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PORT CITIES IN TRANSITION
THE CASE OF PIRAEUS

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CONTENTS

View of the port city of Piraeus

INTRODUCTION

Today, the relation between city and the water element has raised many questions in a variety of disciplines. Due to urban growth, cities are facing now new challenges such as new land for development and accessibility to water through the revitalisation of the waterfront. On the other side, ports until recently being included to the city, are now relocated, leaving behind an abandoned industrial building stock and heavy maritime machinery. The presence of a conflict of interests puts to an end an old symbiosis between these two elements. Nowadays, a new relation and interdependence of port and city is required in order to respond to current conditions and needs.

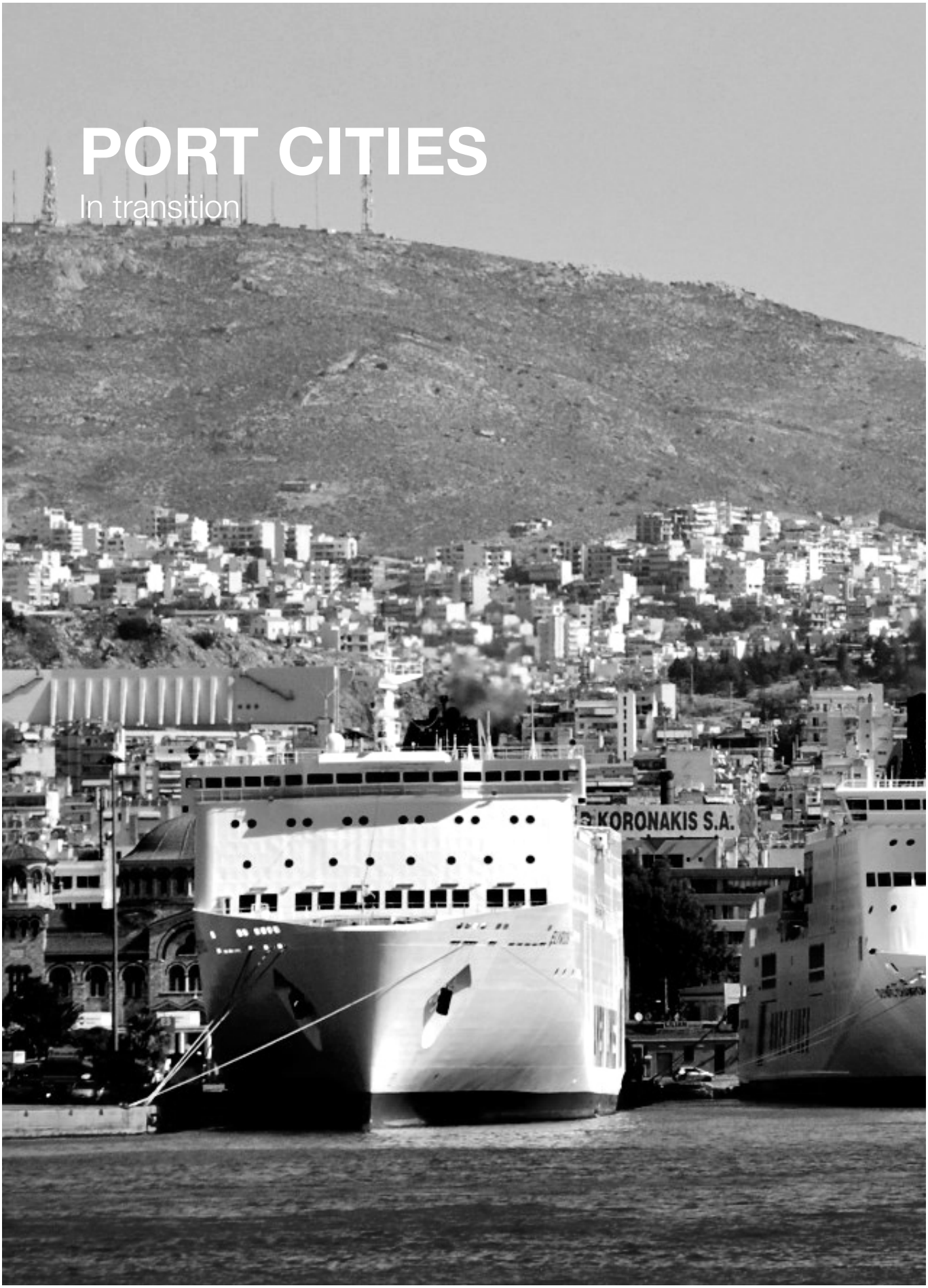
Recently, the port city of Piraeus saw its relocated commercial port enter in a global network and context. Having a high yearly TEU handling and being the busiest port in terms of passenger traffic, Piraeus is seeing its activities grow every year. However, the city seems to be ignored and neglected. The historic city is lacking for the first time since its birth a clear identity and an organised strategy of development. Having not revitalised its waterfront yet, the port city of Piraeus is facing a numerous of spatial, social and economical issues. In addition, its relation with Athens, despite the proximity, seems to be in weaken. The following master thesis is investigating the port city of Piraeus and its relationship with the surrounding urban agglomeration of Athens, framed within the worldwide phenomenon of commercial port relocation and waterfront regeneration.

The goal is to understand how can local, regional and global forces combine to give birth to a new type of port cities exploiting economies of international scale (containers), port-related intermodalism, hinterland and foreland connections, while also including local transformations and connections of the socio-economic system.

The methodology applied for the analysis of the port city of Piraeus is trying to avoid an analytical approach whereby the elements of the case are just analysed rather than their interactions. Its the relations between the city and the port that will result integrated conclusions. This master thesis takes in consideration different scales, factors, case studies and temporalities in order to precise the current profile of this historic port city. Taking into account the particular case of Piraeus and also the negative effects that regeneration projects can engender to the social and urban hierarchies, a territorial strategy is presented. It proposes a new spatial orientation for the future development of Piraeus and its surroundings.

PORT CITIES

In transition



Port in the 17th century (painting by Claude Lorrain)

Industrial port of Belfast at the turn of the 20th century

Port of Hamburg (logistic centre)

1. M. A. Pesquera and J. R. Ruiz," UNCTAD Monographs on port management", Geneva, 1996

EVOLUTION OF PORT CITIES

In pre-industrial societies, until the late 18th century, the basis of the economic structure was the agriculture. People were using renewable sources of energy for their needs, such as muscle power, water, wood, air etc. Thus, the production was slow and limited, and each community was producing just enough to cover its needs. Industrial products were very rare and were always handmade. All these limitations were resulting a poor and weak distribution system with a very small commercial activity. Land transport was a very primitive and unsafe network of roads. Transport of freights were made by wagon trails and mules.

These self-sufficient societies based on agriculture, developed on the coastline maritime and port activities such as fishing, maritime trade and naval warfare. Communities were living from the resources by the sea and all these activities generated a large number of jobs for the city's inhabitants. Thus, the port started to become slowly a business centre where ships were loaded and unloaded and goods were circulating. Having the port in the centre of the city's life, urban and maritime functions coexisted. The urban centre and the port were characterized by a proximity and immediacy.

In many cases though, port facilities were the catalyst for the city's physical development, influencing its pattern and shape. Due to the lack of a port administration, it was the city's administration that was shaping the port by its decisions and acts.

By about the late of 18th century, industry started to replace agriculture as the basis of the economy. Industrial activities started to appear thanks to the replacement of traditional sources of energy by others nonrenewable such as coal, gas and petrol. The big progress in technology (steam engines, combustion engines, electricity, etc.) replaced the type of production in the factories from a craft to an industrial production. Large quantities of standardized low cost of goods were produced.

With the phenomenon of mass distribution, production and consumption got separated. Most of the goods produced in the factories were then distributed, by a constantly improving transport network, to different consumers. Modern form of transports, iron ships with combustion engines, railways, automobiles and lorries were transporting finished and semi-finished goods offering a reliable, flexible, fast and much safer transport network.[1] Transport and accessibility became a vital part of the social and economical life.

Towns in suitable locations were attracting industry, which was stimulating their growth. Thus, the city became the heart of society, producing, consuming and transport the freights. Maritime towns took the leading role thanks to the maritime trade which was one of the main pillars of the transport network at the time. These changes on the organization of the economy and traffic encouraged a major rethink of the meaning of port activities and of relations between the port and the city.

Container

Containerization is a system of intermodal freight transport using containers whose contents do not have to be unloaded at each point of transfer. It is also the process of the transport services adapting their size and utility based on the standard dimensions given by the containers.

Lift-on/Lift-off vessel

LoLo ships are vessels with on-board cranes to load and unload cargo. They can operate on ports missing a cargo handling equipment.

Roll-on/roll-off vessel

Roll-on/roll-off ships are vessels designed to carry wheeled cargo, such as automobiles, trucks, trailers, and railroad cars, that are driven on and off the ship.

The technological progress during the industrial revolution improved the conditions of maritime transport in terms of time and space. Ships started to adapt to the needs of the cargo, and were managed by major shipping companies. Oil replaced wind propulsion and made the vessels faster in terms of speed. At the same time, the port infrastructure is being developed to be able to welcome bigger ships. Concrete structures replace the old wooden ones in order to be more efficient. Everything was evolving and adapting based on the cargo. Railways, roads and pipelines were also constructed and were transforming gradually the port cities into efficient transport hubs.

These changes though, resulted a weaken link between the city and the port. Ports were being developed independently from the city, having their own rhythm and interests, often in conflict with those of the urban areas. Port activities having this constant need of improvement of production and better accessibility were disturbing the urban system and its will to grow. The big change was then translated, firstly by a physical separation and then by a social and cultural segregation. Ports had become autonomous units, isolated from their immediate urban environment and connected with a strong maritime and terrestrial network.

In order to manage these industrial hub clusters, port administrations were founded, resulting an undeniable efficiency in terms of organisation but also a political and social alienation between the port and the city.

However, during the industrial revolution a tremendous growth of cities, population, infrastructures and equipment changed radically the way of life and values of traditional cities.

At the close of the 20th century, a second revolution begun, a technological revolution organized around processing, transmission, interchange and programming of data.[2] Firstly, the decision-making of products are now shifting from the producer to the consumer. This results a distribution of mass customized freights under a consumer-oriented market. Secondly, the markets do not exist in a specific physical area anymore but can be found wherever it's necessary. We witness the creation of a worldwide market area due to new economical activities and globalization of markets. An item is now made just before it is delivered and sold. In order to respond satisfactorily to the consumers demands, a revision of the existent routes of merchandise was necessary.

Three elements, speed, punctuality of deliveries and security of the goods shaped todays maritime trade and transport, linking the new centres of production with the consumers. We witness a diversification and multiplication of trade flows and a standardization in the goods transportation such as containerization and the boom in Ro/Ro and Lo/Lo traffic.[3]

2 and 3. M. A. Pesquera and J. R. Ruiz," UNCTAD Monographs on port management", Geneva, 1996

These changes in production and also in distribution result a new profile of ports that are more than just hubs in transport networks. They play now, a key role, in organizing the trade in goods and data interchange[4], becoming third generation ports called logistical centres. Besides the transport and distribution services, ports have to offer also services for processing and managing administrative commercial and logistical information relating to the movement of goods.[5]

Today, ports no longer depend only on their own infrastructure and equipment in order to be competitive. They need to be part of a strong information and transport network composed by cities which are interconnected, facilitating mobility and speed of interchange. Harbours need the sophisticated tertiary sector that the city has to offer, (bankers, insurers, research services etc.) in order to become strong nodal points in these traffic networks. Therefore, a new commitment between ports and cities has to be thought.

In order to understand this new relation between these two entities, a further understanding and investigation of city-ports is needed.

WESTERN PORT CITY MODEL

Primitive cityport
Close spatial and functional association between city and port

Expanding cityport
Rapid commercial and industrial growth forces port to develop beyond city confines with linear quays and break-bulk industries

Modern industrial cityport
Industrial growth (oil refining) and introduction of Ro-Ro and container facilities requires separation and increased space

Retreat from the waterfront
Changes in maritime technology induce growth of separated maritime industrial development areas

Redevelopment of the waterfront
Large scale modern port consumes large areas of land and water space, urban renewal of original core

General port city
Rising of environmental concern for intermodal transport, city economy develops alike non-port cities

4. UNCTAD, "Port marketing and the challenge of the third generation port", Geneva, 1992

5. M. A. Pesquera and J. R. Ruiz," UNCTAD Monographs on port management", Geneva, 1996

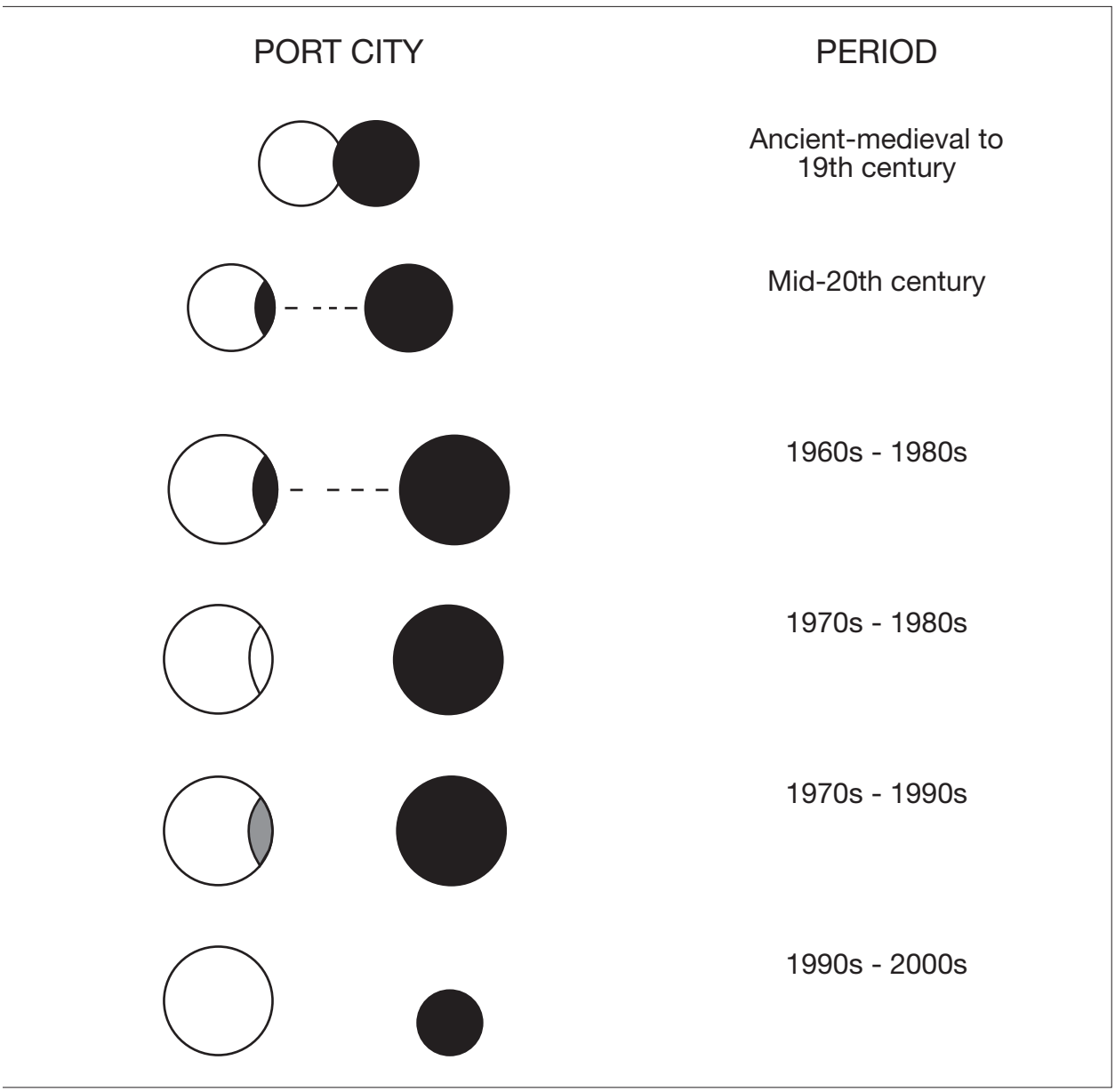


Diagram by Hoyle et al. (1989, p.7) and Lee (2005, p. 145) and then modified by C.Ducruet. *(city: white, port: black)*

DEFINITION OF PORT CITIES

The absence of definition of the notion of "cityport" shows the difficulty of understanding it and analysing it - as Roger Brunet mentioned in 1997 - *"a real object not identified yet".* We distinguish two clear elements and thus, we tend to analyse the city without the port and vice versa. However, its role and geographical state seems to be quite clear.

A port city is firstly, a hub between the maritime network and the land network, secondly, a key point of organising space with activities in a world, national and local scale and finally a centre of reception and distribution of goods, arrivals and departures of people. [6] *"A city-nod of communication (J. Bastié et B. Dézert, 1980)."*

Port cities are strategic transport nodes for major trading regions such as Europe, North America and Asia, especially in a world where more than 90% of trade volumes occur by sea (Rodrigue, 2006). However, their roles are different for a number of reasons, such as the history of trade and urban settlements (colonisations) , the geographical layout, and the current level of regional integration in the transport networks. The following diagram proposed by César Ducruet helps to define the relations between maritime and urban activities by inserting different factors.

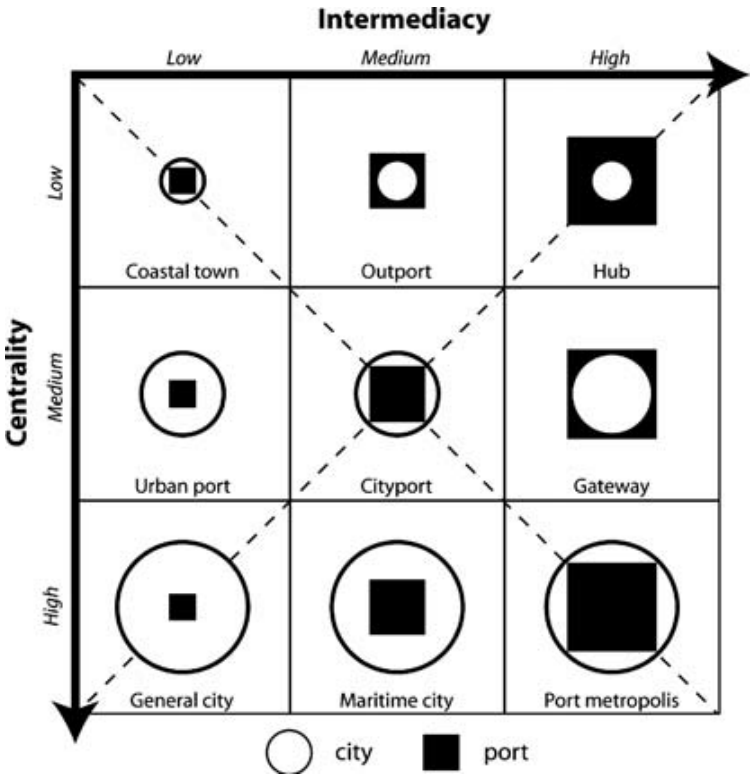
6. César Ducruet, « Typologie mondiale des relations ville-port », Cybergeo : European Journal of Geography [En ligne], Espace, Société, Territoire, document 417, mis en ligne le 27 mars 2008, consulté le 18 novembre 2014. URL : http://cybergeo.revues.org/17332 ; DOI : 10.4000/cybergeo.17332

This matrix considers that centrality is an urban related measure, while intermediacy is an essentially maritime-based measure. We can distinguish an upper-left lower right diagonal illustrating the hierarchical combination of centrality and intermediacy (Fleming and Hayuth, 1994) while the lower left-upper right one marks their opposition.

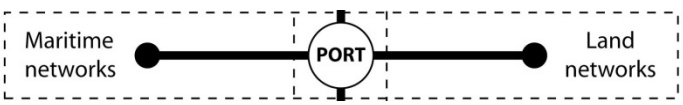
The first diagonal shows a state of balance between city and port, calling it "city-port". The city-port, as defined by Hoyle and Pinder (1981, 1992) is a state of equilibrium between the coastal town and the global port city in terms of size and between the hub and the general city in terms of function. This underlines the fact that, in reality, few port cities might be considered city-ports because of the recurrent disequilibria between these two main orientations.

However the second diagonal shows an opposition between the maritime and the urban activities (Hubs, General cities). Few port cities have become truly global hub port cities. After the early stages of port growth, inducing urban and industrial growth, the symbiosis often declines as ports and cities follow their own developmental logic through spatial and functional separation. From the hub to the general city we observe an opposition between the two functions and the dominance of one of them. [7]

The rest of the configurations (outport, urban port, gateway etc) are states where each time we find a disequilibrium between these two functions.



A matrix of port-city relationships, by César Ducruet



The port triptych, port is a hub between the maritime and the land network, diagram by César Ducruet

PORT CITIES IN TRANSITION

Revitalisation of Boston's waterfront

Revitalisation of Docklands area

Revitalisation of Genoa's waterfront

In general, port cities are entities that have shown over the centuries their durability. They managed to adapt and adjust on different conditions which have gradually shaped their urban form and identity. The relation between the port and the city has followed various phases. From an absolute symbiosis to an absolute isolation. The last decades, in most cases, a "wall" has been placed between the port and the city. In addition, the change of structure of trade and production has left abandoned industrial storage buildings and outdated heavy port machinery, in the majority of ports in the world.

The need for a maximum productivity by the transport and logistic services on one side and on the other, the urban strategies for a spatial and industrial development, accelerated the segregation between ports and cities. Since the 1960s, this spatial separation led to an urban redevelopment of the abandoned sites, previously used by the commercial port, such as the waterfront.

The first generation of waterfront redevelopment started in United states in port cities such as Boston, San Francisco and Baltimore. The revitalisation approach was aiming to attract the population and tourists by offering them cultural and recreational functions. This strategy led to a spatial cluster linked with the element of water where the main activities were consumption and entertainment. Thus, this isolation resulted a social segregation and concentration of the lower class in the inner city.

The second phase of waterfront redevelopment in the 1970s took place in Sydney, Brisbane and London. This time, the strategy of development consisted to highlight the real estate market. New offices, headquarters of international companies, housing were built in the area of Docklands on the riverside. New jobs were created and the model was considered successful despite the real estate crisis and the phenomenon of gentrification. Similar projects such as the Euroméditerranée in Marseilles and Kop Van Zuid in Rotterdam have been influenced by the Docklands model.

In 1990s, a new generation of waterfront redevelopment appears, especially in south of Europe, in cities such as Bilbao, Genoa, Lisbon, Marseilles and Barcelona. The port cities are aiming to preserve maritime activities and at the same time introduce new urban activities. Avoiding to create isolated and fragmented pieces of city oriented to their inner, they propose a reunification of those two elements, with new interactions between the city and the port.[8] The public space is the main tool for this spatial relation. In 1995, the international association of port cities (AIVP) in Rotterdam, mentioned a new generation of redevelopment of the waterfront, where city and port are interdependent elements, and form a real "cityport".

As was previously mentioned, on C.Ducruet's matrix, port cities can be defined by different typologies. In order to understand in practise different European port city models and their role towards the transhipment activities and the relations between the city and the port, it is helpful to compare north and south European port cities with regard to apprehend its affinities and dissimilarities. Distinguish then, the different profiles and orientation of such a complex phenomenon and analyse them.

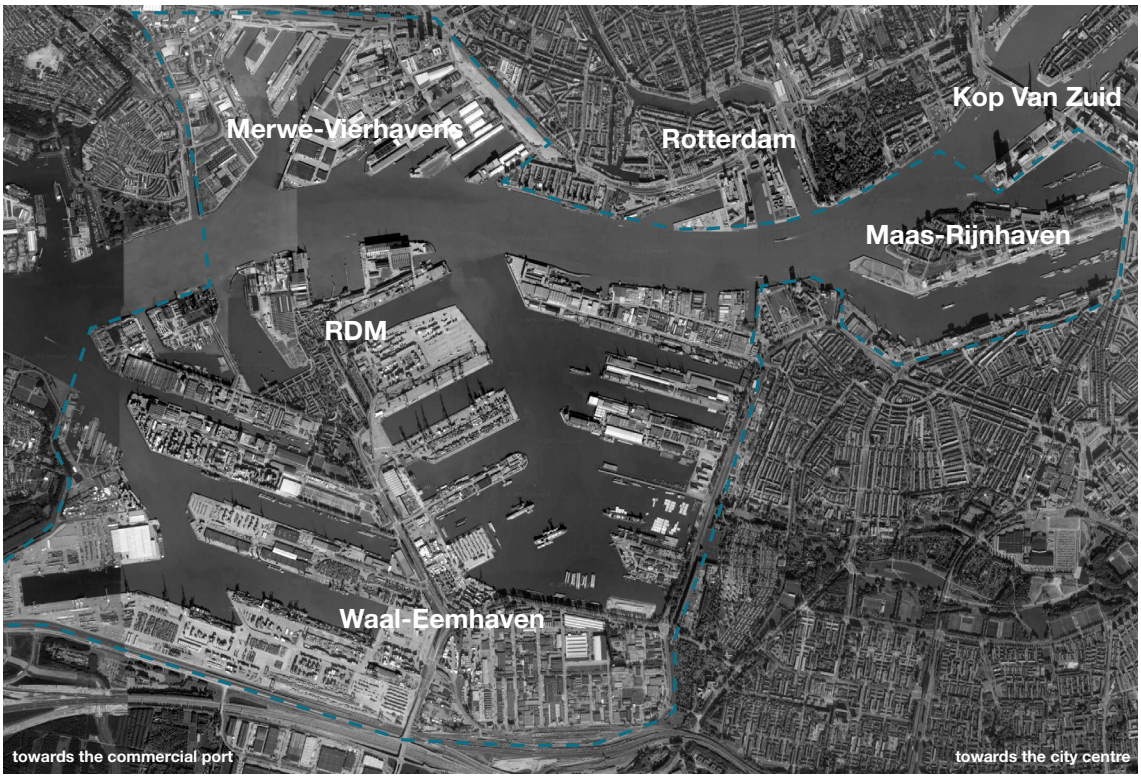
It is absolutely normal to find port cities following different development orientations where urban and maritime activities interact in various levels. Some cases are well identified, easy to locate due to their clear orientation. These port cities are briefly divided in two main categories, to these where port and city functions coexist and to these where port and city activities are independent to each other having their own orientation of development.

