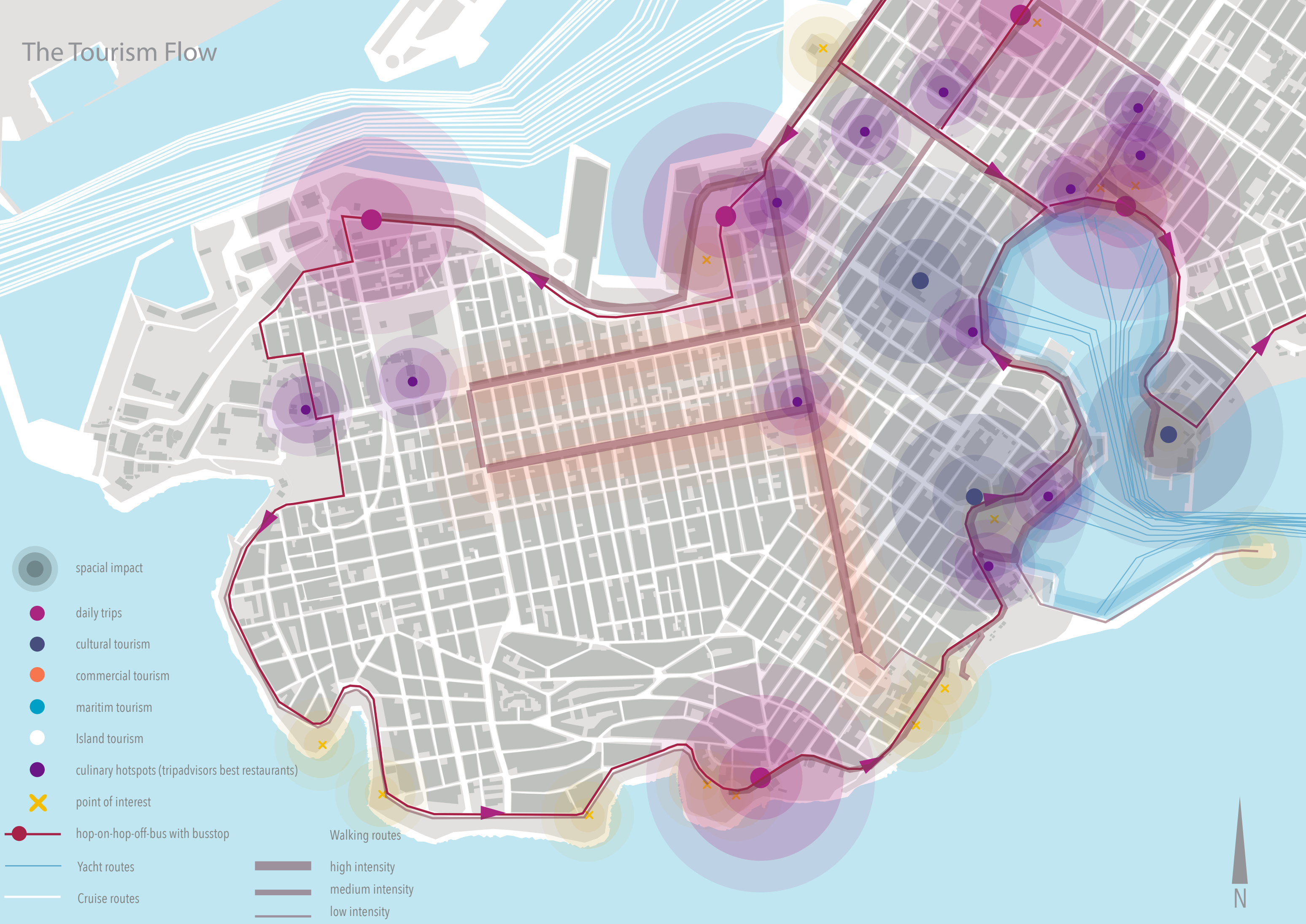
_Goods Flow

food
Super Markets
Local Market
Fish

_The Case Study

Tracing Human Footprints

The Tourism Flow



Evaluation



Tourists Areas

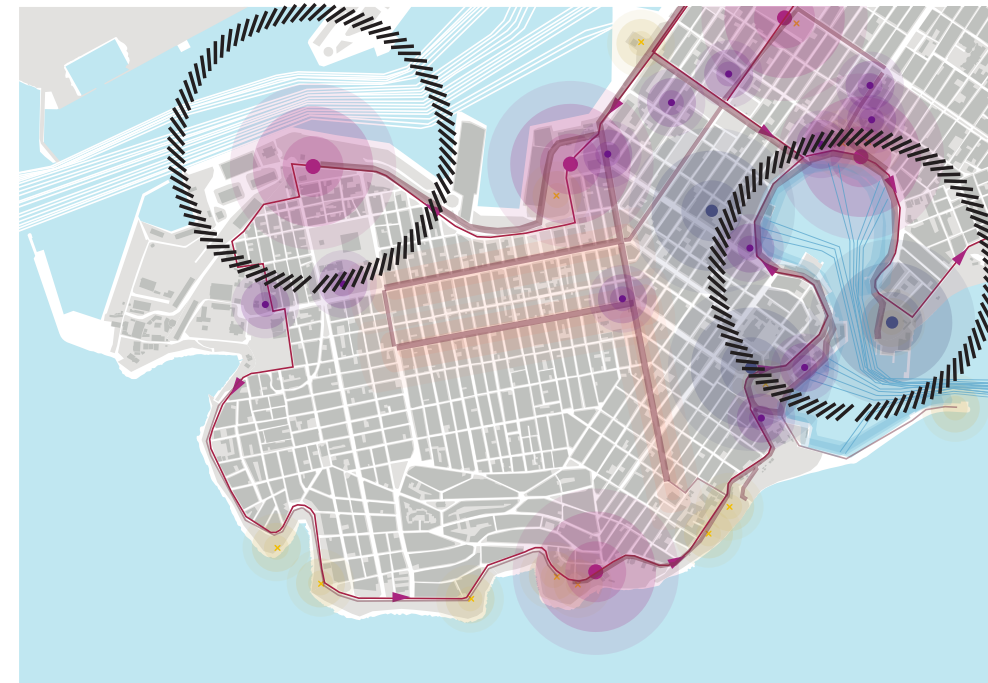
- tourists areas are concentrated in the east
- representative connection road to the Yacht harbour