"Does the port develop the city and its economic activities, or is the city the engine of port expansion ?" (Verlaque, 1979).

"It serves no useful purpose to ask which functions came first or are the more important: they go together." (Goss, 1990)

7. César Ducruet, "A metageography of port-city relationships" Published in: Wang J.J., Olivier D., Notteboom T.E., Slack B. (Eds.) Ports, Cities, and Global Supply Chains, Aldershot, Ashgate, pp. 157-172

8. Pierre Gras, "Le temps des ports, déclin et renaissance des villes portuaires (1940-2010)", Paris, 2010



Stadshavens, Rotterdam's CityPorts area and its four districts

Kop Van Zuid in Rotterdam proposing urban activities

TEU's:	*11 621 000**
Population:	*610 386**
Port area (ha):	*10 000*
Cruise passengers (per/y):	*50 000*
Employment of port:	*45 000/90 000*
Profile:	*Gateway*

**Stats of 2013*

ROTTERDAM

In Europe, Rotterdam stands out as the second largest port after Singapore in terms of its number of subordinates (i.e. ports connecting Rotterdam by their largest flow link). It is considered to be a gateway port is characterised by a really complex and sophisticated hinterland transport network serving the biggest metropolis of West Europe. The statistics for 2008 showed that around 57% of container throughput at Rotterdam was carried by road transport, 30% by inland waterways and 12.7% by railroad. However the road congestion of the area is pushing the authorities to target on an improvement of the waterways and railroads and aiming to attain for 2035 an inland shipping of 45%,a road transport of 35% and a rail transport of 20%.[9]

However, the spatial orientation of the port city of Rotterdam is based on a careful port-urban mix. Port authorities and the municipality are cooperating in order to follow a strategy where the city expands towards non-terminal waterfronts as long with an improvement of public spaces and industrial heritage conservation. Housing, education clusters, business activities are getting developed and coexist with maritime activities. In 2003, the port administration, representatives of the port's business community, local urban authorities and surrounding municipalities, agreed on developing a spatial plan for the CityPorts area and its surroundings.[10]

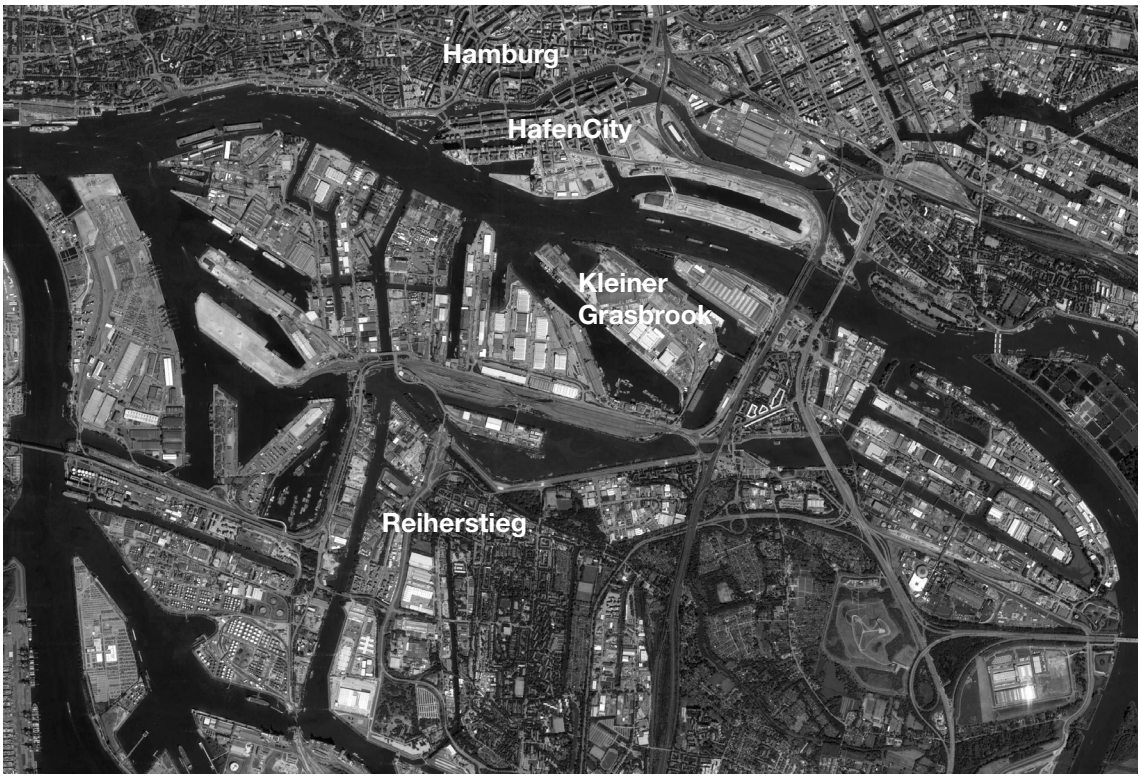
9. Port of Rotterdam annual report, 2008 and 2012

10. Daamen, T.A., Vries, I. Governing the European port–city interface: institutional impacts on spatial projects between city and port. J. Transp. Geogr. (2012)

Stadshavens (CityPorts) in Rotterdam is the largest inner-city development spatial project after the London Gateway. The Rotterdam CityPorts (1,600 hectarea) are a transition area between the city and the port. This area will have both urban and port activities. The port areas still in function are situated inside the Stadshavens area, and will provide jobs to more than 20.000 people. The Municipality of Rotterdam has a long term plan in order to develop and improve the conditions of many public spaces, heavy rail infrastructure and social-class buildings in the City-Ports that are today, in a bad shape. The area is divided into four different zones, each having its own existing profile and development target.

The southern Waal-Eemhaven district will remain a working harbour and will be renewed for maritime activities and services as long with port-based economic functions. The historical Rotterdam Dry Dock (RDM) district, which is, today, connecting the garden village of Heijplaat to the waterfront, has already been renewed into a campus with an innovative cluster of business and educational institutes. (sophisticated tertiary sector). The two remaining districts, Maas-Rijnhaven and Merwe-Vierhavens have a different role and are planned to propose an attractive waterfront based on urban activities with a low-dense residential and business districts.[9]

Rotterdam's ambition is to create an area in which port and urban functions are integrated. CityPorts area accommodates from heavy transhipment activities to housing and clusters of business activities.



HafenCity and Elbe island

HafenCity project made possible the reunification of the city with the waterfront and the river Elbe.

TEU's:	*9 257 000**
Population:	*1 800 000**
Port area (ha):	*7200*
Cruise passengers (per/y):	*430 000*
Employment of port:	*150 000*
Profile:	*Gateway*

**Stats of 2013*

HAMBURG

The city of Hamburg is located on the river Elbe which flows into the North Sea. The port of Hamburg is the second most important container port in Europe, preceded only by Rotterdam. Thanks to its geographical location, Hamburg is a transition point between East and West Europe. Counting in 2013, 9 257 000 TEU container trade and with an increasing number of cruise ship passenger, the port of Hamburg is in an overall growth. Its not just a major container port, but also a logistic hub due to its advanced hinterland connections. The hinterland connections got stronger after the expansion of the railway infrastructure and the implementation of new railway management IT systems. These projects will help to optimise the ever more complex processes, reducing transit times and increasing handling capacities. Nearly 30% of all its container hinterland traffic is transported by rail. The port railway now has one of the world's most modern IT systems available in this sector, which will further increase the efficiency of the port railway.[11]

It should be mentioned here that the planning for the port and the planning for the city is regulated by different planning laws. Port planning is done by Hamburg law and urban planning is done by federal law. There is a Port – urban division in an administrative level and also in a spatial level.

11. Port of Hamburg annual report, 2012

12. http://hafencity.com

13. Daamen, T.A., Vries, I. Governing the European port–city interface: institutional impacts on spatial projects between city and port. J. Transp. Geogr. (2012)

Hamburg, after the ambitious transformation of the historic port area juxtaposed to the city centre (HafenCity), is already planning for a further transformation on the Elbe island. HafenCity project was an initiative by the city of Hamburg to reorient the city towards the river Elbe. Today, the Elbe island is completely different compared to the rich urban districts located at to the north side of the river. It accommodates a mixture of heavy used infrastructure, green spaces in decay and social housing in areas such as Reiherstieg and Kleiner Grasbrook. Their aim is to turn the Elbe island into a continuous spatial network with attractive and affordable living environments (Free and Hanseatic City of Hamburg, 2005).

Spatially orientations by port planners are still focused on a clear separation between maritime and urban activities despite the possibility of turning Reiherstieg into a sort of buffer-zone in order to "protect" the inhabitants from the heavy port industry. It will provide a diversity of services, having its own business district with high quality of green and public spaces to able become a transition area between the urban and heavy port activities. On the other side, according to IBA Hamburg Gmbh, the organization managing the development, the area of Kleiner Grassbrook will be turned into a second HafenCity with a university campus as its main function.[13] This will result an another accessible waterfront for the citizens of Hamburg.

City-port of Barcelona

Nova Bocana area and its new iconic hotel

TEU's:	*1 734 734**
Population:	*1 621 000*
Port area (ha):	*585*
Cruise passengers (per/y):	2 288 026*
Employment of port:	*15 000/82 500*
Profile:	*Maritime city*

**Stats taken from "Port of Barcelona traffic statistics 2014"*

BARCELONA

Situated along the north-east coast of Spain, the port of Barcelona serves Spain, west of Italy, as well as the south of France. The port has a major role to the economic growth of the region. The well organised transportation system is the reason for a high freight volume. However, the dominant transport mode in the hinterland network is the truck transport with train transport coming second. The strategic position of Barcelona along a hinterland corridor permits to develop its land network with new terminals and also developed rail shuttles to other regions outside the traditional hinterland of Barcelona, such as Lyon. By increasing the land connectivity, the port will be able to compete with other ports that are closer to a specific hinterland region. However, Barcelona's TEU container trade seems to be low compared to the Northern Range (Rotterdam, Hamburg, Antwerp) or other ports of the Mediterranean sea such as Valencia and Piraeus.

The spatial orientation followed by the city-port of Barcelona shows a clear division between port and urban activities although they coexist . The waterfront is revitalised with urban activities and being seen as the entrance to the city. This urban renewal is considered to be a third generation waterfront transformation. In the 1980s, the port authority of Barcelona (Autoritat Portuaria de Barcelona (APB)) redeveloped the area of Port Vell, the oldest port area situated next to the historic city centre.

14. Pierre Gras, "Le temps des ports, déclin et renaissance des villes portuaires (1940-2010)", Paris, 2010

This is a well-known European waterfront development project that had the chance to be achieved thanks to the Olympic Games in 1992. By hosting the olympic games, the city of Barcelona had a great opportunity to reorganise and redevelop its infrastructures in a short amount of time. The functional focus of this redevelopment was based on tourism, retail and leisure. The coastline was redeveloped and more than 150 public spaces were created or transformed. New sport facilities, road and telecommunication infrastructures, hotels, museums, restaurants, bars, offices were built under the "Olympic Games effect". Only one-tenth of the new projects represented sportive activities. [14]

Recently, Port Vell was extended by a new area called Nova Bocana, which combines new marinas for yachts and a 16 ha project situated on land reclaimed from the sea. The cruise ship port is the buffer zone between the urban activities situated in Port Vell and the commercial port. Although industrial port activities have been removed from the area, there is still a clear co-existence between leisure-oriented port and urban functions in Barcelona's port–city interface. The spatial connection between the cruise and ferry terminals and the amenities in Port Vell is also evident. The Nova Bocana area has become the host of an iconic hotel, a business center, shops and a marina.[15]

15. Daamen, T.A., Vries, I. Governing the European port–city interface: institutional impacts on spatial projects between city and port. J. Transp. Geogr. (2012)

Marseille's Euroméditerranée Project (www.euromediterranee.fr)

Marseilles' commercial port and its old historic port in the background

TEU's:	*1 062 408**
Population:	*851 420**
Port area (ha):	*3300*
Cruise passengers (per/y):	*700 000*
Employment of port:	*40 000/45 000*
Profile:	*Maritime city*

**Stats of 2013*

MARSEILLES

Marseilles situated at the southern coast of France has direct access to the Mediterranean sea. With a handling of 1 062 408 TEU the past year, the port of Marseille continues its grwoth and progress in the container and logistics sector as well as in that of steel solid bulk. The passenger traffic has increased to 2.6 million people and reaching the remarkable number of 700 000 cruise ship passengers in 2013. The port of Marseilles is considered to be one of the most important Mediterranean ports and an important southern gateway to Europe. The past years Marseilles has also done a big progress in order to strengthen its hinterland connections. In 2013 it was decided to create a rail motorway service to northern and north-eastern France and Europe. In addition, the port's inland waterway traffic had an increase of about 14%. The inland waterway asset is a strong point of differentiation for the port of Marseille Fos compared to other ports in the Southern range.[16]

Marseilles was strongly affected and hit by its abandoned maritime industrial building stock that led to the extinction of a big amount of jobs and a social segregation. Having as example the regeneration of the waterfront of cities such as Barcelona, Genoa and Lisbon, Marseilles lunched the immense Euroméditerranée project in order to revitalise the social, economical and urban aspect of the city and will reactivate its maritime and urban zone.

16. Port of Marseilles annual report, 2013

17. Daamen, T.A., Vries, I. Governing the European port–city interface: institutional impacts on spatial projects between city and port. J. Transp. Geogr. (2012)

Launched in 1995, Euroméditerranée project is one of the city's three major strategic projects covering 480 ha of port–urban land. An area of this project called Cité de la Méditerranée as it can be seen on the map, is starting at the old historic port, situated next to the city centre and extents along the waterfront, called Basins-Est. The goals is to give access to the city to the waterfront, improve the current public spaces and conserve the industrial heritage. Nowadays, the presence of motorways in the city centre is producing a physical and psychological barrier between the city and its harbour. Marseille hasn't had any large scale urban waterfront revitalisation so far. Thus, the major investment in Cité de la Méditerranée, covering up to 60 ha, proposes to relocate the major motorways underground in order to abolish this existing barrier. The project proposes that existing maritime activities such as cruise and ferry terminals, general cargo and containers will be kept and in addition they will remain fenced-off. The port authority believes that these functions are essential for the regional and local markets. Thus, we have a cohabitation between urban and maritime activities. The new public space that will be created on top of the motorway tunnels and over the terminals will include a large departure terminal for cruise ships. This will include more than 50,000 square meters of public program consisted by leisure, touristic and cultural activities. Housing program is missing on this project of creating a second ground level.[17]

THE CASE OF PIRAEUS

In the past, most of ports were capable to change from an agricultural to an industrial economy with an autonomy and independence from the city. Today, a mutual commitment of port and city is required in order to have a cityport responding to current conditions. Infrastructures, (highways,railroads, depots etc.) are essential for a port city to be part of a world scale network where mobility, fluidity and speed of interchange are shaping this new spatial scenario. In addition, sophisticated tertiary services are needed that only a metropolis can offer.

However, taking as a fact the relocation of the commercial port resulting a spatial separation, an acute debate is on about the strategies European port cities should follow in the future in order to revitalise the abandoned sites of the waterfront. On the one side, people believing on a port-related urban development based on logistics, where the port develops the city and its economic activities (economical model). Presence of strong interdependence and careful mix between the functions of the port and the city. On the other side, people proposing a redevelopment of coastal locations without depending on port activities (e.g. cultural or commercial citizen-oriented strategy)(spatial model). A clear segregation and division between the city and the port.

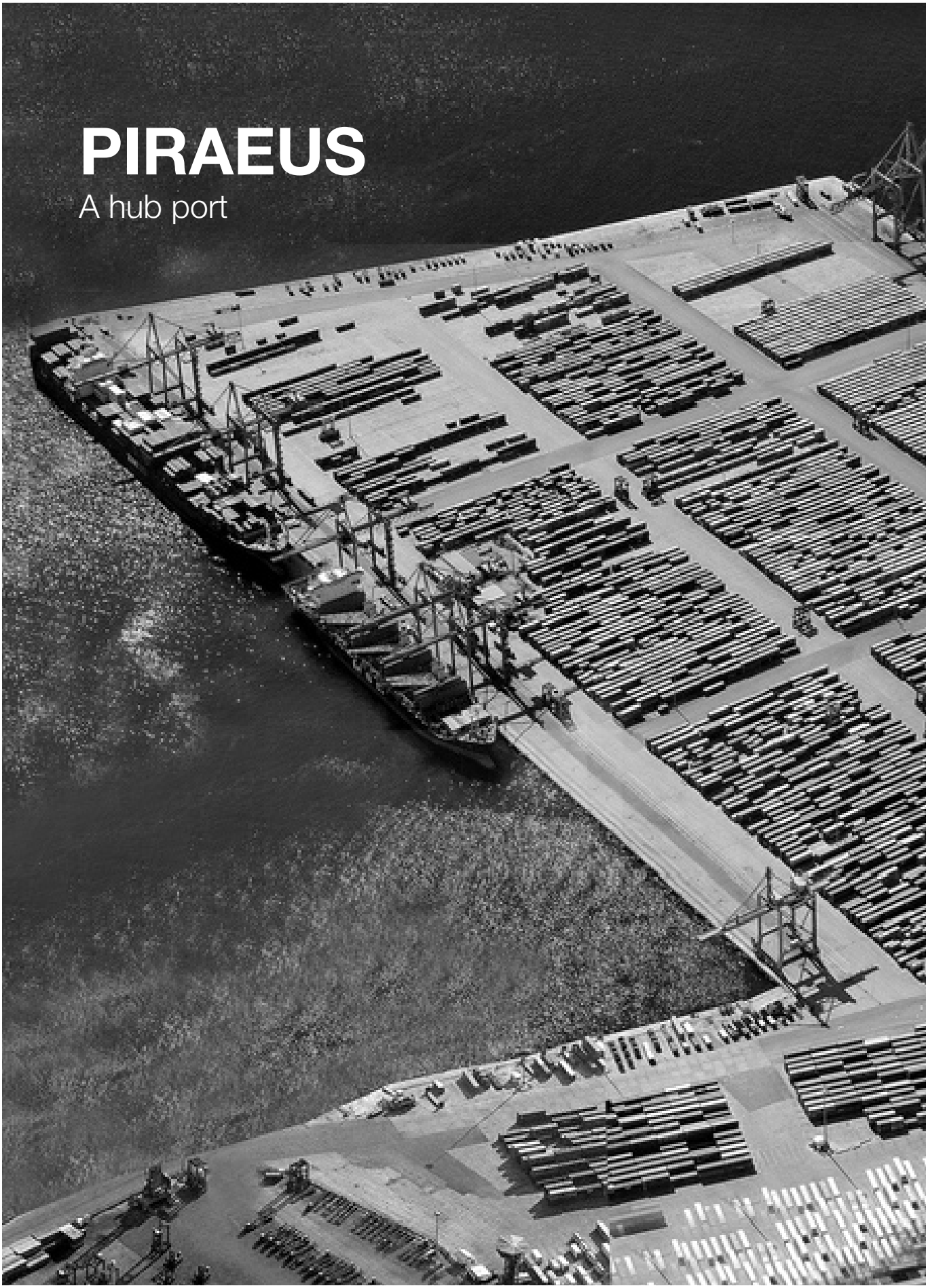
The intention behind this thesis is to investigate the case of Piraeus, a port city in phase of transition. The port of Piraeus is about to become one of the most dynamic ports across the Euro-Mediterranean area. His exceptional geographical qualities turned the port into a maritime crossroad between international shipping routes and the European hinterland network. Locally and regionally, it is made possible through the physical separation between the port city of Piraeus and the new site of Ikonio, located 5 km westwards.

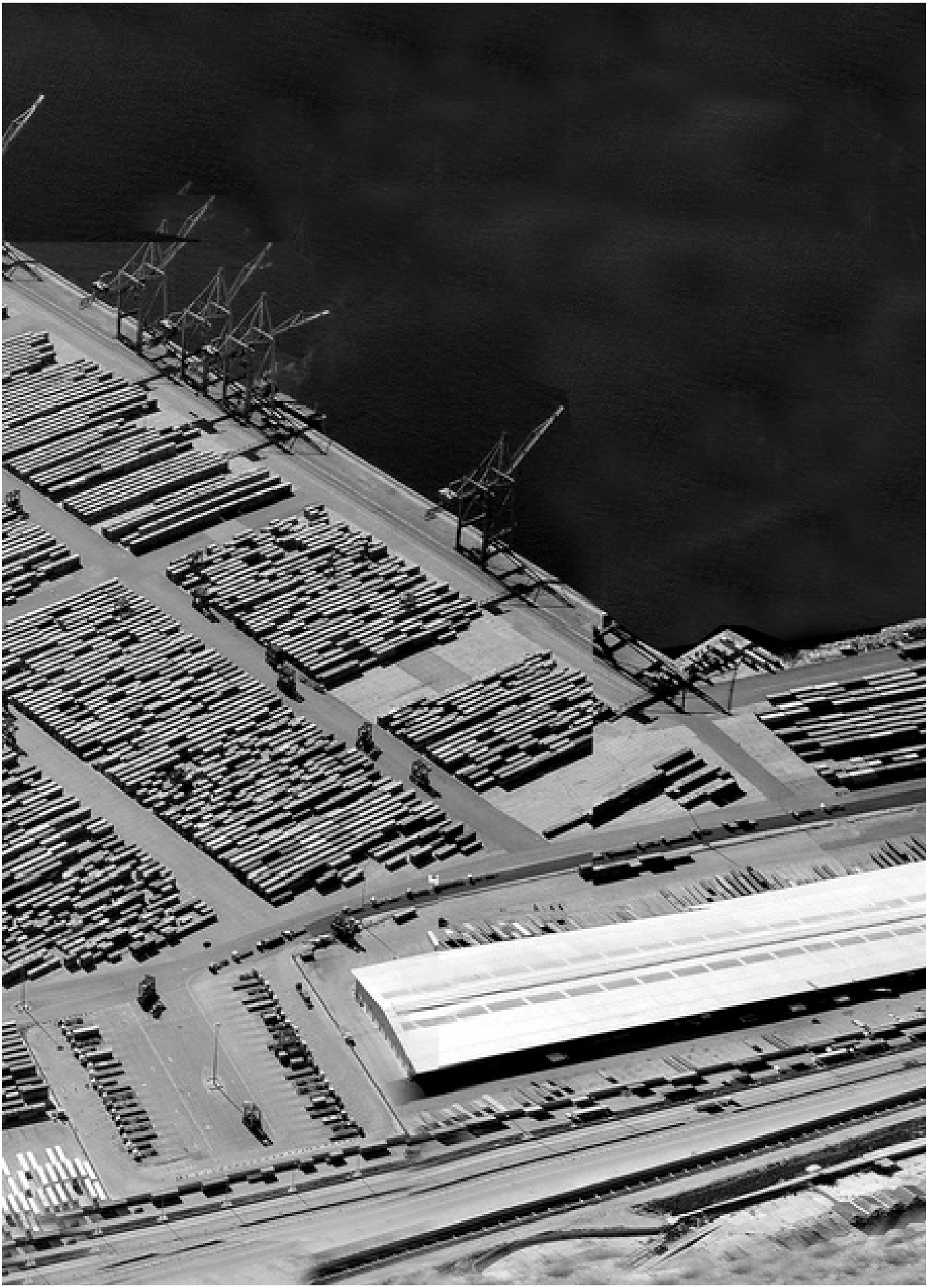
This master thesis takes in consideration different scales, factors and temporalities in order to precise the profile of the port city of Piraeus. Firstly, this work recalls the main historical steps of Piraeus' development since its origins. Then, it reviews its recent evolution on three different geographic levels: the one of maritime flows and its hinterland transport network, the one of regional integration of Piraeus in the Greek transport systems and its relation with Athens, and finally the local issues of port-city relations, re-organisation and redevelopment. Concluding remarks aim at linking together these three levels of analysis in order to propose a clear vision of a future model for the port city of Piraeus. Finally, A strategy is presented, which proposes a spatial orientation in a territorial scale for Piraeus and its surroundings.

Abandoned industrial site of Drapetsona

PIRAEUS

A hub port





Geographical and geopolitical situation of Greece

GEOGRAPHICAL AND GEOPOLITICAL SITUATION

Greece is located in the south edge of Europe and occupies the southern part of the Balkan Peninsula, situated at the crossroads Europe, Asia and Africa. In the antiquity, this strategic position situated at the extremity of the European continent and neighbouring with the continents of Asia and Africa and also between three major seas, the East Mediterranean sea, the Adriatic sea and the Black Sea, made the country an important cultural and commercial centre. The importance of the islands of the Aegean sea is indisputable since they played a great role of encounters and interactions between different cultures. This strategic location was also the cause of many wars and conflicts during history, beginning with the Persian Wars, the Romans and later the Venetians and the Ottomans.

Greece is the most southern European state. The strengthening of its strategic position should contribute to the balanced development between the north and south of Europe. Today, the Chinese government are seeing Greece‘s position as a trade hub and are willing to invest and transform the country their main gate to Europe.On the other side, the Russians are willing to turn the country into an energetic hub by including it in the South Stream pipeline project. In addition, Greek lobbies strongly believe to become in the future, a major supplier of energy of the European Union according to the last findings of oil and gas lying under the Mediterranean Sea in Greece and between Cyprus and Israel. Greece appears to be the only country with a certain stability in the region of Eastern Mediterranean. This strong interest from foreign investors the latest years is mostly due to the privatization policy established by the current government.

However, we often face geopolitical issues -conflicts of interests- between different sides. European governments, as well as Washington, are reportedly concerned over Russia’s possible expansion into Europe. Gazprom, Russia’s state-owned gas monopoly, has made a high bid for the Greek gas utility company. Media reports suggest the privatization agency has delayed choosing a buyer under international pressure. There are also other strategic concerns, such as conflict with China over Greek ports. German and Dutch interests are opposing the idea of using Greece as the primary source of Chinese trade with Europe.

THE "MODERN SILK ROAD"

Prime minister of Greece and China in Piraeus

"Cosco go home", manifestations by Greek workers

Cosco's container ship

Would Greece's geographical situation, along with the privatization policy established by the government, be considered as a wish or as a curse for the future of the country?

Four years ago, Greece has pledged to press ahead with a radical privatization plan in an effort to help reduce its high level of debt. The present government follows a privatization policy spanning rail and road transport, airports and ports, utilities, gaming and public real estate holdings, that will hopefully lead into a future growth and development of the areas. It is aiming at attracting significant international capital flows that will contribute to restarting the Greek economy and fuel the economic growth. Some indicative assets included in the privatisation program are shares of Athens International Airport S.A., shares of Ellinikon (old airport), the economic rights of Hellenic Motorways and shares of OLP (port administration of Piraeus).

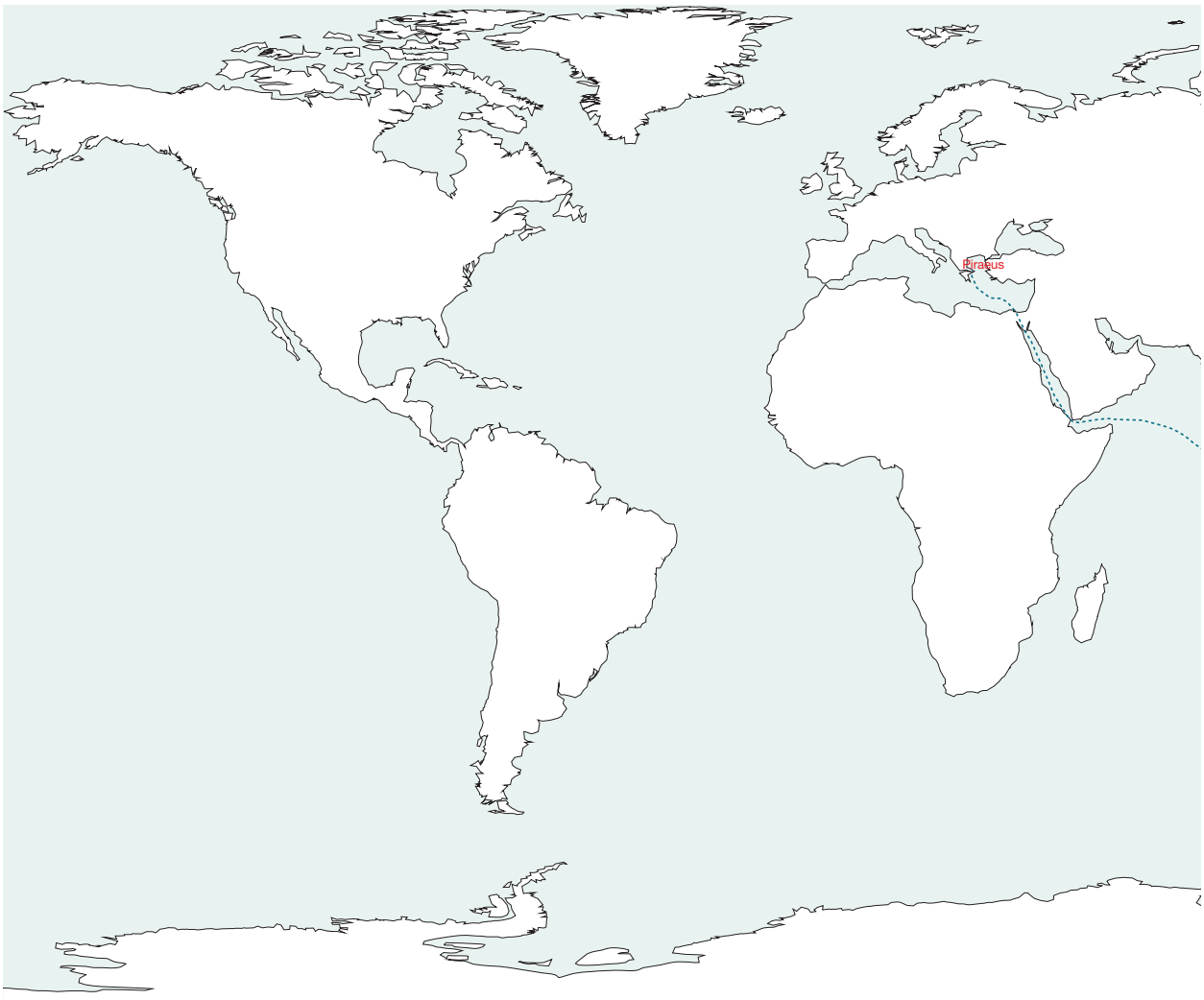
While many investors are fleeing from Greece, a country in disarray, China sees it as an opportunity to strengthen its presence in Europe. They seek to buy cheap assets in key areas, in order to open a gateway on the European market. Chinese strategy is to establish a network of ports, logistics centres and railways - a modern version of the Silk Road - to distribute their products throughout Europe, expedite trade between East and West and enjoy highly profitable infrastructure on the continent. Their ultimate goal is to create a larger commercial port than Rotterdam, which is now the largest in Europe.

In June of 2009 the Chinese public giant Cosco signed a contract of 564 million euros for the authorization to operate on terminal II for the next 35 years, investing in exchange about 3.3 billion euros in the modernization and upgrade of port facilities, the construction of a third terminal and improve its freight management capabilities. The commercial port, located right close to the passenger port where thousands of tourists borrow the ferry to the islands every day, can currently load and unload up to 3.1 million containers per year, or 8 500 per day.

Today in Piraeus, Cosco supports more than 1000 jobs and has transformed the port into one of the biggest and fastest-growing in the Mediterranean. This huge investment has been a boon to Piraeus, a struggling port hit by an industrial decline and the country's debt crisis. Situated close to Athens, it is the busiest passenger port in Europe and a leading cruise-ship terminal in the Mediterranean. Cosco's investment ranks among the most successful Greek privatizations in recent decades. It also has strengthen the relations between the two countries and more deals are likely to happen in the future. The Chinese have also made an agreement with the Greek state railway company in order to transport their goods through the country. Shipping, infrastructure, tourism, exports (oil, wine, marble), financial services (finance for Greek shipbuilding projects by Chinese banks) are among a total of 6,5 billion deals that have been made between Greece and China the recent years.

However, the port workers are worried about the long term consequences of this deal. They believe that China took advantage of a moment of weakness of the Greek national economy. Nouhoutides George, the president of the union dock works, clearly against this concession, says "*when a contract is concluded between a rich country and an over-indebted country, which country do you think is in a position to dictate terms? China wants to produce 'Made in Europe' goods with tax exemptions, favourable terms and 'penalising' Greek interests and workers.*" Today, there seem to be controversial views from the workers, since Cosco isn't hiring workers with permanent contracts. Nikolaos, 40 years old, unloads cargo for about 1,400 euros a month. *"The contractor assures us at least twenty working days per month or 1000 euros minimum,"* he claims. The arrival of Cosco has also affected positevely the terminal I, run by the Greek port authority, OLP. Due to the competition the productivity has risen the past years.

Recently interviewed by a Greek television channel, the CEO of Cosco, Wei Jiafu, said: *"I came to give back to the port of Piraeus its former status and I hope to turn it into the most important trading port in the Mediterranean. There is a Chinese saying that goes, 'build the nest of the eagle and the eagle will come'. We built this nest in your country to attract Chinese eagles this is the gift of China to Greece. "*



The maritime “Modern Silk Road” established by Cosco

"Greek ship owners control 3 901 ships, corresponding to 15,56% of the capacity of the world fleet, carrying 60% of China's imported oil and more than half of its total outbound."

Greek Shipping Minister Miltos Varvitsiotis

Nowadays, Cosco Pacific Ltd. offers its services to big and worldwide known companies such as Hewlett-Packard Co., ZTE and Huawei Technologies Co. in order to transport their high-value goods from the site of production to the European market. The products leaving from the main ports of China, are crossing the Suez Canal and then get unloaded at the commercial port of Piraeus. This transport hub, also called "Rotterdam of South Europe", offers transhipment services and storage spaces for the freights. The goods are then distributed by trains to the West and East European market saving up to 6 days in comparison with other Northern European commercial ports. This route of goods established by China is also known as the **"Modern Silk Road"**. It is obvious that the Chinese are looking for cost-effective ways to deliver their exports to European markets. Their investment to railroad, canal, port and road infrastructure is playing a decisive role in developing the economies of the regions.[1]

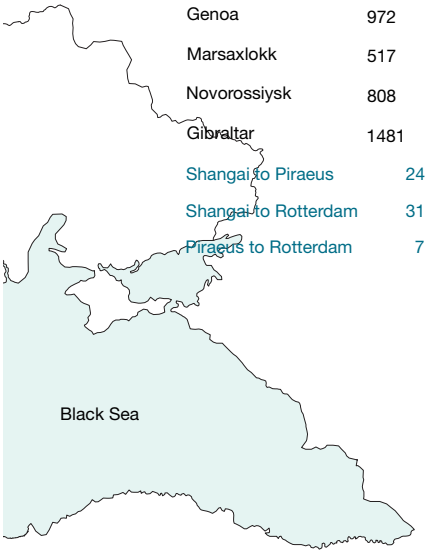
Cosco is able to offer a secure maritime silk route where speed, flexibility and high connectivity are priorities. China and Greece are bonding through trade, since the Greek merchant fleet, the world leader by tonnage, has been carrying on its ships an important amount of freights, imports and exports, serving China . These strong shipping relations between these two countries can also being seen on the number of Greek vessels built in China the last decades.

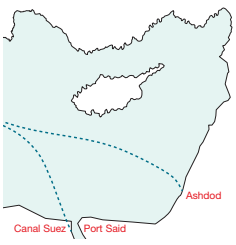
1. Dean Andromidas, "China Develops Balkan Infrastructure that the European Union Won't Build", 2013

Foreland connections of Piraeus

FORELAND CONNECTIONS

	Distance	Hours
Thessaloniki	252	11
Istanbul	352	15
Port Said	593	25
Ashdod	657	27
Constanza	548	23
Koper	835	35
Genoa	972	41
Marsaxlokk	517	22
Novorossiysk	808	34
Gibraltar	1481	65
Shangai to Piraeus		24 days
Shangai to Rotterdam		31 days
Piraeus to Rotterdam		7 days





Genoa Ports

Maritime routes

The efficiency of a port doesn't only depend on the flow of containers (TEU) or the good foreland connectivity. A port needs to have strong hinterland connections to be able to distribute the transhipment freights and also provide high quality infrastructures to store the merchandises for a short, mid or long term. These three factors are key points for a good operation of every port.

Piraeus has national, regional and international foreland connections. Its geographical situation close to Egypt, makes the port of Piraeus a really strategic and key point, since it's the closest European harbour (land connections with the European continent) to Suez Canal. It takes only a day for international freights to be transported from Port Said to Piraeus. Daily, hundreds of containerships are passing through Suez Canal coming mainly from the biggest ports of China, such as Shanghai. The freights are unloaded to Piraeus and then distributed to other ports of the Mediterranean sea. In a national scale, Piraeus is connected by freight maritime routes with Thessaloniki, which is the second biggest commercial port in the country.

Piraeus has strong foreland connections mainly due to its geographical location close to Suez Canal, where international goods are coming. However, its situation in the extremity of the European continent, is not only an advantage but also a disadvantage since it is far away from the European market. Thus, the main element that defines and shapes foreland, hinterland connections and the model of any port in the world, is the location of the market.

MODELS OF PORT CITIES

In Europe, the main markets and settlements are mostly located in the inland of the continent. Major ports are situated in the periphery and serve their customers. Since the spread of containerization, European port authorities are engaged to find an efficient way to connect a maximum inland through transport services (eg. river, road-rail, sea-rail and air-sea). This phenomenon results a dissociation of activities between coastal and inland cities. Coastal cities ,due to their location, their economic structure is based on transport activities as inland cities tend to specialise to higher-value activities such as banking, finance and other "metropolitan" functions.[2]

The *Northern Range* is the second most important maritime zone in the world and the most important in Europe. It is characterized by its economical influence, its size, the quality of its hinterland network and its 490 million consumers. Being surrounded by the Baltic and the North sea, the English Channel and the Atlantic Ocean. The first three biggest European ports are situated in this zone (Rotterdam, Hamburg and Antwerp). The yearly traffic of goods of *Northern Range* is equivalent to Shangai's.[3]

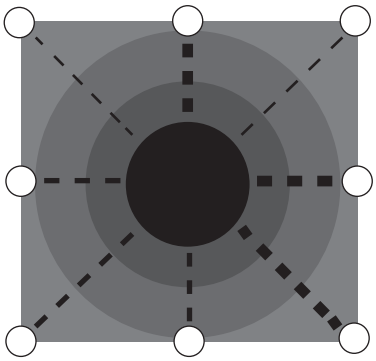
Since maritime-business have suffered from employment decline and the local economies are not benefiting from transport maritime activities, European researchers have been focusing on the way to develop alternative strategies to diversify coastal local economies.(Benacchio et al., 2001).

In Asia, we observe a different port city model. Settlements are mostly coastal and thus port cities are the most important markets for ports. Most primate Asian cities are port cities, and still now keep a high percentage in the volume of goods transported to and from Europe and North America. This is due to the colonial model in South and South East Asia that combined urban and port activities through the establishment of depots in strategic locations such as Singapore and Hong Kong. The rapid development of North-East Asia gave birth to some of the world's most combined models of port-city relationships. This results an underdeveloped inland transportation and market.

The lack of inland connections between South and East Asia, is preventing ports from connecting other countries' markets. In Asia, in contrary of Europe, ports and cities have been developing and improving their functions in a symbiotic way. In the Asia-Pacific region, many hub port cities combine rather than separate port and urban functions (Lee et al., 2008). European port cities have a lower port-city interdependence, while Asian port cities have a strong interdependence.

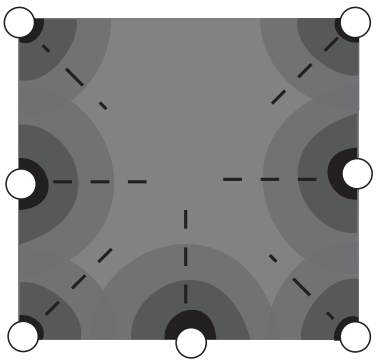
As showed in the diagrams, there is a clear differentiation of spatial patterns as urban economies are "residual" markets in Europe and "core" markets in Asia. European ports compete for a single market (European Union) whereas Asian ports are focused on a national economy.[4]

EUROPE



Inland concentration and coastal gateways

SOUTH & EAST ASIA



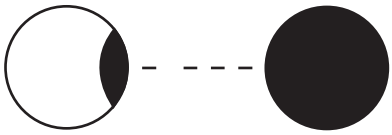
Coastal concentration and low hinterland coverage

Logistic chain hierarchy
Port - city
Degree of market concentration (hinterland)

Diagrams made by Lee, Song & C.Ducruet, 2006

2 and 4. César Ducruet, "Port-city relationships in Europe and Asia", journal of International Logistics and Trade 4(2), pp. 13-35
3. Pierre Gras, "Le temps des ports, déclin et renaissance des villes portuaires (1940-2010)", Paris, 2010

EUROPEAN PORT CITY MODEL

WESTERN PORT CITY MODEL	PORT CITY
Primitive cityport Close spatial and functional association between city and port	
Expanding cityport Rapid commercial and industrial growth forces port to develop beyond city confines with linear quays and break-bulk industries	
Modern industrial cityport Industrial growth (oil refining) and introduction of Ro-Ro and container facilities requires separation and increased space	
Retreat from the waterfront Changes in maritime technology induce growth of separated maritime industrial development areas	
Redevelopment of the waterfront Large scale modern port consumes large areas of land and water space, urban renewal of original core	
General port city Rising of environmental concern for intermodal transport, city economy develops alike non-port cities	

ASIAN HUB PORT CITY MODEL

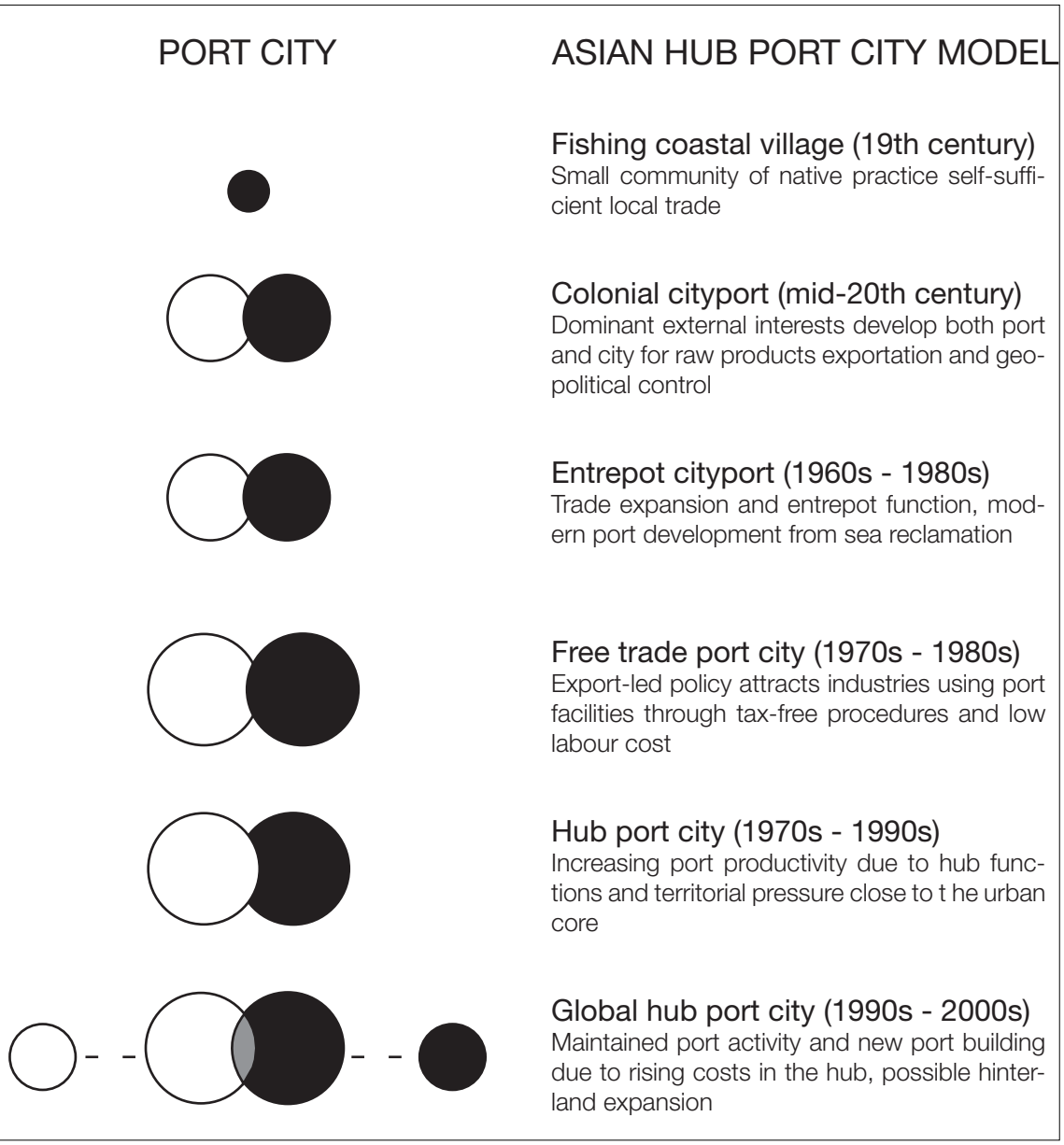


Diagram by Hoyle et al. (1989, p.7) and Lee (2005, p. 145) and then modified by C.Ducruet. *(city: white, port: black)*

EUROPEAN CORRIDORS

European ports compete in a single market and often face conflicts of interest. For instance, the incapacity of Le Havre to enlarge its radiance through rail and barge transport services towards the East and specifically Paris' region market, gave the opportunity to Antwerp to interfere and link with Paris' market. French production of bottled mineral water originated in the Alps is going through Antwerp and not Marseille or Le Havre, because Antwerp offers better services for storage and lower cost for export. In addition French projects such as Rhine-Rhone rivers' connection and "Seine-East" canal project were cancelled due to environmental and cultural concerns. Despite Le Harve's strategic position at the entrance of the English Channel and the world's busiest sea lane *(Northern Range)*, its land network has diminished due to the lack of efficient national plans for a maritime and intermodal strategy. Thus, most of the northern ports such as Rotterdam, Hamburg and Antwerp are now leaders in all transport modes (rail, road, sea, river).

Freight transport through a land network is considered to be an important link of the logistics chain. Ports must offer a sufficient capacity to maritime traffic, in terms of stocking and hinterland transport.[5]

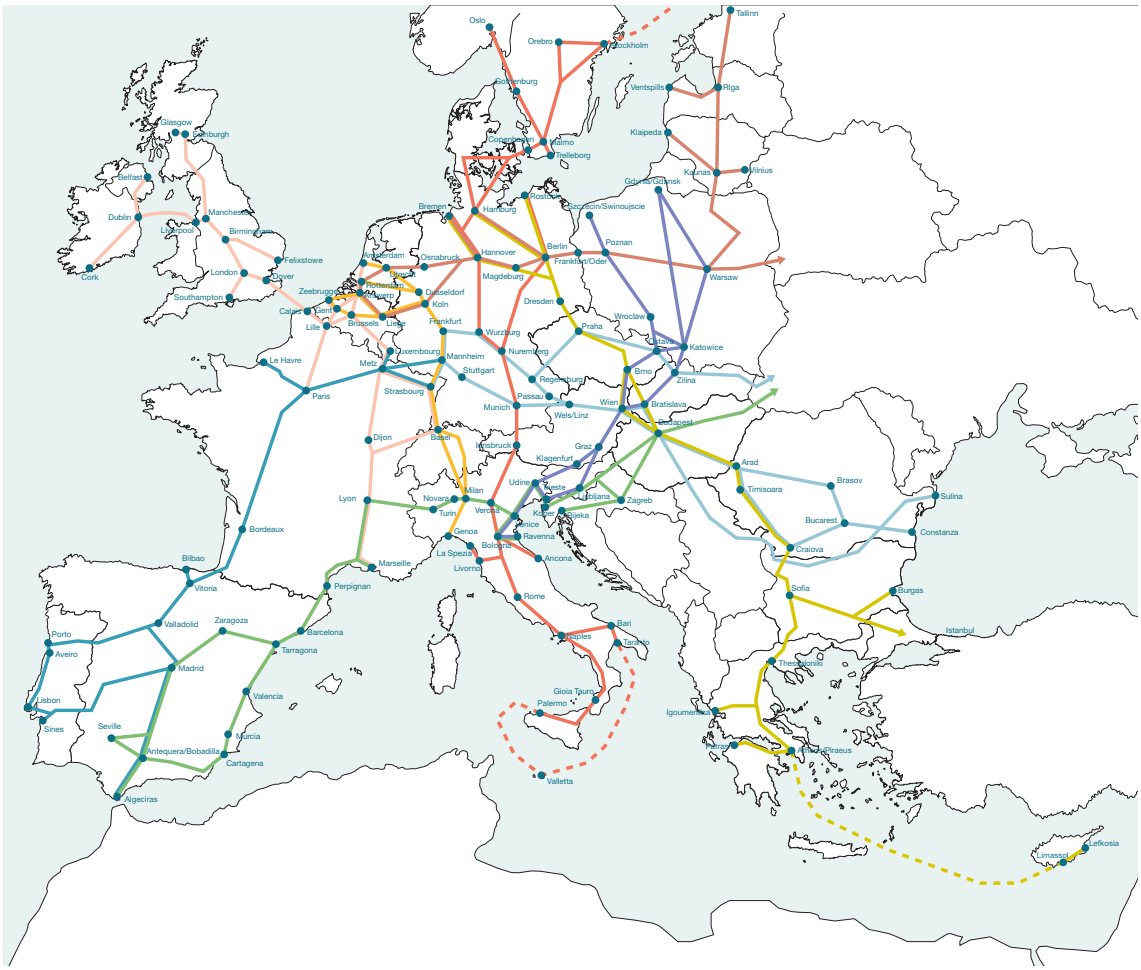
5. César Ducruet, "Port-city relationships in Europe and Asia", journal of International Logistics and Trade 4(2), pp. 13-35

6. European Commission, Brussels 2014, "Building the Transport Core Network: Core Network Corridors and Connecting Europe Facility"

The European union made a first proposal for the first time to define a Core Network of transport infrastructure which includes all transport modes (road, rail, inland waterways, maritime and air transport). The goal of these core network corridors is to remove bottlenecks, build missing cross-border connections and promote interconnections between different European markets, seas and countries. Some of these corridors are already existing. The TEN-T (Trans-European Transport Network) project includes 11 European corridors.

Corridor number 7, known as Orient/East Mediterranean Corridor, connects the German ports Hamburg and Rostock with Athens (possible extension to Lefkosia, Cyprus), while the second route ends in Burgas, in Bulgaria. This corridor is one of the longest northwest-southeastern axes. It connects central European markets with the maritime interfaces of the North, Baltic, Black and Mediterranean seas. The main goal of the corridor's development is to improve port's use, as well as the rail development along the north-south line from Budapest to Athens. The main bottleneck of the Orient/East Mediterranean Corridor is the railway section between Timisoara - Sofia.