- open spaces and tourist areas are connected to each other
- open spaces give those areas a representative image
- people feel safe and comfortable



- the belt walk around the Peninsula is also the route for the Hop-on-Hop-off bus



Maritime Tourism and Cruise Routes

- - brings many visitors to the peninsula
- - enriches the area with a variety of specialized economy
- - large coastal avenue and office buildings act as barrier between the residential area and the arriving tourists
- the risk of overloading the area with tourists from the stopping cruises
- - no infrastructure to facilitate tourists there
- - water pollution (less water exchange in the bay) and coastal pollution
- most of the tourists are coming just for one day
- conflict of coexistanse between residential areas and tourists

The Goods Flow



The Case Study - Tracing Human Footprints



1. Age 26: Female. Lives within the 5 blocks and works at the Metaxa hospital (blue dot on the bottom right)

2. Age 9, 11: Male, Female. Live within the 5 blocks and go to school in the Pigada Square (green dot in the center)

3. Age 47: Male. Lives within the 5 blocks and works outside Piraeus, towards Athens. His route exits the map from the top.

4. Age 22: Female. Lives within the 5 blocks and works at the center of Piraeus, at a cafe. Goes there by bus

5. Age 53: Male. Lives within the 5 blocks and is a teacher in the Hadjikyriakio area school (green dot on the top left)

6. Age 44, 70: Female, Female. Live in the Hadjikyriakio neighbourhood and run a restaurant within the 5 blocks

The commercial uses are local and the people that work in them live in the neighbourhood. It is evident that people don't cover long distances. Also the area doesn't consist any short of passage, and doesn't contain any significant highways passing through.

We found that people either walk towards their destination or use a car. Only one of the 8 examined people uses the bus and only for a short distance.

Where people go:	How they go:
● Commercial	— car
● Housing	— on foot
● Education	— bus
● Hospital	
Bus Stop	

Bibliography

- _ Wackernagel, M., Kitzes, J., Moran, D., Goldfinger, S., & Thomas, M. (2006). The Ecological Footprint of cities and regions: comparing resource availability with resource demand. *Environment and Urbanization*, 18(1), 103–112. <https://doi.org/10.1177/0956247806063978>
- _ Jean-Philippe Goiran, Kosmas P. Pavlopoulos, Eric Fouache, Maria Triantaphyllou, Roland Etienne; Piraeus, the ancient island of Athens: Evidence from Holocene sediments and historical archives. *Geology* ; 39 (6): 531–534.
- _ Gill, David WJ. „Hippodamus and the Piraeus.“ *Historia: Zeitschrift fur Alte Geschichte* (2006): 1-15.
- _ Μαλούτας, Θωμάς. “Πειραιάς: Πληθυσμιακή Στασιμότητα.” *Athens Social Atlas*, Athens Social Atlas, 2017, www.athenssocialatlas.gr/%CE%AC%CF%81%CE%B8%CF%81%CE%BF/%CF%80%CE%B5%CE%B9%CF%81%CE%B1%CE%B9%CE%AC%CF%82-%CF%80%CE%B%CE%B7%CE%B8%CF%85%CF%83%CE%BC%CE%B9%CE%B1%CE%BA%CE%AE-%CF%83%CF%84%CE%B1%CF%83%CE%B9%CE%BC%CF%8C%CF%84%CE%B7%CF%84%CE%B1/.

Images:

- _ https://mlp-blo-g-spot.blogspot.com/2015/04/Piraiiki.html?fbclid=IwAR2j83DNw2r_hfWBRhOZmwmGH2KcMVuHyywAyXjEkzILr-Qxkxnc7xE_4RDI
- _ https://mlp-blo-g-spot.blogspot.com/2015/12/map1927.html?view=classic&fbclid=IwAR12pQta1mzqmUSPtgCqoKJFyjTS-V27DN5-ABMQENHx9r_Cs6wnQNQXe0jo
- _ https://pireorama.blogspot.com/2018/05/arxaios-peiraias.html?fbclid=IwAR3jxgFJb9EQOztW52bzxsmZ3Q5OKqYbUaOXO94gn-QkSTTPGty9DHak0_S4