The new guidelines set the deadline of 2030 for the delivery of this Core Network of transport infrastructure. The ambitious TEN-T project needs an ambitious budget to accelerate and attain its implementation.[6]



TEN-T (Trans-European Transport Network) project

- Rhine - Danube
- Atlantic
- Baltic - Adriatic
- North sea - Mediterranean
- North sea - Baltic
- Scandinavian - Mediterranean
- Rhine - Alpine
- Orient/East - Mediterranean
- Mediterranean

Hinterland connections of Piraeus

HINTERLAND CONNECTIONS

In 2007 Romania and Bulgaria joined the European Union. Thus, the gravity centre of the European market moved towards the East of the continent. Recently, the rail freight corridor 7 (RFC7, orient corridor) passing through Greece, Bulgaria, Romania, Hungary, Slovakia, Austria and Czech Republic was established thanks to an initiative by the European Union and the collaboration of 8 national railways.

Goods arriving from China are unloaded in Piraeus and then loaded in train wagons and sent to Prague. They are then distributed to the West and East of Europe. The route of the freight train starts in Piraeus (Athens), continues to Thessaloniki - Sofia - Vidin - Arad - Budapest - Bratislava - Vienna and ends in Prague. In this network, freight trains are moving under better conditions and are passing from one national railroad network to the next one without encountering any administrative obstacles, which create delays. Infrastructure managers of the RFC7 are making sure, by eliminating any bottlenecks along the route, that the freight trains have a smooth passage along the corridor without encountering any delays.[7]

With a European Union hit by the financial crisis, the Chinese state is investing on improving the existing transport infrastructures and build new ones along the corridor 7 to make sure that freights are arriving to their destination on time.[8]

7. Source: http://www.rfc7.eu

8. Dean Andromidas, "China Develops Balkan Infrastructure that the European Union Won't Build", 2013

HELLENIC RAILWAY NETWORK

Cosco and the Greek national railway (TRAINOSE) came to an agreement for the transport of products of big companies such as Hewlett-Packard. The basic condition for success is the punctual delivery of products to their final destination. TRAINOSE side has to provide the required capacity to facilitate the movement of cargo from the port of Piraeus, taking into account the possible delays of the arrival of container ships. The Greek railway company agreed to not start its routes, regardless of the scheduled departure time, if the Cosco's container ships haven't arrived. On the other side, Cosco has agreed to use TRAINOSE as main provider of railway services in Greece for the transport of freights from or to Piraeus. However, that alternative provider of freight rail service does not currently exist in the Greek market. Today, TRAINOSE's yearly turnover only from activities with Cosco is 20 million euros. The number will increase 50% the upcoming year due to the increase of the yearly routes.[9] Other big companies such as LG, Samsung, Lenovo, Sony, Hyundai and Dell are currently in talks for a future collaboration with Cosco.

Nowadays, the Greek railway network is considered to be insufficient. The important topography and specially the presence of the mountains of Pindos in the western part of the main land, doesn't facilitate the construction of new railroads. Big infrastructure works are required such as bridges and tunnels for the construction of one railroad. Thus, big investments are required for relatively small contributory benefits for the society. However, the biggest cities of Greece (Patras, Athens, Larisa, Lamia, Volos , Thessaloniki, Kavala, Alexandroupoli) are linked by a core railway network that crosses the country. Greece is connected by train with FYROM, Bulgaria and Turkey. Most of the existing railroads need to be improved and updated in order to facilitate the transport of freights. There's also a lack of freight terminals close the commercial ports.

Last March a 17 km railroad connecting Cosco's container terminal at Neo Ikonio with the Thriasio Plain in the northwest and the Greek north-south rail line was implemented. Thriasio is already one of the most important logistical and industrial centres of Greece.[10] This link was vital for the economic development of the country because now freights are transported directly towards the north and avoiding to pass through the capital, Athens.

9. Alexandra Kassimi, "Symfonia cosco-trainose gia metafores apo kai pros thn kentrikh eyropi", Kathimerini, 14.10.2014

10. Dean Andromidas, "China Develops Balkan Infrastructure that the European Union Won't Build", 2013

Hellenic Railway Network

LOGISTIC CENTRE OF THRIASSIAN PLAIN

The logistic centre of the Thriassian Plain is a new freight station and a marshalling yard serving the commercial port of Piraeus. In this hub, all the activities relating to transport, logistics and goods distribution are carried out by various operators. The Thriassian Plain of a total area of 1 750 000m², is situated in a really strategic point,10 km Northwest of Athens and 17 km from Ikonion port. It is located next to highway and railway connections. The facilities of the Thriassian complex comprise warehouses, distribution centres, storage areas, offices, truck services, bus depot, intermodal connections etc. and are accessible to all companies involved in the transport activities. It has three fundamental duties.

Firstly, improve and deal with the territorial planning alongside with the rationalization of the infrastructure in order to optimise area utilization, to safeguard the environment and to build the infrastructures following specific criteria based on operator necessities.Secondly, ensure a transport quality to be able to stay competitive, particularly when considering that nowadays competing means surviving the effects of globalization. The increase in freight transport, and growing competition between all production areas have been forcing industries to ask for more efficient transport and logistics solutions. This means removing the maximum of bottlenecks and diseconomy.

Finally, the Thriassian complex is dealing with the correct intermodal development. It offers convenient transport and synergic solutions combining a variety of transport methods such as trains, trucks or ships.[11]

The Thriassian complex started it services a few months ago and plays already a catalytic role in the chain of the transport of freights in the hinterland of Piraeus, coordinating the whole process and saving time and money. It is again visible on the map the lack of railway infrastructure. Freights are using the passenger railway in order to be transported towards the north of the country.

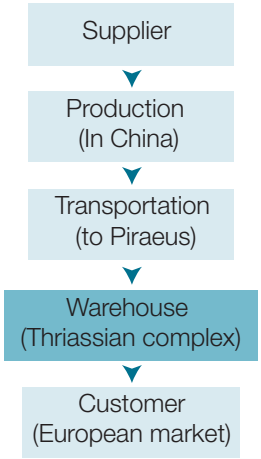
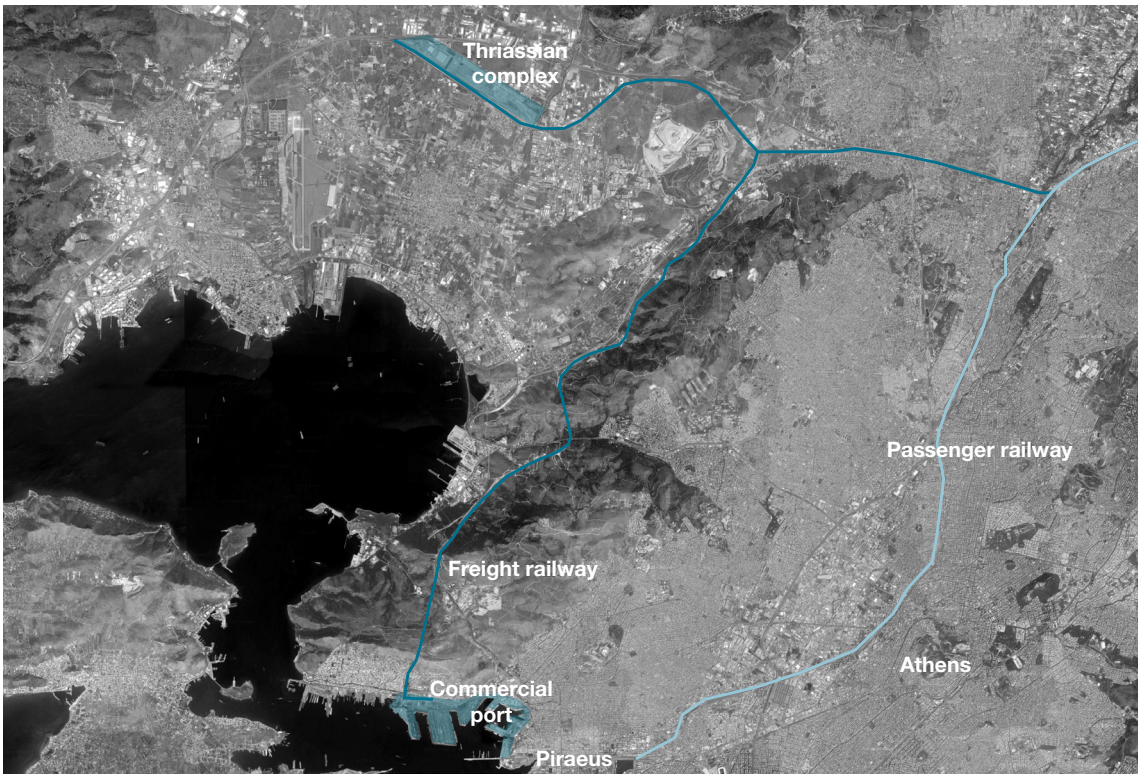


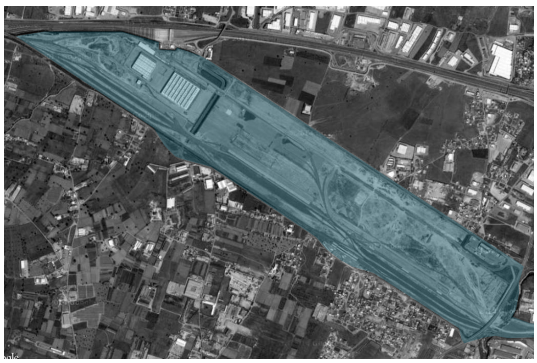
Diagram showing the "Modern Silk road"

11. europlatforms EEIG, "logistics centres directions for use", 2004



Railway connection between the commercial port of Piraeus with the Thriassian plain

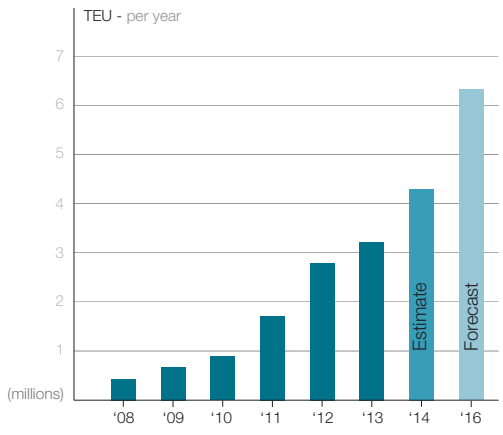
A typical warehouse in Thriassian plain



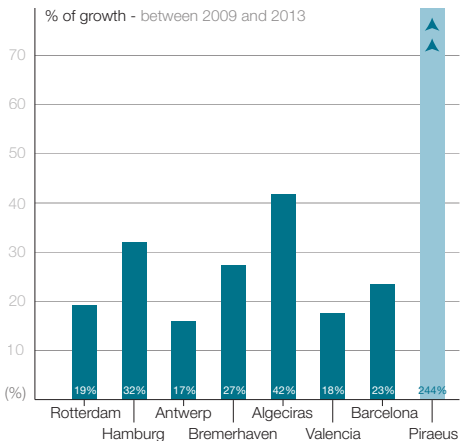
Thriassian complex (total area of 1 750 000m²)

Port	Country	2013	2012	2011	2010	2009	2008
Rotterdam	**Netherlands**	**11,621**	**11,866**	**11,877**	**11,148**	**9,743**	**10,784**
Hamburg	Germany	9,257	8,864	9,014	7,896	7,008	9,737
Antwerp	Belgium	8,578	8,635	8,664	8,468	7,310	8,663
Bremerhaven	Germany	5,831	6,115	5,916	4,888	4,565	5,448
Algeciras	Spain	4,343	4,112	3,063	2,810	3,043	3,324
Valencia	Spain	4,328	4,470	4,327	4,207	3,654	3,602
Felixstowe	United Kingdom	3,500	3,327	3,249	3,416	3,100	3,200
Piraeus	Greece	3,163	2,734	1,679	1,201	915	665
Gioia Tauro	Italy	3,100	2,721	2,305	2,852	2,857	3,468
Ambarli/Istanbul	Turkye	2,750	2,600	2,686	2,540	1,836	2,262
St. Petersburg	Russia	2,578	2,520	2,197	1,900	1,342	1,983
Marsaxlokk	Malta	2,550	2,400	2,360	2,371	2,330	2,300
Le Havre	France	2,486	2,303	2,215	2,358	2,241	2,450
Zeebrugge	Belgium	2,027	1,953	2,206	2,500	2,328	2,210
Genoa	Italy	1,988	2,065	1,847	1,758	1,534	1,766
Southampton	United Kingdom	1,800	1,651	1,500	1,563	1,534	1,767
Barcelona	Spain	1,720	1,759	2,035	1,947	1,400	1,710
La Spezia	Italy	1,300	1,247	1,307	1,285	1,046	1,246
Gdansk	Poland	1,178	929	686	509	238	186
Las Palmas	Spain	1,017	1,208	1,297	1,113	1,007	1,352

Top 20 European container ports in TEU (source: port of Rotterdam 2013)



Piraeus, TEU per year



Percentage of growth in TEU between 2009 and 2013

MARITIME ACTIVITIES

The port of Piraeus is a port of multiple activities. The following activities are coastal shipping, cruise transport, car-terminal, Ro-Ro services, Containers transport, Ship repairing and environmental and logistics operations. The Port of Piraeus is considered to be one of the largest in size commercial port in Europe and the largest passenger port. It has 44 km seawalls, and it serves annually 40.000 ship arrivals and departures, 21.5 million ferry passengers, 3.000.000 vehicles, 500.000 vehicles/goods (car-terminal), more than 3.1 million containers (TEU) and more than 2.3 million cruise passengers. In 2013, Piraeus was the 8th commercial port in Europe in terms of TEU with a tremendous growth recorded the past years.

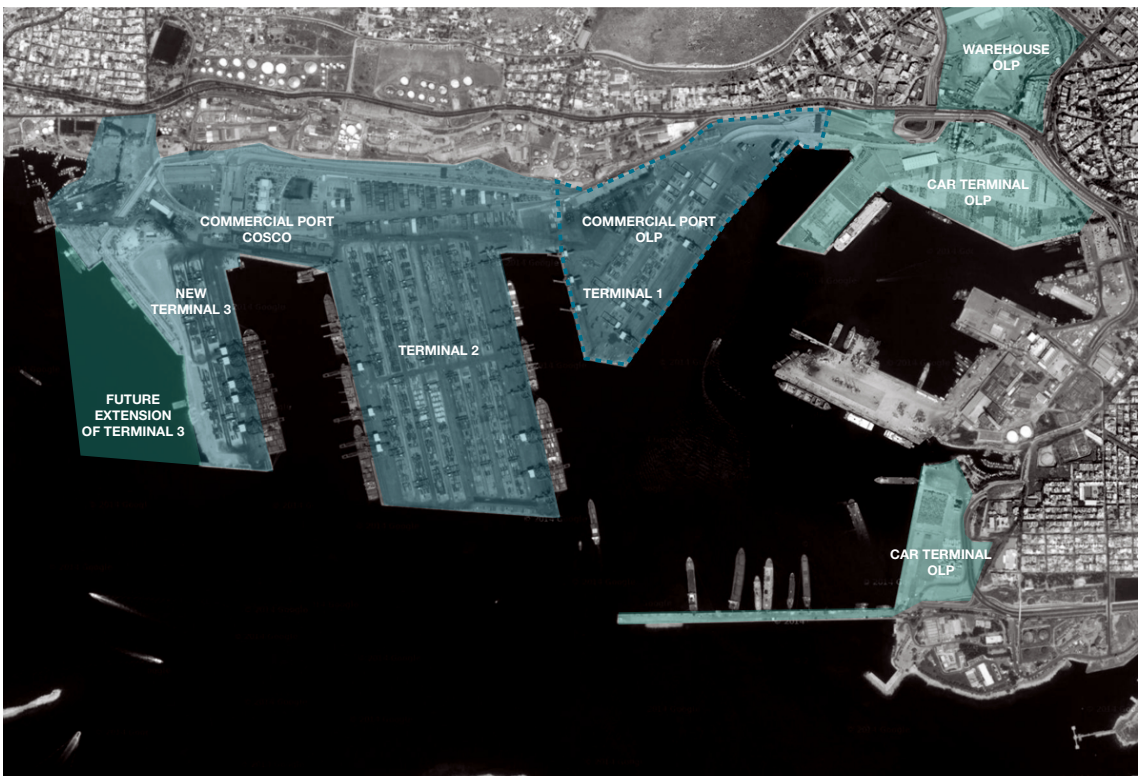
Container is a metallic box used for the transportation of freights. Its capacity is measured in TEU (Twenty-foot Equivalent Units) and its standard dimensions are 6 or 12 meters of length. Containerisation is the process of the transport services adapting their size and utility based on the standard dimensions given by the containers.[12]

12. http://en.wikipedia.org/wiki/Shipping_container

14. Antonios Stathis, master thesis,"O emporeumatikos stathmos sto Thriassio pedio os epektasi stin endoxora tou emporeumatikous limena pireos", Athens, 2011

Looking at statistics we observe that the container throughput in Piraeus, which covers nearly 90% of the Greek market, has more than doubled since 2009 when Cosco started operating, reaching 3.2 million TEUs in 2013. Piraeus recorded a 244% growth while Rotterdam and Hamburg recorded a 19% and 32% growth respectively. At the same time the competing port in the Mediterranean saw their numbers increase by about 20%.This impressive performance in the port of Piraeus over the last years is due mainly to the transhipment activity. In addition according to estimations of the National Bank of Greece, Piraeus continues to have the potential for further growth. If we take into consideration the ongoing upgrading of infrastructure and equipment (capacity increase by 60%) and also according to the business plan by Cosco, we can estimate an increase to 4.2 million TEU at the end of 2014 and a forecast for 2016 of more than 6 million TEU. According to the Sector Study: "Container Ports: An Engine of Growth" published by the National bank of Greece in April 2013, this growth will provide to the Greek economy an additional revenue of € 0,9 bn., which will result in added value 0.4% of GDP, and will generate approximately 9,000 new jobs. The long-term effect could be significantly higher (€ 5,1 bn. and 2.5% of GDP by 2018 and 125 000 new jobs), through a network of enterprises (cluster) in the port of Piraeus area, comprising significant indirect effects due to the increased production of goods outside of this network.[13]

13. National Bank, Sectoral report,"Container Ports: An Engine of Growth", April 2013



Commercial port of Piraeus at Ikonio

View of terminal III under construction

View of terminal III under construction

PORT INFRASTRUCTURES

After the deal between OLP and Cosco, both of these companies are operating simultaneously at the commercial port of Piraeus. On one side, OLP (Organismos Limenos Pireos), is managing the container terminal I and also the two car terminal G1 and G2. On the other side, Cosco is managing the terminal II and also the terminal III, which is currently under construction.

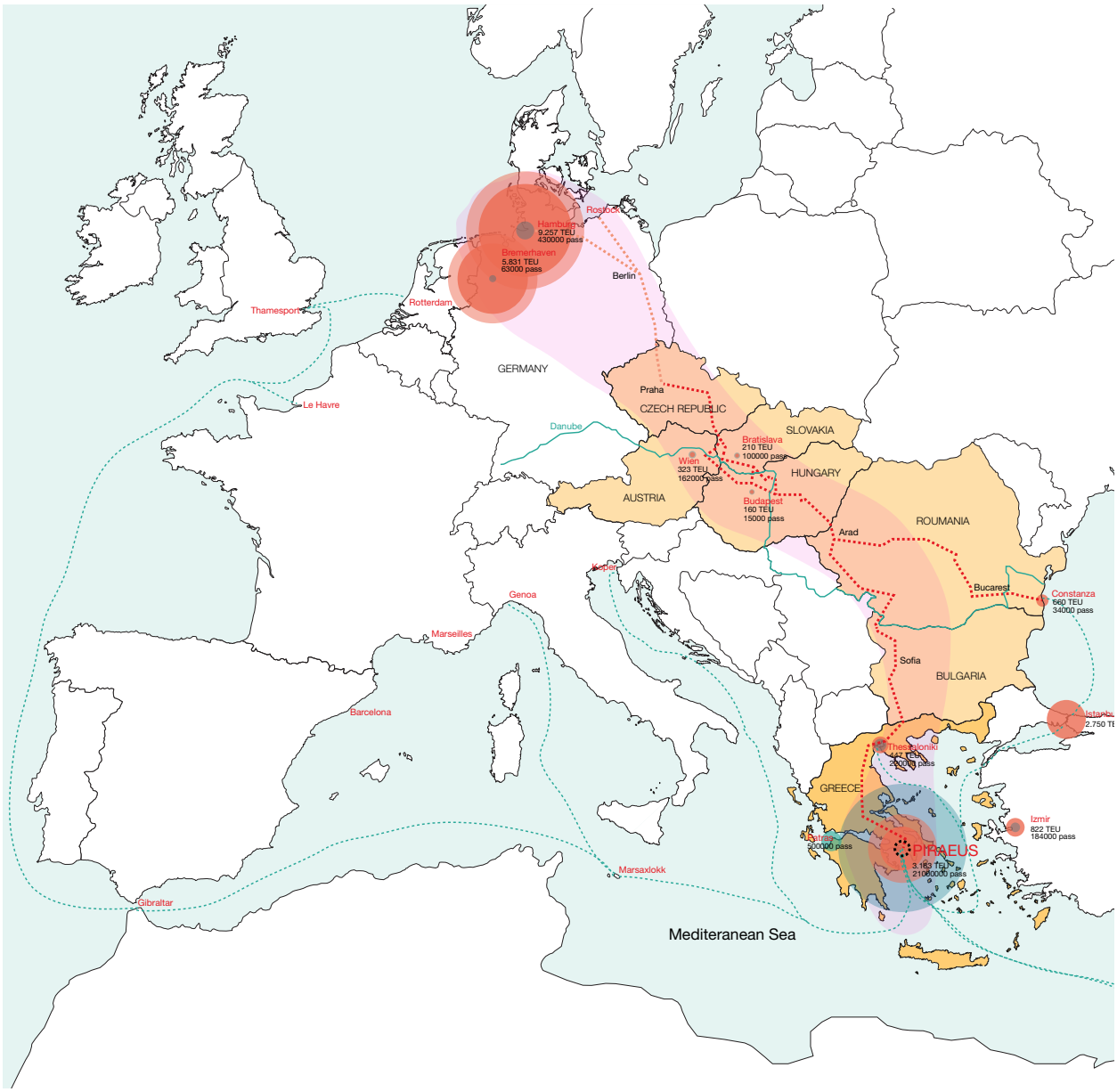
OLP made huge investments 15 years ago for the construction of the new Pier II. However, the construction was a failure and the pier had several defects. The deal with Cosco also included the reconstruction and renovation of Pier II in order to upgrade the capacity from 1.4 million containers to 2.7 million containers per year. Cosco has invested about 130 million euros for the reconstruction of Pier II so far. Another deal between these two companies was that OLP should not improve or upgrade the capacity of Pier I in order to avoid to become more attractive for the market and start competing against Cosco.

The container terminals I, II and III can serve different size of container ships. With the implementation of the expanding works on terminal I and II the total surface will increase up to 1 500 000m2 and the total length of the platforms will reach 4 500m, having the possibility to serve ships up to 18m of depth. Today the total capacity of the commercial port is 4 700 000 TEU per year, a number which will increase to 6 200 000 the upcoming years. More precisely, the terminal I has an overall surface of 250 000m2 and seawalls measuring 1 250m in length. After the implementation of the constructions, Pier II and III will have an overall surface of 1 300 000m2, 650 000m2 and 650 000m2 each while their total length will reach 3 600m (1800m + 1800m).

The two car terminals G1 and G2 have 375m and 750m of seawall length respectively and serve ships with a maximum depth of 11m. Their capacity is 4 500 and 6 600 car spaces and a total of 700 000 CEU/per year.[14]

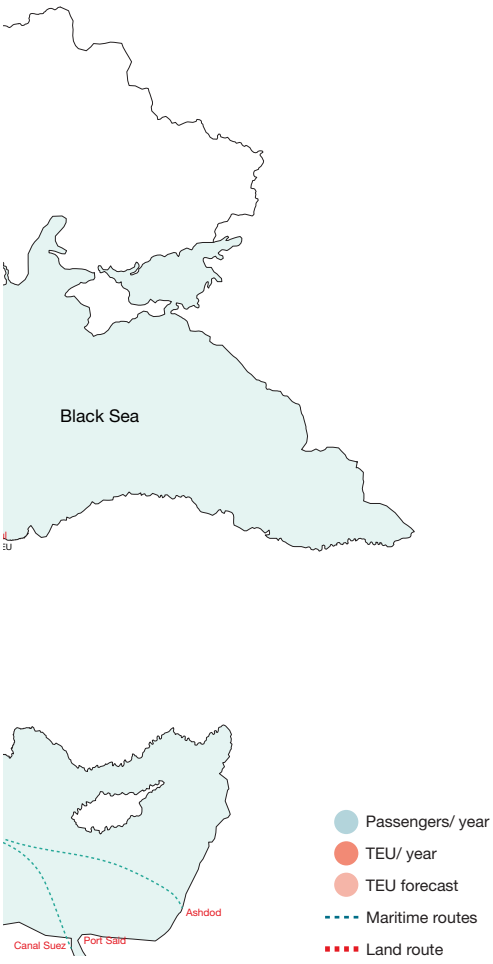
Terminal II managed by Cosco

Terminal I managed by OLP



Piraeus, an intermodal transport node

INTERMODAL TRANSPORT NODE



César Ducruet defines three fundamental aspects to approach this complex phenomenon of port cities and understand their role and functions, taking in consideration all the elements constituting and characterising city-ports.

Firsty, **centrality** is the aspect that evaluates the status of a network node. Centre is the point around which are distributed objects in space, for example an urban area, of any size, serving the surrounding space. In economic terms, the centrality expresses “a functional complexity that becomes the centre and brings a pulling force on a region» (D. Pumain et T. Saint-Julien, 1997). J. Bird (1977) distinguishes three types of centrality: endogenous (central sites), internal (economy of scale and agglomeration) and exogenous (gateway) in the case of ports. The combination of the three is the ability to create flows (D. Fleming et Y. Hayuth, 1994).

The port of Piraeus, with the assistance of the international airport of Athens (Markopoulo), attracts a frequent and huge volume of passengers and cargo, connecting the port to international destinations. According to Eurostat 2011, the port of Piraeus is the busiest passenger port in Europe and has a passenger flow of more than 21 million passenger per year. In addition, the passenger sea cruise sector counts more than 2 million departure - arrivals per year, making Piraeus one of the most important cruise ship destinations in Europe. In this regard, Piraeus is characterized by a rather exogenous centrality, being an important gateway.

Secondly, **intermediacy** or degree of intermediacy, according to C.Ducruet, is the property of a place or a wider area to create a network or be part of a network. For port cities their networking depends on the level of their integration in the providers' transport networks (D. Fleming et Y. Hayuth, 1994). The quality (degree) of integration is not necessarily dependent on the centrality or nodality but mainly by the networking capability of the port city.

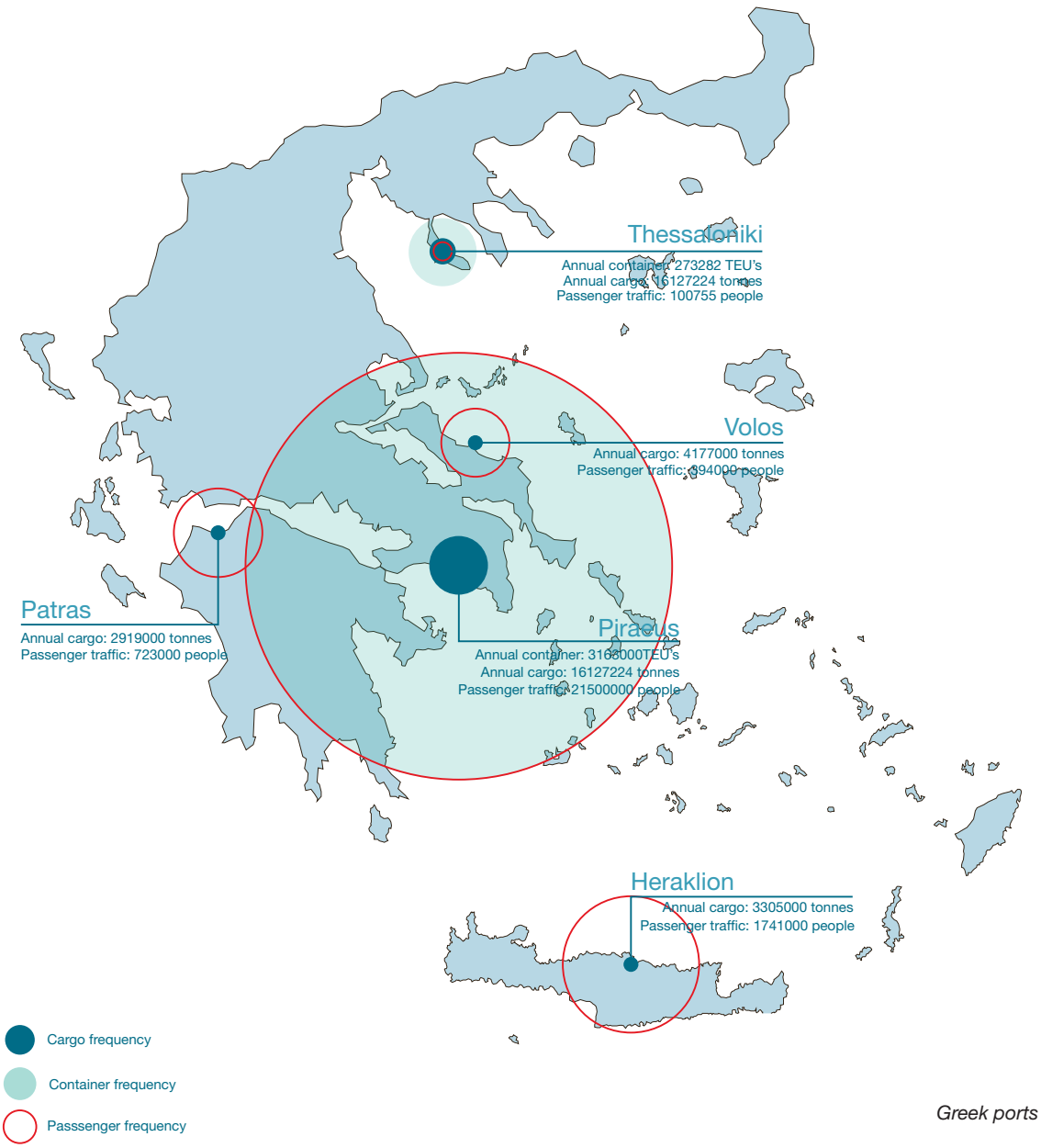
In terms of intermediacy, the port of Piraeus has strengthen its networking by being a key hub in the "modern silk road" chain. The port has established international relations with the Chinese public maritime company Cosco, and also regional relations, mainly in the Eastern Mediterranean basin.

Finally, **nodality** is expressed through a crossing situation in a network of relationships (A. Bailly, 1994). It is the set of characteristics of transport junctions (JJ Bavoux et al., 2005). In the case of port-cities, nodality refers mainly to their size , the marine and terrestrial accessibility and also the port infrastructure.

Piraeus, as we saw previously, belongs to the middle class ports, while construction works for further extension of the terminals are underway. Its nodality is undeniable , however the poor hinterland connections that have started to be developed quite recently, are still far away from being fully implemented resulting a problematic terrestrial accessibility.

These fundamental aspects can be analysed in different scales (global, regional and national scale), temporalities (short, medium and long term) and functions (maritime and urban activities). The following maps are trying to combine local, national and regional scales and taking in consideration current and future maritime activities, in order to compare and understand Piraeus' position and network in relation with its close and far surroundings.

The following map illustrates the transportation frequency of freights and passengers and also the geographical positions of the five most important ports of Greece. Piraeus is the busiest container port of Greece, loading about 3.1 million TEUs per year. The port of Thessaloniki is second with a tremendous difference from the first, with an annual container transport of almost 0.3 million TEUs. Piraeus is also the number one harbour in the country in terms of passenger traffic, having eleven times more annual passengers from the port of Heraklion, on Crete Island, being second in the list. In addition, the ports of Patras and Volos are the third and fourth important passenger ports respectively. We observe the massive difference of the port of Piraeus in terms of transportation frequency of goods and passengers that leads to the conclusion that Piraeus is being part of an international network compared to the other four harbours framed into a national and regional scale.


Thessaloniki
Annual container: 273282 TEU's
Annual cargo: 16127224 tonnes
Passenger traffic: 100755 people
Volos
Annual cargo: 4177000 tonnes
Passenger traffic: 394000 people
Patras
Annual cargo: 2919000 tonnes
Passenger traffic: 723000 people
Piraeus
Annual container: 3163000TEU's
Annual cargo: 16127224 tonnes
Passenger traffic: 21500000 people
Heraklion
Annual cargo: 3305000 tonnes
Passenger traffic: 1741000 people
Cargo frequency
Container frequency
Passsenger frequency

Greek ports

Zooming on Attica region we notice the presence of several ports. Some of them are having a minor importance serving local interests such as the port of Skala Oropou and Agia Marina, transporting passengers from Attica to the island across, Chalkida.

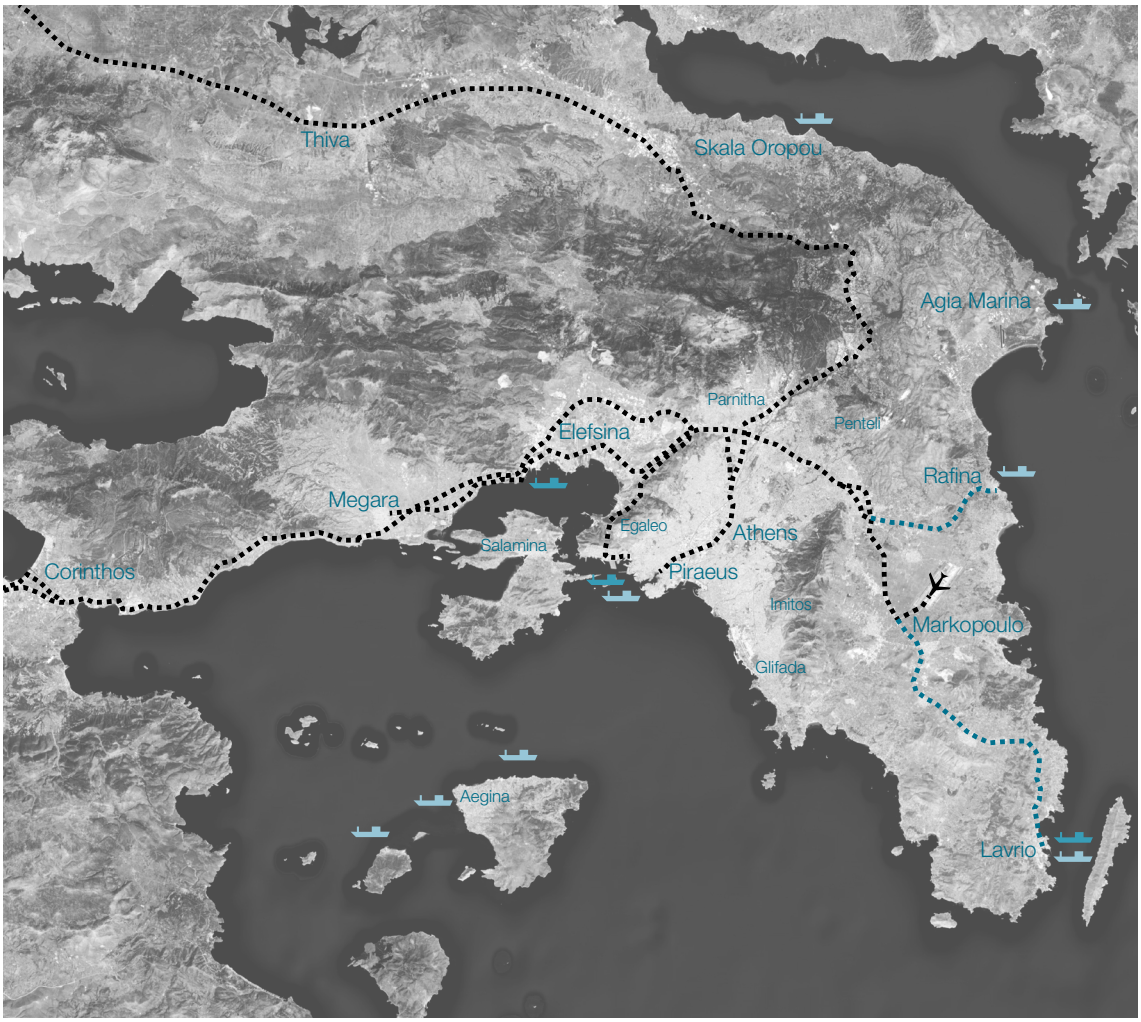
On the other side, the ports of Rafina and the port of Lavrio are having a national importance and influence. The passenger harbour of Rafina has an annual passenger traffic of 1 723 634[15] passengers. While the tourism in Greece is increasing, the port of Rafina seems to have a strategic location, connecting by ferry the mainland with the southern part of Chalkida and the Aegean islands. The proximity of Rafina's harbour to the Athenian International Airport "El. Venizelos" and the easily passenger access to the port through the highway of Attiki Odos, make this port really attractive in terms of passenger traffic. Thus, the new Master plan of Attica is planning to extend the suburban railway to Rafina.

The port of Lavrio located at the extremity of Attica peninsula is considered to be an important maritime node with a strategic position. Like Rafina, it is identified to be a national importance port, being a complementary port of Piraeus. It has a passenger and also a commercial harbour. Its passenger traffic is lower than Rafinas' port, counting around 400 000[16] passenger annually and serving mainly the cyclades islands. Its commercial activities are focused in a national scale transporting freights from the mainland to the Cyclades islands (national market). Contrary to Lavio, Piraeus' commercial activities are mainly related to transhipment having as destination the European market. Piraeus is considered to be along with the Internation Airport the main gateways to the Greek mainland. A suburban railway network is connecting several national infrastructures and future extensions to Rafina and Lavrio are already planned.

Summarising, the port of Piraeus is currently functioning as one of the twenty busiest European container ports and is clearly a hub between the maritime and land network. The presence of cargo terminals, shipyards, car terminals, the fishery and also the passenger port, situated relatively close, with its passenger and cruise ship piers make Piraeus a centre of reception and distribution of goods, arrivals and departures of people. Looking at this spatial structure of the port, Piraeus has the potential to become a coastal trade centre not only on a local scale but also on a national and international scale. Piraeus must become an **intermodal transport node** for passengers and freights in order to be able to sustain and manage this massive amount of mobility.

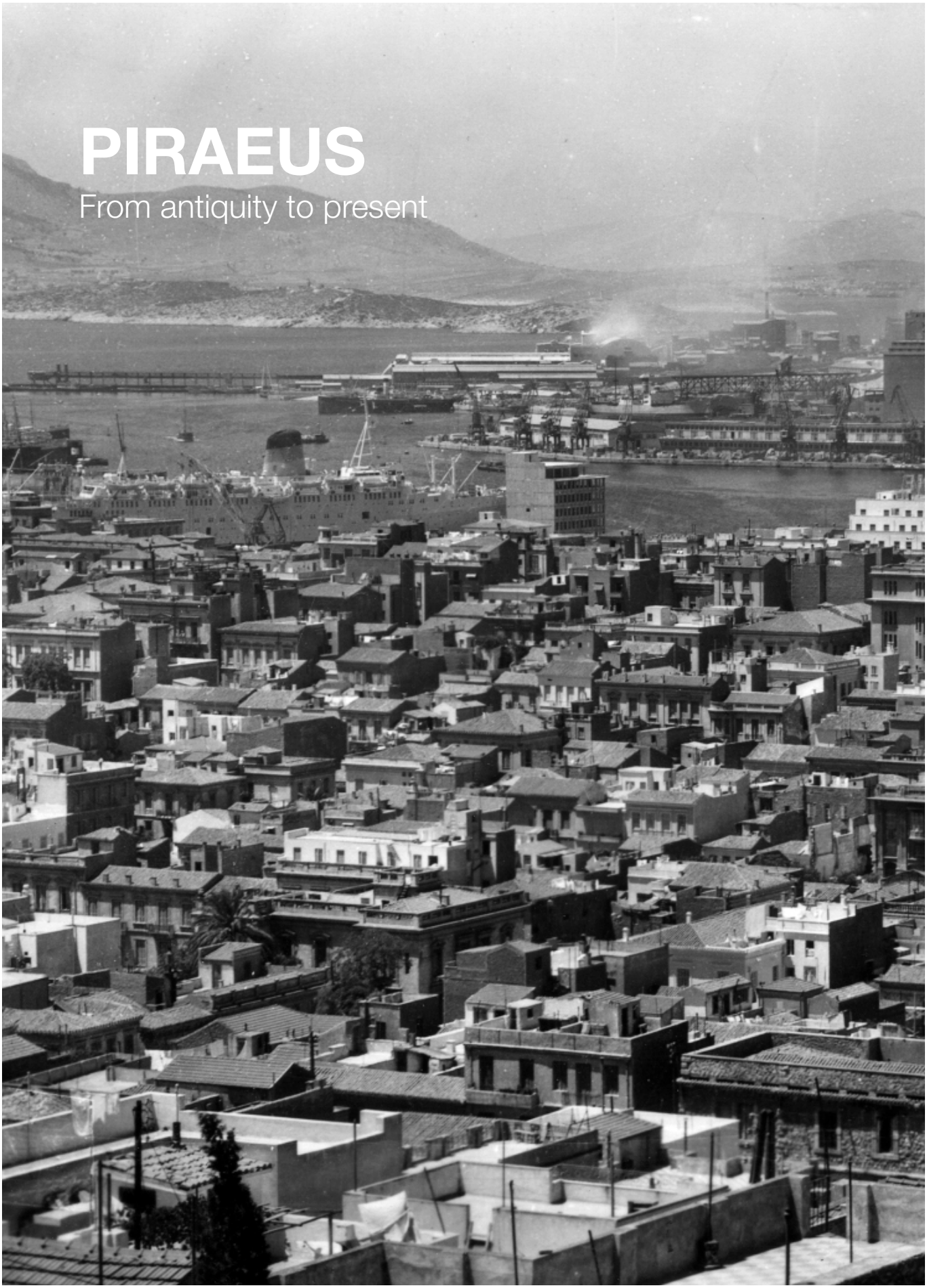
15. Source: www.rafinaport.gr

16. Source: www.elime.gr



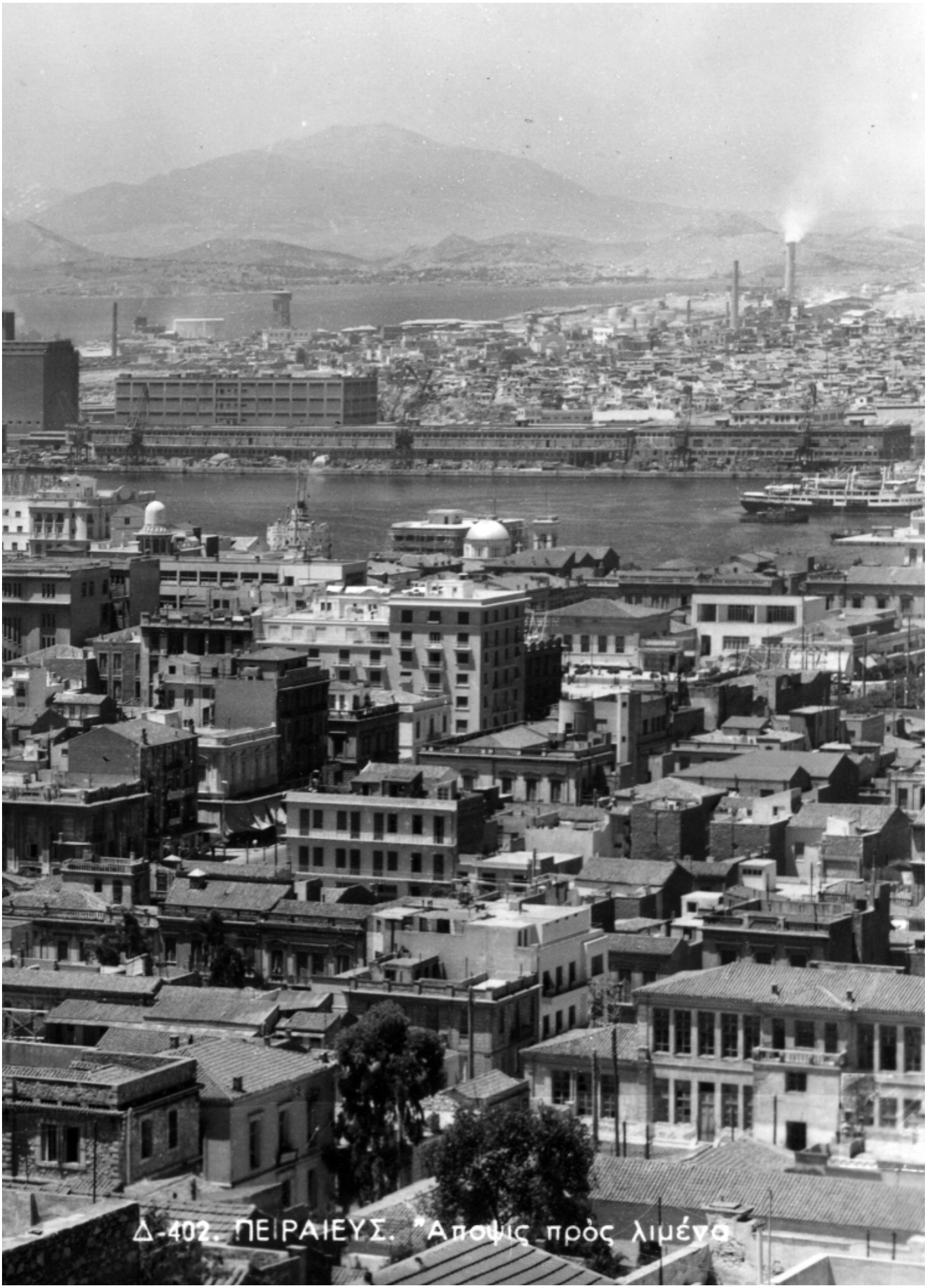
Attica and its gateways

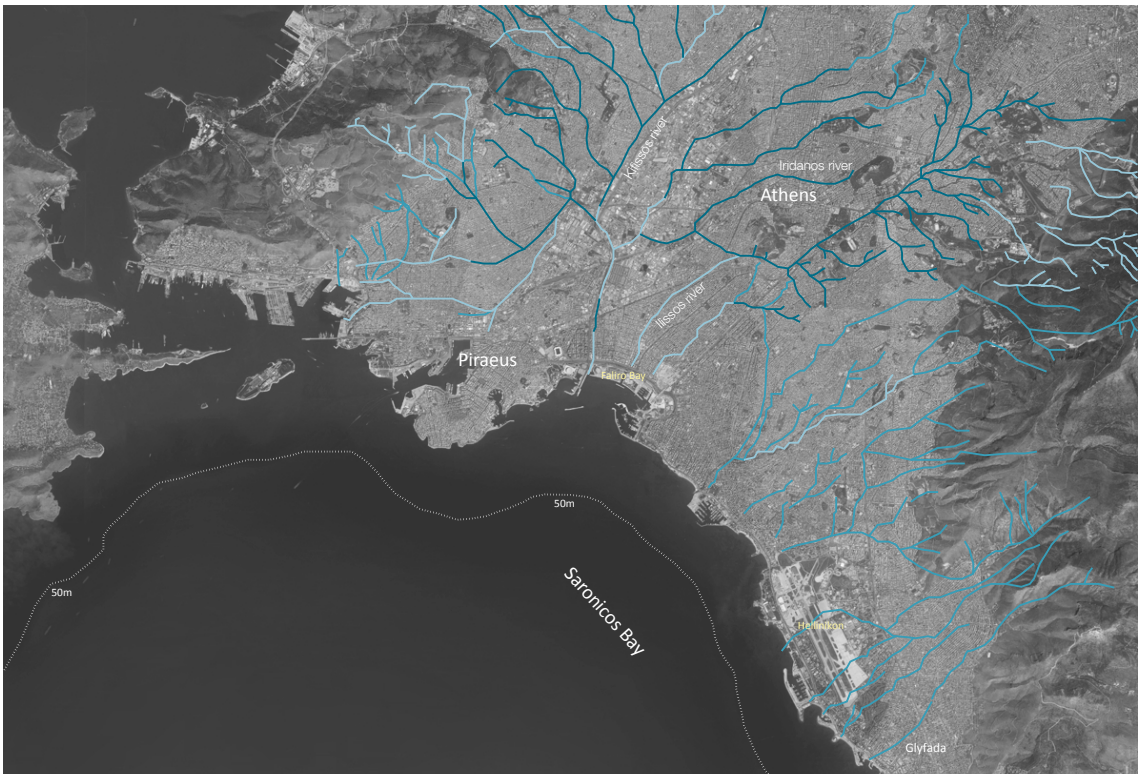
Commercial port of Piraeus, terminal II



PIRAEUS

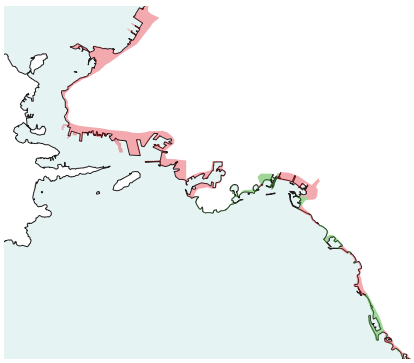
From antiquity to present


Δ-402. ΠΕΙΡΑΙΕΥΣ. Ἄποψις πρὸς λιμένα



Topography and hydrology of Athens

Covered water routes Open air water routes Covered streams



Accessibility along Athens' waterfront

Municipality of Piraeus:[1]
Population: 163 668
Area: 10,87 km²
Density: 15 066 /km²

Urban:
Population: 448 997
Area: 50,417 km²
Density: 8 906 /km²

Attica:
Population: 3 686 371
Area: 2 928 717 km²
Density: 1 259 /km²

1. Hellenic Statistical Authority

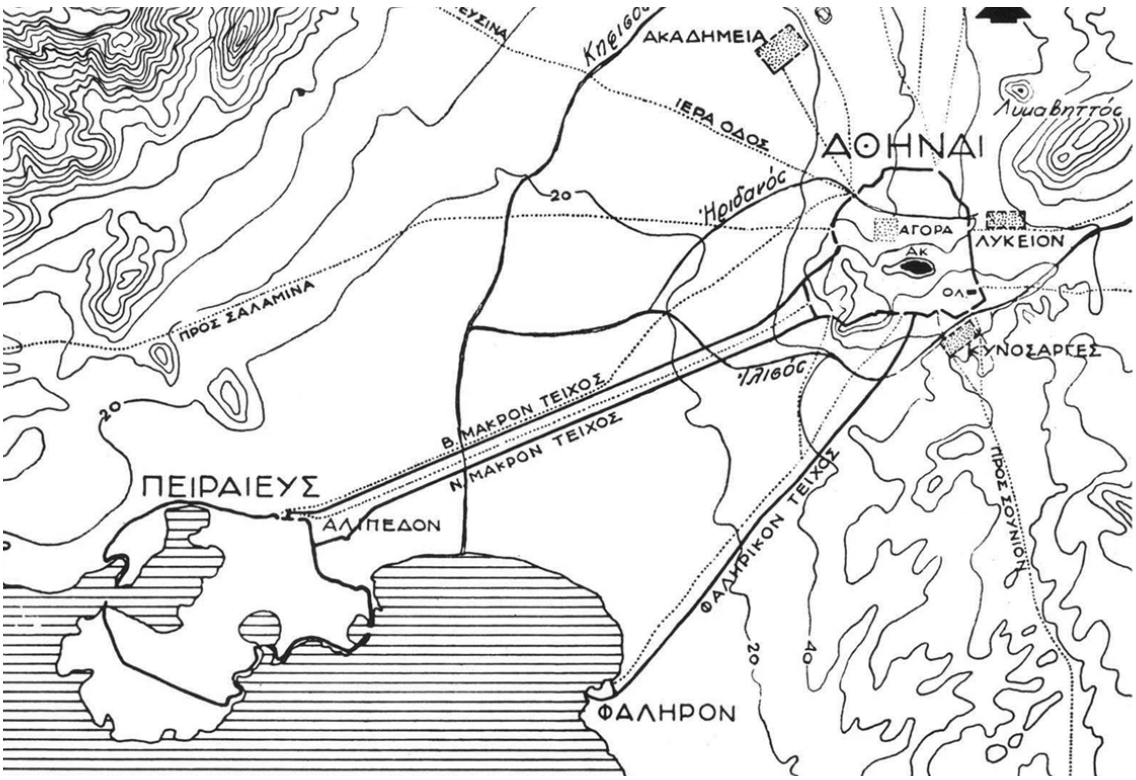
ATTICA REGION

Athens is the capital of Greece since 1834, four years after the independence of the Greek country. It is situated in the plain of Attica on the southern part of mainland Greece with direct exit on the Aegean sea through its main port Pireaus. The region of Attica, one of the 13 regions of Greece, includes the whole peninsula of Attica and some islands of the Saronic gulf. Piraeus is one of the 8 regional units. Five of those eight are located in the basin of Attica (Central Athens, North Athens, West Athens, South Athens and Piraeus), two outside the plain (East Attica, West Attica) and finally the last one composed by the Saronic islands. They are then divided into 66 municipalities. The municipality of Piraeus was founded in 1835 and became one of the municipalities into which Attica was initially divided. Each municipality elects its own mayor and council. Piraeus' municipality is composed by 30 districts such Kastella, Mikrolimano, Kaminia etc. The region of Attica is by far the most populated of the country with a total population of near 3,7 million inhabitants and represents the 34,2% of the total population of Greece (10,8 million inhabitants).

The large city of Athens is situated on the Attica basin and consumes all available space strictly defined by natural limits. These are the Mount Egaleo to the west, the Mount Parnitha to the north, Mount Penteli to the northeast, Mount Hymettus to the east and the coastline giving on the Saronic gulf to the south. Today, the city has reached its spatial limits and the only possibility to expand would be outside the basin either to the west towards the Thriasian plain or to the east towards Markopoulo and the new airport.

Two main rivers running on the Attica plain, Kifissos and Ilissos river are also forming a natural limit on the territory. Kifissos river sheds from the mountains of Parnitha and Penteli flows and bisects the territory until it reaches the Faliro bay and pours into the sea in the Saronic Gulf. Eastern of Kifissos river, Ilissos river rising from the mountain of Imittos and pours as well at the Faliro bay. These two rivers, are characterised by having a minimum flow of water during summer and flood during winter specially after rainfalls. Many parts of both of these rivers are today canalised and covered, as it is shown on the hydrological map, in order to build roads on them. The same is done with most of the streams of Athens, offering space for new roads.

As seen previously, Athens is a city built adjacent and along the Saronikos Bay. The coast of Athens starts from Piraeus and ends to Sounio, including 15 different municipalities. However, there has never been an overall plan engaging the whole coastline resulted a fragmented and in many parts not accessible waterfront. Nowadays, the city of Athens starts to show again a strong interest and will to open up to the sea by constructing new projects such as the transformation of the Faliro bay (Renzo Piano) and the future planning of the old airport of Hellinikon.



Plan of Classical Athens, Ioannis Travlos, 1968

Piraeus,..
... Themistocles also convinced them to build the rest of Piraeus, because he believed that it was a good location, what with it having three natural harbours, and he believed that Piraeus was much more useful than the city above...

Thucydides, Historiae A

ANCIENT PIRAEUS

Piraeus appears in history just before the Persian Wars, with the decision of Themistocles to fortify its three harbours. The enclosed and safe harbours of Zea and Munychia situated at the western and eastern slopes of Munychia's hill and the third one, the port of Cantharus, on the east side of Piraeus's peninsula. Themistoclis understood the significance of the establishment of a future fleet for the city of Athens and Piraeus' harbours and their fortification would be the tools to accomplish his vision. His strategy of transforming Athens into a naval power would help him to defend the city from future invaders.

Athenians were obliged to divide their forces for the defence of two separated cities. On the one side, the city of Athens, the traditional political and religious centre and on the other side Piraeus, the defence (military) and supply base. This bipolarity, of maritime and terrestrial centre, was feasible by building a double wall of 12km in length (the Long Walls) protecting and connecting the two poles. A continuous defensive system uniting the old and the new city which left until today an undeniable mark on the Attic terrain.

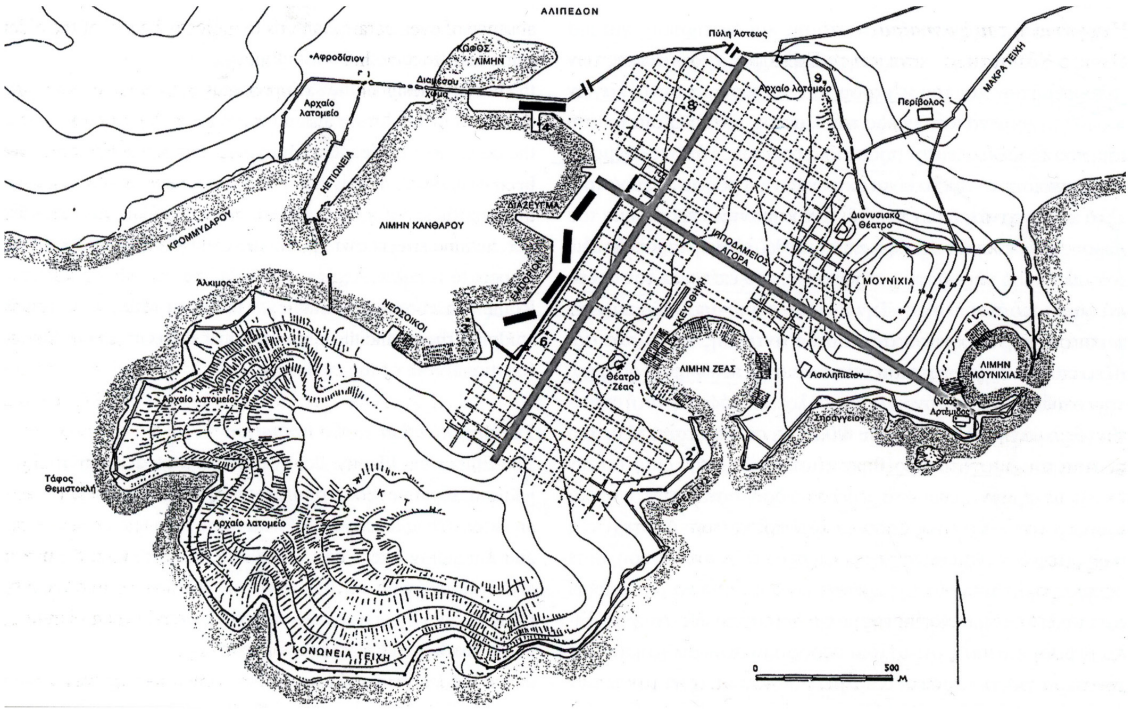
The first "leg" of the total three, the Phaleric wall, was abandoned after 413 BC. The other two parallel legs, the southern and the north Long wall, were including the old historical road of Pireos, the link between the city and the port. The modern Pireos street lies on the northern long wall. Parts of the old wall are visible until today.

The ancient Greek verb "piro" means to traverse a marine passage, to traverse the sea, and to cross to the other side, which means that I am now experienced. That is the meaning of "pira" (experience) in Greek; to have crossed a sea.

Peratos is the one who is situated on the other side, where I want to go. From "peratos" the Latins created "portus", its original meaning being "passage", and later "port". Let's not forget that the port of Piraeus also, in the days when the coastal valley was sea and Piraeus was an island, took its name from some "pereea", the one who carried people to the other side, and that's why many people today pronounce it "Pereas". That is the correct way. "Piraeus used to be an island, whence it took its name, from the verb "diaperan" {=to traverse}".

So, Piraeus is essentially the ancient port Perasma which, through its etymological root, gave its name to all the ports of the world: port, porto, puerto etc.[2]

2. Anna Tziropoulou Efstathiou in "Piraeus, centre of shipping and culture". Egiis, GR, 2012



The Hippodamian sketch of the city of Piraeus

The identity of Piraeus was determined by the presence of two independent and separated functions. On the one side the infrastructures used for military purposes (dockyards, shipsheds, arsenals etc) and on the other side, the sector of trade where ships were loading and unloading goods. These two separated functions influenced Piraeus urban plan, demographics and the social composition of the city.

If Piraeus owes its existence to Themistrocles, it's Hippodamus who proposed the urban plan of the city. The hippodameian urban plan is expressing a philosophical viewpoint of a rational organisation of the city life under the idea of equality. The success of Piraeus plan could be observed by the effectiveness of the solutions provided for the city's activities and by the quality living conditions of the citizens. The harmonious proportions of the plots and the rational planning of public spaces created great conditions for the smooth functioning of the city. In addition, social segregations were minimised due to the application of this principle of equality.

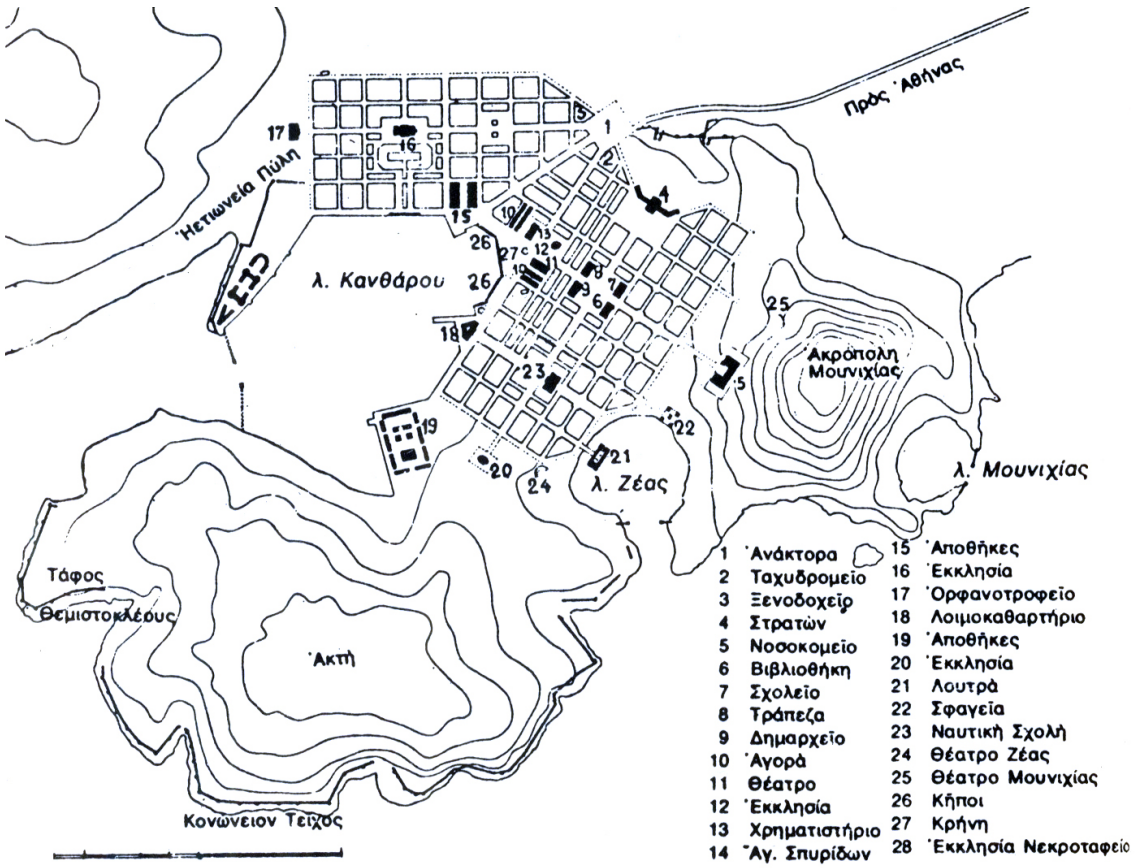
Public spaces such as the area of the dockyards and the Emporion were situated on the coastline. These functions represented the commercial activities and were independent of the Hippodameian urban planning system. At the other hand, the political centre (Hippodameian market) and the housing were part of this rational grid. We have a clear demarcation of functions based on the urban plan.

Two wide streets were crossing the city, connecting the three harbours of Cantharus, Zea and Munychia and the northern part of the city with the southern.

The downgrading of the city of Piraeus according to historical sources begun during the Hellenistic years. During the roman occupation, the port was used as a base to launch their military expeditions. In 395 AD, the Goths literally destroyed the city. In 1307 and 1454 Piraeus was occupied by Catalans and Ottomans respectively. The port "reappears" in a text written in 1654 by a venetian general named Morosini and is mentioned as the *"harbour of the Dragon" (Porto Leone)* due to the existence of an ancient lion statue at the entrance of the port.

Few years before the establishment of the new Greek country in 1830, Piraeus is a desolated region with a deserted surrounding area. In the early of 19th century, Chateaubriand wrote about Piraeus:

"In vain does one's glance seek for the temple of Aphrodite, the Long Stoa and the symbolic statue representing the people of Athens...Instead of the magnificent dockyards, the peristyles where boats would be tied up, the markets...instead of such structures as would in their entirety represent the appearance and beauty of the city of Rhodes, I saw but one dilapidated monastery and one storehouse... That was the deplorable state which these famous harbours have fallen..."



City plan of Piraeus by Kleanthis and Schaubert in 1834

BIRTH OF PIRAEUS

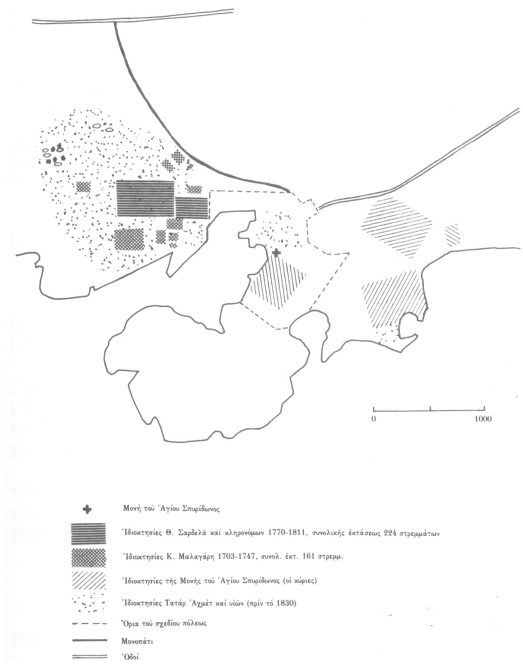
In 1834 Athens becomes the capital of the newly founded Greek country and Piraeus is designated to be the capital's port. The planning of the new city of Piraeus is within the framework of a general re-plan and development of Greece. The country is faced to a reorganisation on the socio-economic and also administrative level. Piraeus is designated to become a commercial and industrial town, within the interests of Athens, due to its advantageous geographical position.

The birth of Piraeus started by an allotment of land done by the Greek state and then sold on low prices to future inhabitants, with the condition of a mandatory construction by the buyer. Thus, a small village started to develop. The authors of the first city plan in 1834 were Kleanthis and Eduard Schaubert. They also drew up plans for other Greek cities including the first street plan of Athens.

The first city plan was based on the Hippodamian system where Gounari street (extension of Pireos street) was separating the settlement into the "left" and "right" side. The "left side" was composed mainly by a residential area with two squares, a market and a small church. The "right side" was devoted to the Chiot community and was including the main urban functions such as shops, schools, cultural, administrative and religious activities. At the entrance to the city of Piraeus, Kleanthis and E. Schaubert proposed the construction of the summer Palace of the king Otto with an extensive park around it. The post office and the hotel were supposed to be build nearby.

Due to the bad consistency of soil (existence of groundwater), the summer Palace was never build in Piraeus and the city failed to become a political centre.

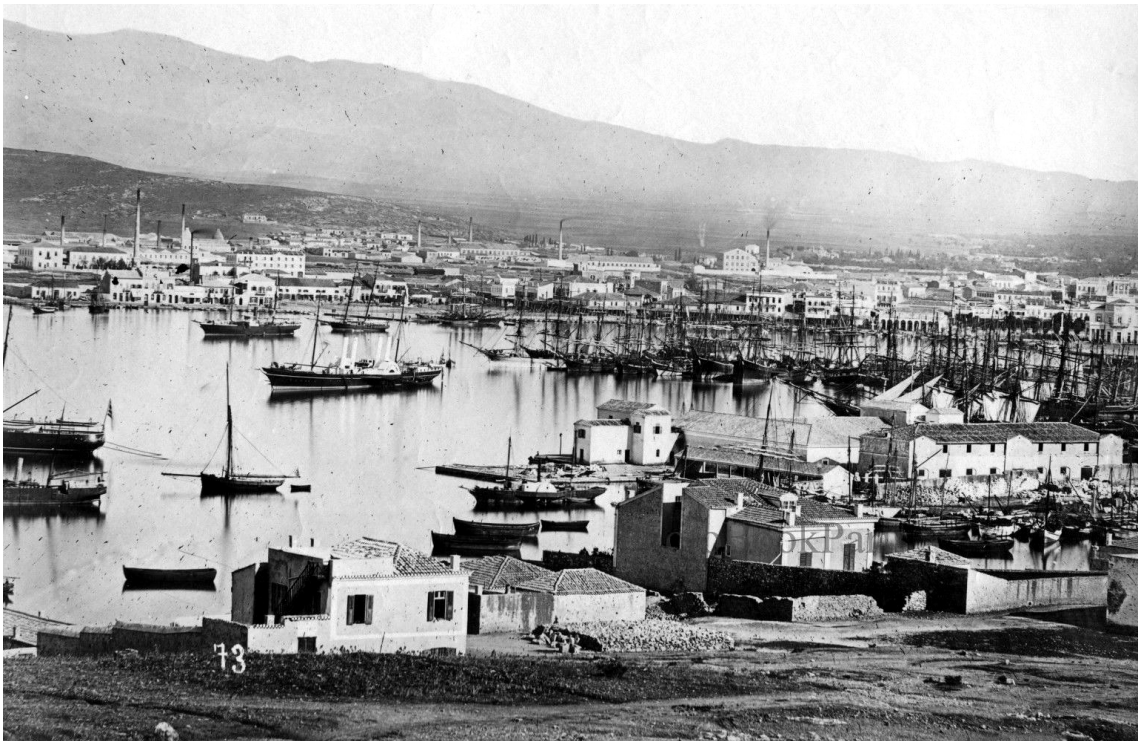
In 1834 after some minor adjustments done by von Klenze the first street plan of Piraeus was approved on 11 of August 1834.



Properties of land in early of 19th century

Year	*Number of industries in Piraeus**
1867	*8*
1875	*30*
1883	*43-45*
1891	*52*
1909	*76*

Workers	*3 000*
Craftsmen	*300*
Farmers	*180*
Sailors	*5 600*
Divers professions	*185*
Public sector	*810*
Private sector	*3 500*
Servants	*4 500*
Trade	*3 350*
Landowners	*1 660*
Merchants and manufacturers	*1 805*
*Total working population in 1882***	*24 890*



View of the port of Piraeus in 1875

"THE GREEK MANCHESTER"

From 1836, the municipality thanks to its income is able to play an important role in order to keep a balance between the economical and the social growth of the city. Everything seems to be based on the economic system of the new born city and the trade starts to flourish. Trade becomes the common occupation of the majority of the inhabitants, originated from all across Greece. Most of these immigrants are coming from the island of Chios and Hydra. They share their knowledge of trading and rapidly shape the dominant commercial morals of the society. This commercial bourgeoisie is composed mainly by big merchants - importers, having the role of middlemen between the external and the local market.

In 1835, after the completion of Pireos street, the city of Athens is finally connected by a paved road of 8 km. Its main use is the transportation of imported goods. The freights are transported with the help of mules. In 1869, the first railroad connecting the two cities is implemented assuring a bigger safety and reduces by two thirds the time of the trips. A new era of relation between the two cities starts after the completion of the railroad. The "iron street" ends now at the port, where the city's life and economy rotate around it.

After the crisis of 1842, an industrial wave starts to develop and reaches high productivity levels in 1860s. Trade and industry coexist. The small and limited local market of Piraeus pushes the industrial enterprises to seek new markets such as other Greek cities, the Balkans and the Asia Minor. In 1860s the city of Piraeus faces an "industrial boom".The demographic growth of the city and the development of the cotton manufacturing make the industry the base of Piraeus' economy. Piraeus starts to look more like the developed industrial European cities and less like the other port cities of the east. The industries are concentrated around the port, specifically on the east side. Silk factories, steam mills, textile and ceramic industries were composing the industrial zone of the port. The city had become the biggest industrial city of the country.

Piraeus has an important labour force. From only 4 247 inhabitants in 1845, the city counts 51 020 in 1896 due to the industrial revolution and the turn towards the secondary sector. During 1870s we observe a segregation of the society. On the one side, the upper commercial class and on the other side, the birth of a new class in the history of society, the working class.

"...the broad roads that are being built, the sewers that are being dug, the drainage and decontamination works that are continuing, the trees...demonstrate that Piraeus has a municipal authority better adjusted to the interests of its city, than that of Athens."

Henri Belle, 1881

**Christina Agriantoni, "I aparches tis ekviomichanisis stin Ellada ton 19o eona". Katarti, GR, 2010*

***Lila Leontidou, "Polis tis siopis". Etva, GR, 2001*

View of the customs

View of a basin

View of factories

View of the port of Piraeus taken from the custom house

View of the port of Piraeus in 1910s

THE CITY UP TO 1922

*In 1900, there were 17 iron and steel industries in Piraeus, as well as manufacturers of assorted machinery, 33 flour mills, pasta factories, beverage and spirit manufacturers, 10 textile mills, 12 soap manufacturers and other chemical industries, as well as 13 plants producing miscellaneous other goods. The Retsinas brothers' spinning and textile mills, the Dilaveris mosaic and ceramic tile factories, and the multiple Vassiliadis enterprises - with a foundry, boiler-maker, fitting shop, wood-working shop and shipbuilding enterprise - were among the most significant industries.** Merchant marine was flourishing and big shipping companies had their headquarters in Piraeus.

In 1907, Piraeus was the only industrial city in Greece. More than 160 factories were in operation in Piraeus by 1920 and represented 27% of the new manufacturing plants established in Greece. In the midst of the first world war, the commercial and industrial prosperity of Piraeus is still present.

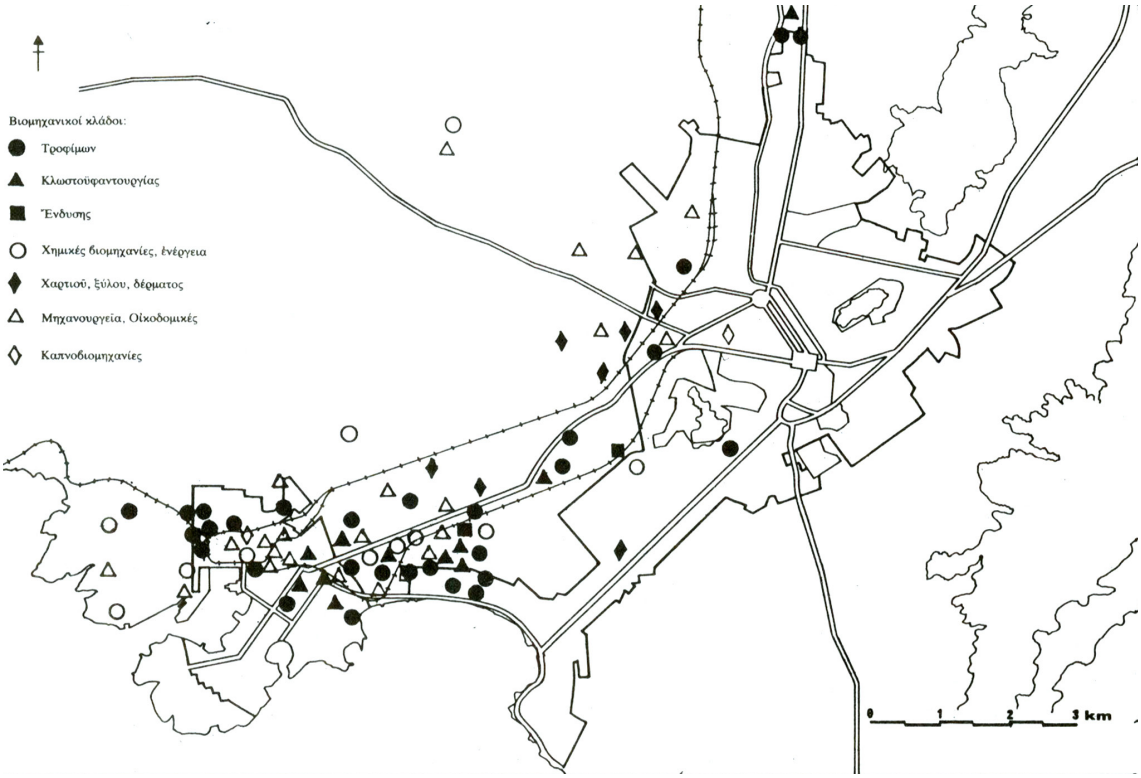
The connection of the Greek railways with the European network created the conditions for counterbalancing the recession due to the first world war that result a significant reduction of traffic in the port. *"This link-up, that took place in 1915, took on great significance by connecting Europe with Egypt, India and Asia in general. The mail of England, Europe and India will pass through Piraeus saving considerable amount of time. The express Paris-Piraeus train will cover the distance between these two cities in 60 hours".*[3]

After the second world war and the Asia Minor disaster in 1922, a big wave of refuges arrived in Piraeus and almost doubled the population from 133 482 people to 230 000 inhabitants. Piraeus acquired an appearance of a large city. This big change was reflected in the composition of the society. Different traditions, ideas, educations and characters composed a motley society. The press of the time reported *"Piraeus lives in an Oriental fashion, while in all other aspects, as a city, as a harbour, it is American style, going ahead in leaps and bounds...".* Class differences began to appear sharper in the way of life, in social contacts, manners, leisure and places of recreation.

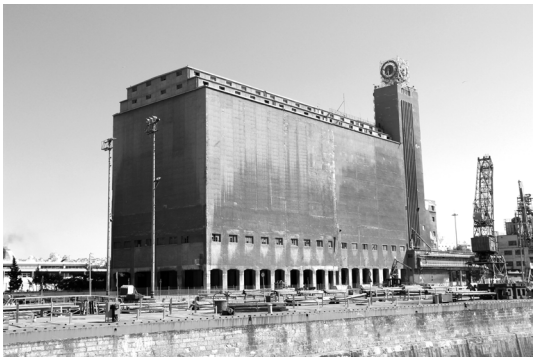
The working class settled around the industrial zone by the port, in the labour suburbs of Piraeus such as the region of Kokkinia, Drapetsona and Keratsini. The construction of new industries was strongly related with the position of the refugee settlements and literally surrounded them and cut them off from the south part of the city. Piraeus was divided in two, with the harbour and the industrial zone serving as the barrier between its poor and wealthier districts.

The revitalisation of Piraeus by the refuges and the lack of infrastructures and facilities such as warehouses for merchandise, docks, loading and unloading machinery, pushed the authorities to plan an overall reconstruction of the port area.

3. G.A. Steinhauer / M.G. Malikouti / V. Tsokopoulos / V. Ganiatsas, "Piraeus, centre of shipping and culture". Egiis, GR, 2012



The industrial axis Athens - Piraeus in 1920



Silo on the Eetioneia coast

Silo on the Eetioneia coast

DE-INDUSTRIALIZATION

In 1923, the of reorganising the port was implemented. In 1930, Piraeus Port Authority (OLP, Organismos Limenos Peiraias) was set up and all individual merchants, port workers, men who unloaded goods became permanent employes of the new port administration. A new custom house was established and two large granaries were build by Siemens on the Eetioneia coast in 1937. These new infrastructures are exceptional examples of modern architecture. The traffic is increased while the industry started to face a decline in the 30's.

Despite this development, Piraeus faces its first serious crisis of de-industrialization in the 1930s. The crisis in the flour industry - one of the main pillars of Piraeus's industry -, the constant development of land transportation and specially the high amount of local taxes resulted serious structural problems for the city's economy. This caused a massive outflow towards Athens, along the new industrial axis, Pireos street .

This resulted a spatial unification between Piraeus and Athens, from a bipolar system into one large conurbation.

During the occupation of Greece by the Nazis the port of Piraeus was heavily damaged by bombing. In addition famine, inflation and the suspension of productive activities ravaged completely the city. It took five whole years after the war before the damages were repaired. In the 1950's, the reconstruction of the city resulted radical changes in its physiognomy. Regeneration projects in eastern areas such as Tourkolimano and Zea began to change the appearance of the city into an attractive zone for leisure.

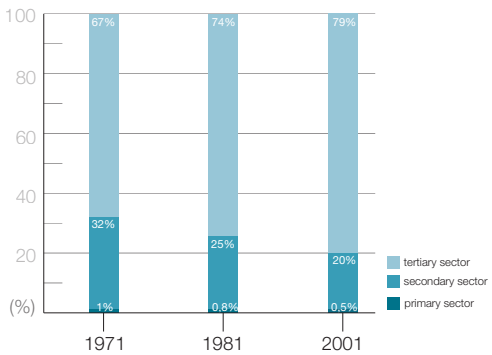
However, the industry is in decline and down-graded. The area with the highest concentration of secondary production was Drapetsona (fertiliser industry). In 1928, 36% of the population were employed in the industry compared to only 23% in 1960. On the north side of the city, the industrial zones were still damaged and took up until 1960s to reconstruct the area. The regions of Drapetsona, Keratsini and Kokkinia constituting the working-class areas became independent municipalities.

The junta of 1967-1974 brought an important change of direction. A development of public and private investments in tourism, transformed Piraeus. New offices and bank buildings were build on the harbour front. This process of reconstruction, growth and redevelopment of Piraeus was harshly halted by the world oil crisis in 1973.

PIRAEUS TODAY

The de-industrialization process started in 1960 reaches its peek in 1980 with the strong presence of the tertiary sector. More than 300 small and big industries were shut and about 1000 trade related business were vanished. This resulted an enormous loss of jobs that were never replaced by other sectors. After the favourable legislation of 1968, by which shipping companies were exempted from some taxes, a large number of shipping agencies relocated to Piraeus. They managed to create the world's largest fleet within a period of twenty years. These agencies were situated on the Miaouli coast constituting the new business centre of the city.

The de-industrialization process resulted an enormous building-stock of abandoned industrial buildings provoking "dead" zones and inaccessible voids in the inner city due to their important size. These brownfields are often characterised by their contaminated soil and by their presence are "breaking" the continuity of the urban fabric.



***Geniko poleodomiko sxedio Dimou Peiraia, ESYE 2001*

Piraeus today is a "passageway" connecting the main land with sites on the Greek sea, tourist islands. With the separation of the port services in 1985, commercial shipping was moved westwards, to the port of Herakleous at Keratsini, and the central port remained purely for passenger traffic. With this relocation of the heavy, shipbuilding and goods functions, the quays have started to be vacated and have been taken by passenger ships, the size of which increased markedly in the last decade of the twentieth century. Commercial establishments have been removed from the central harbour and have moved eastwards towards the city centre. We observe a spatial fission between the urban and the maritime activities.

In the historical industrial zone of Piraeus, very few factories still operate. Next to the commercial port (a landscape of containers), we find today, all city's western districts trapped behind a barrier, many kilometres in length, formed by the harbour's infrastructure, without any outlet to the sea. In 1994, planning began in order to construct a rapid traffic ring-road which cuts through the seafront in the area of the old factories and shipyards and connects the port city of Piraeus with the new commercial port at Ikonio.

Today, the restoration of the strongly segregated urban fabric is a priority. In addition, the need for a re-organisation of Piraeus's infrastructures and seafront is incontestable. Any future intervention should highlight the identity of the historic harbour, an identity which is being lost in Piraeus.

Relocation of the commercial port at Ikonio

PIRAEUS

The city


ΣΙΓΓΕΡ Α.Ε.

POLYCENTRICITY OF ATHENS

Athens is a perennial capital of a small European country that has become a small metropolis in the global scale. Comprising around one third of the total population of the country, Athens' metropolitan area dominates the Greek urban network. The presence of several urban centres, differing in terms of size, density etc., result a polycentric city. More specifically, Athens and the secondary centres of the Attica Basin are part of a greater metropolitan area, a conurbation. One of these complementary centres, Piraeus, was designated to be the port of the capital and until today is the capital's main gateway from the inner land towards the Greek islands. Therefore, the relation between Athens and Piraeus differ from the other relations of satellite centres with the capital. These two complementary centres, besides their historical and economical relations have also spatial connections. A linear industrial zone that divide and at the same time unify the two agglomerations.[1]

We can easily observe on the aerial nocturne photography the main urban core of Athens and its satellite centres connected with linear streets. The city of Piraeus as well as Pireos street connecting the port with Athens can be easily distinguished. However, the urban void of Eleonas and the old airport of Hellinikon by the coast are an antithesis with the rest of the urban fabric. Finally, we can notice the expansion of the city towards the airport in Markopoulo outside the Attica basin.

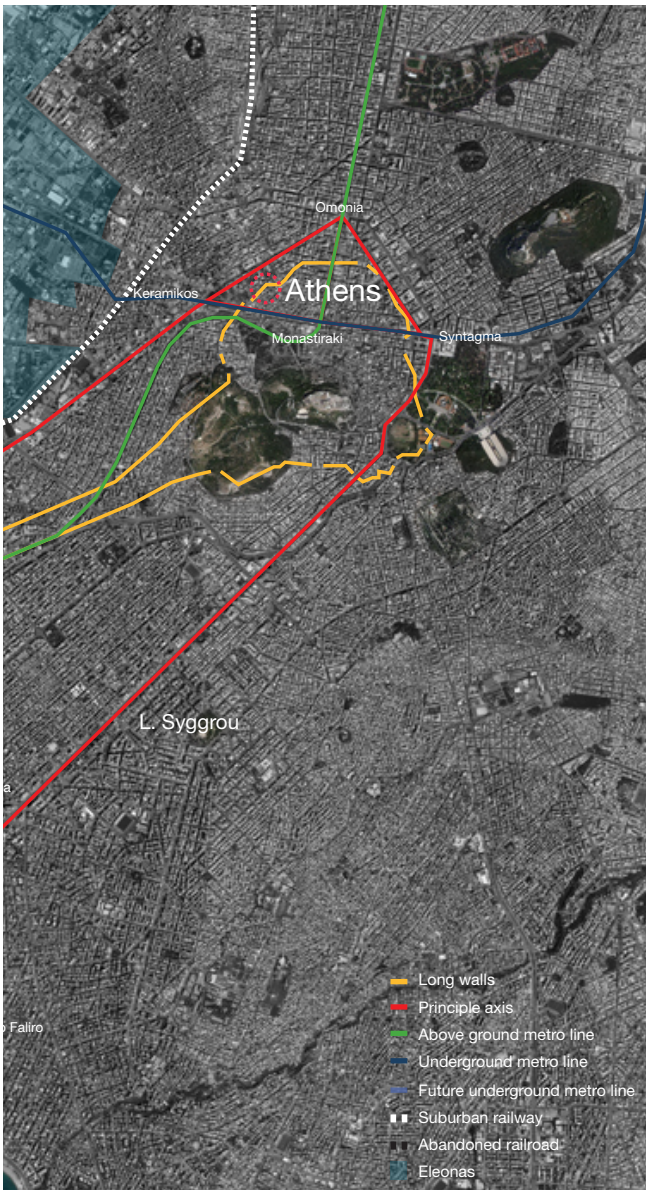
1. E. Chaniotou, "Athens, Piraeus, Port. Trilogy & conjunctive metropolitan centre of Athens-Piraeus", Athens 2011

"La conurbation athénienne superpose une multiplicité de problématiques contrastées: celle d'une cité mythique, d'une porte sur l'Orient, d'une capitale européenne, et d'une ville tentaculaire. En effet, l'Athènes antique, comme Babylone, Rome ou Jérusalem, demeure une référence incontournable des villes occidentales, tandis que l'Athènes contemporaine, espace inachevé et congestionné où se presse la moitié de la population grecque, et dont la plupart des édifices se construisent sans architectes, détermine en négatif, l'image d'une «modernité sauvage»".

Richard Scoffier, "Athènes, ville en éclats".

Conurbation between Athens and Piraeus

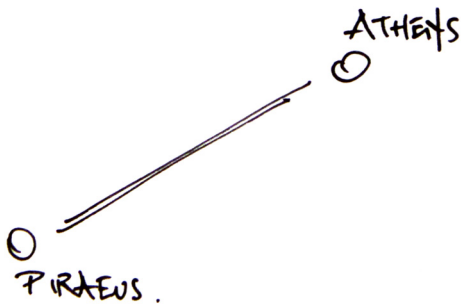
CONURBATION



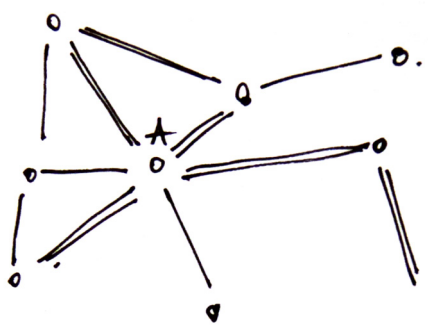
Focusing now in the city centre of Athens and its port, we notice that the old bipolar system between the centre of Athens and Piraeus has now been transformed into a conurbation resulted by the process of spatial expansion and population growth. This is due to the arrival of refugees and the construction of refugee settlements, particularly in the region of Tavros and Renti, during the period of 1922 to 1950.[2]

As we saw in the previous chapter, the intentions of Kleanthis and Schaubert, who designed in 1834 the new urban plan for Athens and Piraeus, was to connect the capital with the centre of Athens, by Pireos street. Thus, Pireos street is constructed on the north part of the old walls, starting in Omonia square and extents for about 9km until it encounters Gounari street. On the other side, the above ground metro (ISAP), located on the southern part of the walls, is arriving to Piraeus after making a loop and passing next to Posidonos avenue. The other two parallel connector elements are, Syggrou Boulevard in the east and the train railroad in the west. Next to Pireos street, we observe the large area of Eleonas, an industrial zone in decay with incoherent activities.

Nowadays, we encounter several problems in this conjunctive metropolitan centre[3], between Athens and Piraeus. Starting with the dereliction of the city centre of Athens, following with the abandoned industrial building stock along Pireos street and finally arriving in the strongly spatially and socially segregated port city of Piraeus.



Bipolar system



Polycentricity

Aerial view of Piraeus and its port, the linear industrial axis including Pireos street and Eleonas and the centre of Athens

The Long Walls starting today at the pedestrian street in Philopappou, reshaped by Pikionis and ending in Piraeus, are now fragmented and can hardly be found along the old axis. This fragmentation avoids a single perception of a continuous whole that would lead to the understanding of their importance for the city's history.[4]

Piraeos street starts from Omonia square, meets Iera Odos avenue, intersects with Kifissou Boulevard and ends in the port of Piraeus. It crosses four municipalities, Athens, Tavros - Moschato, Nikaia - Agios Ioannis Rentis and Piraeus. Pireos street after the second world war was counting more than 60 factories situated along this axis. Behind this street, in the industrial zone of Eleonas, and more specifically, in the regions of Tavros, Kalithea, Moschato and Neo Faliro, hundreds of factories, workshops and warehouses were operating. After the shutdown of the majority of factories due to the deindustrialization, a huge abandoned building stock occurred, which is until today intact. Although, the big tobacco company Keranis was shut other factories such as Pavlidis factory, HALCOR and ELAIS remain open. Residential area and housing are missing along the street, where industrial and trade activities are the major functions. Two minor residential areas were developed by this linear industrial axis, the neighbourhood of Tavros and Agios Ioannis Rentis.

In the 90s, the majority of the abandoned buildings were considered to be important for the industrial history of the city and since then are listed as protected.

There was also an interest for revitalisation this historic street and thus, several projects were made such as the remodelling of the Gazi area, the renovation of the slaughterhouses in Tavros and opening of the Higher School of Fine arts. This regeneration was reinforced also by private charitable institutions who played a key role through the reconstructions of cultural sites, such as the Foundation of the Hellenic World and the Benaki Museum.[5] These projects are situated close to Athens and therefore we can observe a differentiation between the upper part of Pireos street where richer municipalities have used some funds to proceed with the implementation of projects, in contrary on the lower part, the municipality of Piraeus hasn't proceed to any building reconstruction and renovation due to a lack of budget. Therefore, we observe an inequality of management of the abandoned industrial buildings between the north and the south part of the road.

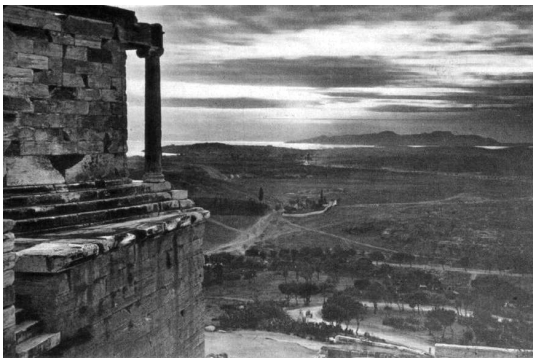
Today, Pireos street connects and serves locally the four municipalities. However we observe a phenomenon of fragmentation of these municipalities along the street due to the social and functional disruption caused by the street. In addition, the different institutional framework along the street, results the lack of global strategy for an overall reconstruction of the street with clear goals.

2 and 3. E. Chaniotou, "Athens, Piraeus, Port. Trilogy & conjunctive metropolitan centre of Athens-Piraeus", Athens 2011
4. NTUA, "Metalassomeni charaktires kai politikes sta kentra tis polis Athinas kai Pirea, B' fasi", Athens 2011,
5. Vatavali, Belavilas, "Metaschismos tis odou Pireos", 2007

Syggrou Avenue is one of the few straight axis by the late of 19th century. It reflects the spirit of modernisation and in the 20th century it played a significant role to the Athenian territorial expansion, as it helped to create new areas for the establishment of new settlements such as Neos Kosmos, Nea Smyrni, Kalithea and Paleo Faliro. Being completed between the first and the second world war, vehicular traffic was still limited the first years of its implementation. During the postwar period, the avenue was marked by a densification and enlargement of the neighbourhoods near the boulevard, as well as the settlements along its edges. It was only by the 1970s, that Syggrou was redefined to a "closed high-speed highway". This was possible due to the increase of the number of cars in the city, the implementation of Vouliagmenis avenue, the construction of the Ellinikon airport as well as the popularisation of the air travel. After becoming a "closed high-speed highway", Syggrou was seen as an impassable obstacle and barrier for the housing areas situated west and eastwards. In addition, with the second obstacle of the coastal avenue Posidonos, the residential areas got developed and oriented themselves towards the inner city, far from the seashore. Nowadays, Syggrou Avenue is a high speed connection between the centre of Athens, Piraeus and the waterfront. The perception of this straight axis has started slowly to change and thus has attracted new land uses, such as culture, health, insurance, education and business. The establishment of new facilities, changed the role of Syggrou, into a cultural and entrepreneurship avenue of a metropolitan and international range. However, the connectivity problems of the residential areas along the avenue still remain.[6]

The two functions that odos Pireos used to do since its construction, the transportation of goods and people from Piraeus to Athens, have now moved east and westwards of the historical axis. Eastwards, the first axis, the freight transportation by train, passes behind the mountain Egaleo, avoiding to cross the city centre is heading towards the Thriassian Plain. Westwards, Syggrou boulevard, a high speed avenue connects the historic centre of Athens firstly, with the waterfront and then with Piraeus. Pireos street situated in between, has nowadays along its length an abandoned industrial building stock and an ambiguous function. A new identity and role has to be rethought and given to this historical street. A future revitalisation of this axis would reinforce the link between the city of Athens and Piraeus and will enable a further opportunity of densification in the industrial zone of Eleonas.

6. NTUA , "Syggrou: Astiki Leoforos Politismou kai epichirimatikis drastiriotitas", Athens 2011



View towards Piraeus from Propylaia in 1890

View towards Piraeus from Philopappou in 2010

Pireos Street

L. Syggrou linking the city centre with the waterfront

Old walls findings under the railroads

RELATIONS BETWEEN PORT AND CITY

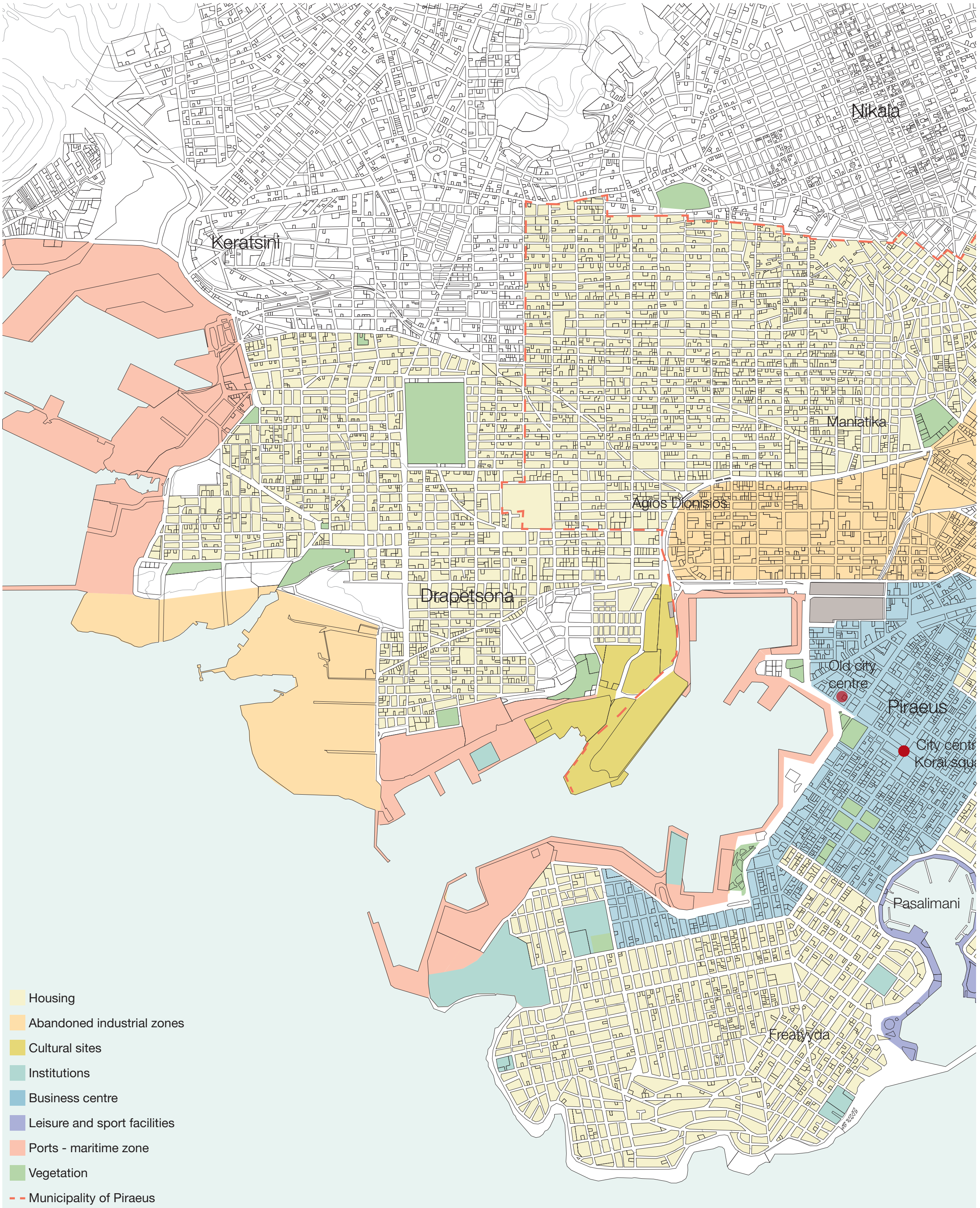
After having understood the position of Piraeus in the world maritime and land network, the differentiation of scale compared to the other Greek ports, its historical background and finally the relation between the city of Athens and Piraeus, this work investigates the relations between the city of Piraeus and its port. The goal is to determine whether or not the port and the city are a homogenous entity and, if not, which factors define this spatial, administrative and social segregation. This master thesis proposes an urban analysis of Piraeus, based on five different themes aiming to firstly observe, then analyse and finally point out the problems and the potentials of each thematic.

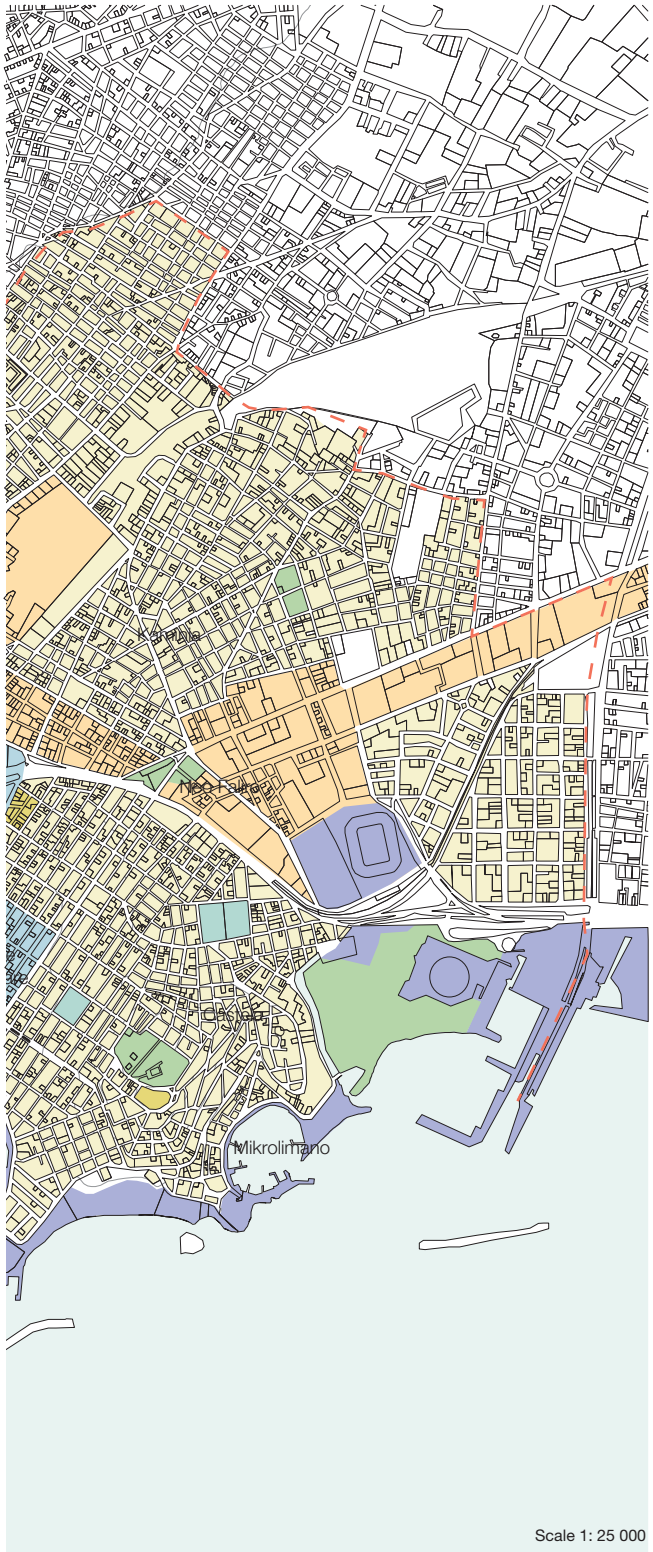
The first step is composed by a deconstructivist analysis of Piraeus, producing five maps based on the different program encountering in the port city, its environment and relation with water, the public transport and the street system, the two harbours and finally the abandoned industrial zones. An extra analysis on the administrative level is made in order to understand how the port and city authorities influence by their decisions the development of the port city. Finally, the methodology proposes a sort of selective reconstruction of Piraeus, translated into a superposition of certain layers of maps in order to point out spatial and social problems.

Port and maritime functions were since the birth of Piraeus the pillars of the urban growth. After the relocation of the commercial port, what are the relations between the passenger port and the city?

How is the compact inactive industrial zone affecting the relation between the city and port?

How is the growth and development of the commercial port affecting the city of Piraeus today?


Nikaia
Keratsini
Maniatika
Agios Dionisios
Drapetsona
Old city centre
Piraeus
Pasalimani
Freatyda
Housing
Abandoned industrial zones
Cultural sites
Institutions
Business centre
Leisure and sport facilities
Ports - maritime zone
Vegetation
Municipality of Piraeus



PROGRAM

For more than a century, the centre of Piraeus was situated next to the harbour where commercial activities and naval traffic were happening. Specifically, what was called centre was the old market between the church of St. Spyridon and the Electric Station. In the early's of the 20th century a second city centre started to appear at the Korai square. This was due to the construction of the Municipal Theatre and the church of St. Konstantinos around the square. In addition, the old historic city hall who had a big clock on its facade and was situated close to the market, was demolished as well as the old market. A new city hall was then built in 1970 on Korai square and an office tower in the cityfront where the old market was located. Nowadays, the official and social city centre is situated at Korai square, where two big main avenues intersect.

Thus, we observe already a bipolarity between the two city centres, the old "popular" one by the harbour and the new official one by the Municipal Theatre. The city centre's limits are now placed at the "entrance" of the city, where Pireos street meets Labraki bridge. On the south side, the centre's limits reach Pasalimani. Pasalimani was the main pole of attraction for leisure and recreation with its long promenades, cafes, theatres and cinemas. It is now linked by pedestrian street to the Municipal Theatre. The Ministry of Trade shipping used to be situated in Pasalimani but has now moved at the west side of the port. Same with the main building of the port administration (OLP) that has moved to Xaveriou coast. These two public services having a great amount of employees

are completely isolated from the rest of the city. On the contrary, the basic services of the port authorities remain at the centre area of the port, at Karaiskaki square. During the junta of 1967-74 two buildings started to getting build. A skyscraper situated in the cityfront, where the old municipal market used to be and a new building, looking alike with the municipal theatre, on Korai square. Both of these buildings were never fully implemented.Nowadays, Pireus has two markets. The first one lies where the old market was situated by the harbour and next to the skyscraper. It is a traditional street market attracting people from Piraeus and from the surrounding neighbourhoods. The second market is developing around the Municipal Theatre and Korai square and it is situated on modern pedestrian streets in the city centre of Piraeus.

During the junta and the deindustrialisation period, the deteriorated area of Troumpa was completely destroyed to construct new offices forming the new shipping zone. These offices situated in the cityfront by Miaoulis coast were representing the power of the Greek trade fleet. In 2000s, these buildings have been extended towards Xaveriou coast and include also other activities such as banks and insurances. Today, these shipping companies are starting to leave from Piraeus and are being installed in the Northern part of Athens (Kifissia) since they no longer need to have a direct view to their fleet due to the evolution of technology and the placement of cameras.

The old city hall with the big clock (today demolished)

The old municipal market

The municipal market of Piraeus

The Municipal Theatre

Shipping companies situated on the cityfront

View of Pasalimani

On the southern part of the city of Piraeus we encounter the area of Pasalimani (the old port of Zea), the traditional leisure part of the city. In 1970s, the other old port of Munichia, Mikrolimano, became a tourist attraction. Gradually, recreational facilities were constructed along the shoreline starting from Freattyda, following to Zea, the square Kanaris in Pasalimani, Castella,Tourkolimano and ending at the coast of the basketball stadium called “Peace and Friendship”. A big problem that Piraeus is facing are the illegal constructions on the whole length of the waterfront. Restaurants, bars etc. have built outdoor structures on public spaces in order to extend illegally their shop. Unfortunately, this phenomenon has resulted a big lack of quality and quantity of public spaces in Piraeus.[7]

An abundance of neoclassical buildings situated in the city centre of Piraeus were built at the beginning of the 20th century. Today the majority of this building stock is considered to be protected. However, the lack of funds of the inhabitants and the municipality, has led these buildings to the abandon and desolation. Unfortunately, after the hit of the financial crisis, things don’t seem to change any time soon. The city centre of Pireus has an enormous potential and restoring these neoclassical buildings would “wake up” its lost spirit again.

7. N. Belavilas ,“Stichia gia ta poleodomika dedomena tou kentrikou Pirea”, Athens 2011,

The two main and contrasted residential areas of the city of Piraeus are situated, the one in the peninsula of Piraeus (Freatida, Piraiki) and the other one west and north of the port, in Maniatika area. Secondary residential areas can be found also in Kastela, Neo Faliro and Kaminia. The inhabitants of the wider Piraeus, being part today of different municipalities (Keratsini,Drapetsona,Nikaia, Korydallos, Perama, Agios Ioannis Rentis), are mainly refugees and immigrants and compose the working class.

The important uses that attract thousands of people, employees, visitors, students etc are placed outside of the centre's core. Important facilities such as the university of Piraeus, the two hospitals, the central complex of Port Agency, the Aegean Maritime Administration and the School Naval Academy in the area of Chatzikiriakeio provoke daily traffic congestion. As it can be seen on the map most of these facilities are located on the southern part of the peninsula resulting traffic problems in its narrow part. The sport facilities of G.Karaiskakis and the stadium of Peace and Friendship have better connections thanks to the public transport of electrical metro and Tram and main the two avenues passing by.

Piraeus doesn't have a continuous and single archeological zone as Athens does. The few fragments of antiquity that still exist can be found inside the urban fabric, next to buildings or public spaces. A vast amount of ancient traces still need to be excavated, a really hard process in a really dense city. Due to the long deserted period of Piraeus, the old foundations of the Hippodamian city, of the markets, of the three ports and of the two theaters, have survived and can be seen until today. On the other hand, the Long Walls have not been well preserved today. We can still find a few point on the lines of the Metro, at Neo Faliro and the old Ieitionia Gate on Ieitonia coast.[8]

Today, walking around the port city of Piraeus, we encounter a variety of constructions from different time periods. Fragments of the Long walls, Byzantine churches, neoclassical buildings, industrial zones, a skyscraper, are all composing a phenomenon of stratification. However, the majority of these constructions are not protected or promoted. Specifically, there is an unwillingness of promoting the industrial heritage, constituting a major part of Piraeus' modern history.

9. N. Belavilas, "Stichia gia ta poleodomika dedomena tou kentrikou Pirea" Athens 2011

The unfinished skyscraper

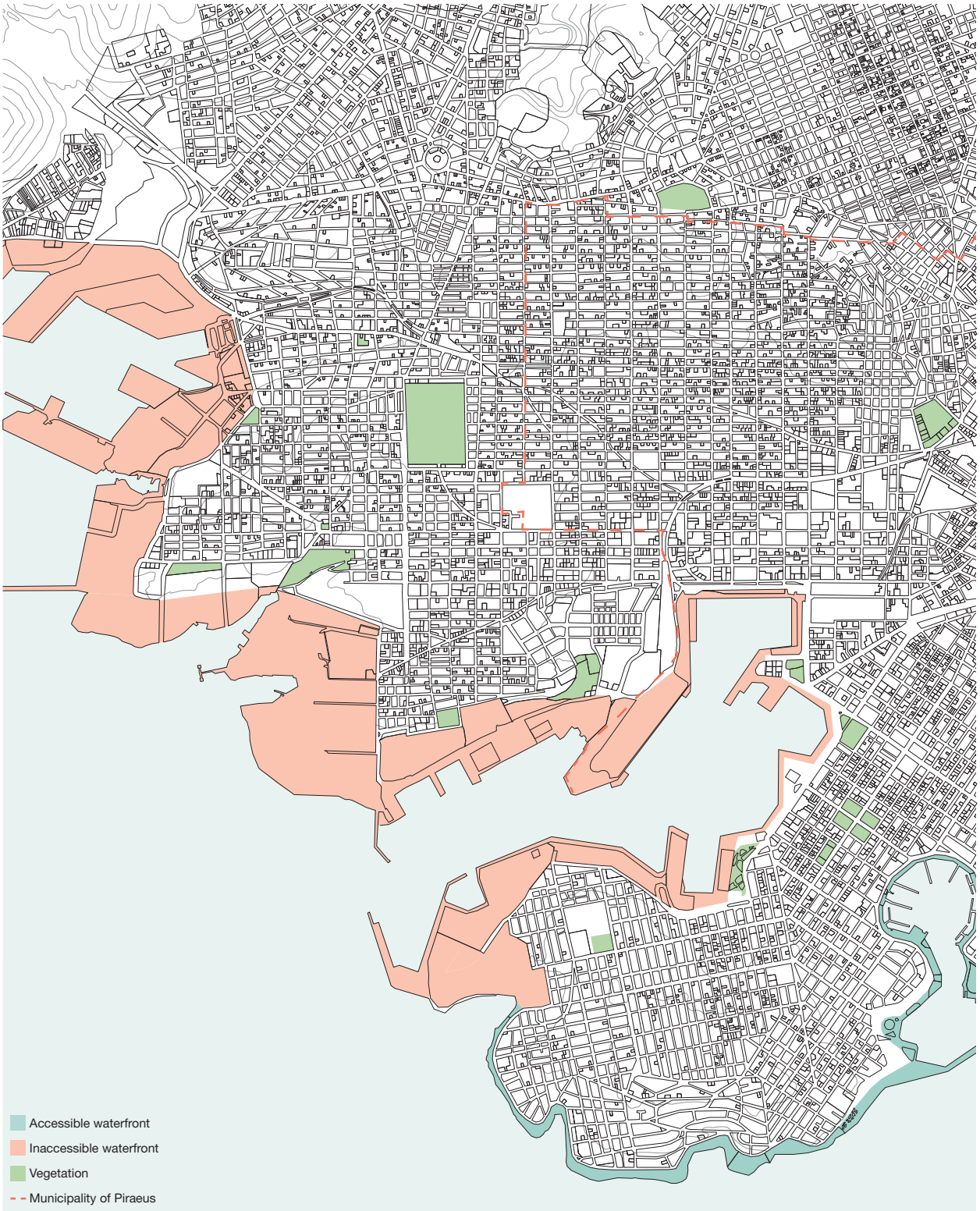
The old customs house

An old and abandoned neoclassical building

Ministry of Trade Shipping

The old Ietionia Gate

Hatzikyriakio girl's orphanage

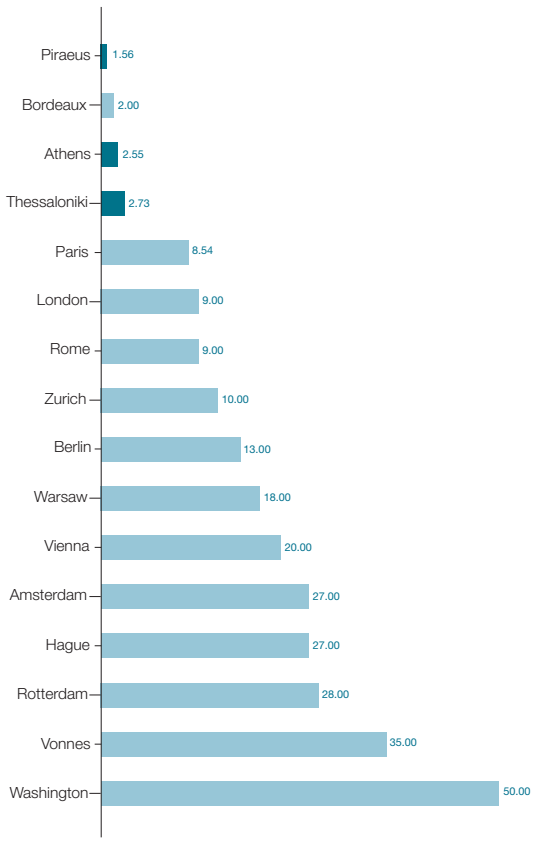

Accessible waterfront
Inaccessible waterfront
Vegetation
Municipality of Piraeus

ENVIRONMENT

Inhabitants of the wider Piraeus have a particular relation with the waterfront and the Saronic sea. Looking at the map on the left, we observe that the accessibility to the waterfront differ strongly on the northern part in comparison with the southern coast. On the northern coast the accessibility to the waterfront is impossible due to the presence of two national infrastructures, the commercial and the passenger port. In between, a vast brownfield being part of the municipality of Drapetsona, separates the two harbours. The old factory of fertilizers used to lie and operate until the end of the past century. These industrial infrastructures were and still are obstacles for the residents of wider Piraeus, living just across, to have access to the waterfront. In addition, until the early of 1990s the main sewage pipeline of Athens was ending in Keratsini, spilling all the dirty water in the sea. This process resulted of course important pollution problems in the Saronic bay. These two reasons “forced” the city of wider Piraeus to develop and orient towards the inner land despite its proximity to the water element. The Greek state in order to deal with heavily polluted sea decided to construct on top of a small island, located close to Piraeus, facilities of biological sewage treatment. This island is called Psitalia and is located in the Saronic Gulf and today, is the main reason for the restoration of the sea’s clarity, which was damaged by the industrial residues and the sewage water. On the contrary, the southern waterfront of Piraeus is accessible to all its length, offering activities for leisure such as sailing. Thus, the inhabitants of Piraeus peninsula have a strong and daily relation with the seafront.

The most important squares and gardens of Piraeus were planned and created back in the 19th century. The main squares Korai, Kanaris, Alexandra, the two garderns of Tinanios and Terpsithea and the only grove by the church of Prophet Elias are all located in the central part of Piraeus. Despite the strong density and the lack of public spaces, during the 20th century, only one big public space was implemented next to the stadium of Peace and Friendship. From these few public spaces only a small percentage have vegetation. In Piraeus municipality the green ratio per inhabitant is at just 1.56 m^2 / inhabitant, much lower than the 2.55 m^2 / inhabitant in the Attica Basin and far lower than the 8.00m^2 / inhabitant[10], which is the national urban standard. The overall lack of greenery and public spaces is striking.

A potential solution to this problem, taking in account the strong density of the city, would be the re-use of the existing brownfields in areas such as Drapetsona, Neo Faliro, Palataki and the inactive train route. By exploiting these places based on a strategy where vegetation is a priority, the ration of green- would increase to a rate comparable to these of big western European cities.[11]



Ratio of vegetation in m2 / inhabitant[12]

10. N. Belavilas, "Stichia gia ta poleodomika dedomena tou kentrikou Pirea", Athens 2011

11. N. Belavilas,"City's movements in Athens and Piraeus, Greece, A chronicle 1960 - 2009", Athens 2010

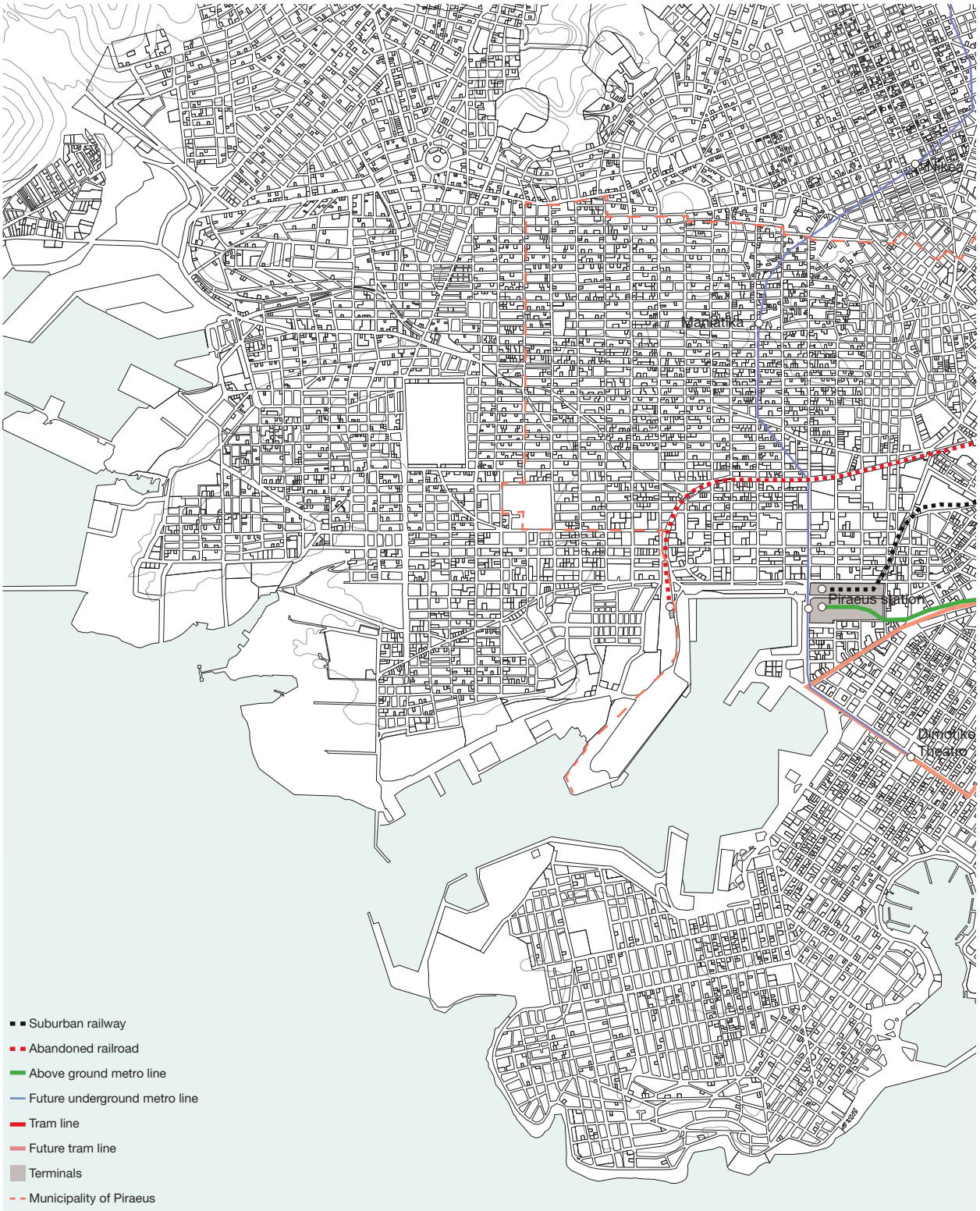
12. A. Komninos, "hellinikon and the question of the large urban void", USA, 2013

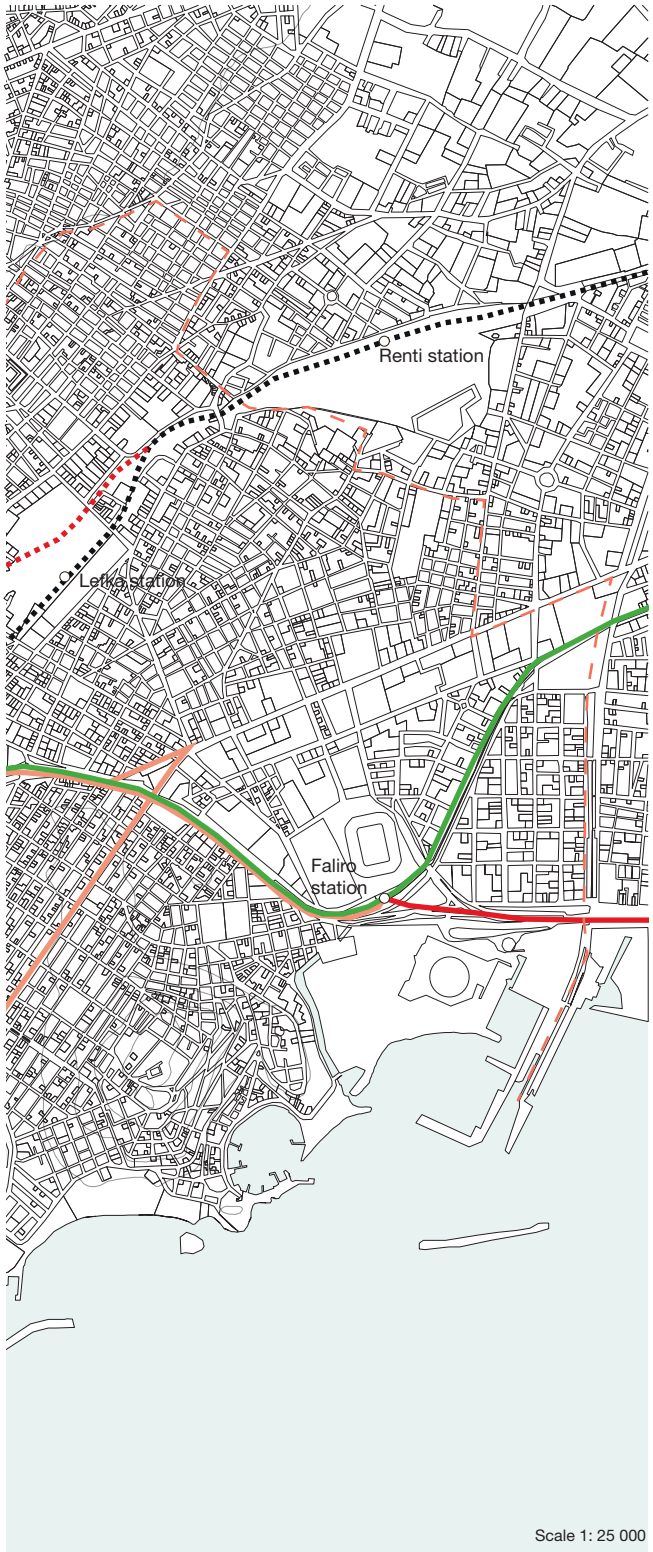
Terpsithea square

Terpsithea square

Themistocles statue at Themistocles square

By the Exhibition Centre of OLP


Piraeus station
Dimotiko
Theatro
Suburban railway
Abandoned railroad
Above ground metro line
Future underground metro line
Tram line
Future tram line
Terminals
Municipality of Piraeus



TRANSPORTATION

The city of Athens has an overall serious problem of traffic and Piraeus isn't an exception. According to the last measurment of 2006, during the peak hours, 41 000 vehicles move with an average speed of 8 to 12 km/h in the centre of Piraeus[13], producing a massive traffic congestion. This huge flow of vehicles across the city provokes also a problem of parking space. Cars are parked wherever they find space, often on the pavement or on pedestrian streets. The zone designated for leisure attracts a serious amount of inhabitants from all over Athens as well as tourists, resulting again traffic congestion. A potential solution to this problem would be firstly, to turn some streets into pedestrian streets and secondly, concentrate some big parking lots at the periphery of the municipality and then encourage citizens to use public transport.

Currently, the main public transports of Athens are the bus, the metro and the suburban railway. There is also a tram line connecting the city centre of Athens with the coastline. The metro line was inaugurated early this century and already expansions of the current lines are under construction. Overall, Piraeus has a strong connectivity to the public transport network. It is connected by any possible public transport such as the suburban railway, the above ground metro, the bus system and soon with the underground metro and tram. In addition with the ferries, Piraeus is considered to be a real intermodal transport node, serving local, national and international destinations.

13. EMP – OASA, "Piraeus' tram extension",Athens, 2007

The above ground metro station of Piraeus

Dimotiko theatro station under construction in Piraeus

The abandoned train station and its railroads

However some connections are considered to be problematic. These connections by suburban railway and the above ground metro are thought and designed to serve the passenger port and the areas around it and ignore completely the residential areas of Drapetsona, Maniatika, Piraeus peninsula, Kastela, Neo Faliro etc. Nowadays, the tram line stops in Neo Faliro station at the entrance of Piraeus municipality. The extension until the centre of the city is underway and will finally connect the whole Saronic coastline from Voula to Piraeus.

As we saw previously, the above ground metro, serving about 400 000 passengers daily, follows the old long walls and parallel to Pireos street, arrives to Neo Faliro station, then makes a loop and finally joins the passenger port. On the other hand we observe a problem with the arrival of Pireos street to Piraeus, where the main road splits into several secondary ones that lead to the harbour. A total mayhem is taking place at this intersection. There are thoughts on relocating the last part of the metro's railway underground in order to obtain a continuous Pireos street that reaches the harbour. The terminal station of the above ground metro is located at a central position in the port right next to the terminal station of the suburban railway.

The suburban railway supports connection between the national airport in Markopoulo, Larisis station, Piraeus and Kiato. Nowadays, the suburban railway network hasn't had a success so far, having a low passenger

The railroads splitting in two the city of Piraeus in 1930

The abandoned railroads in 2014

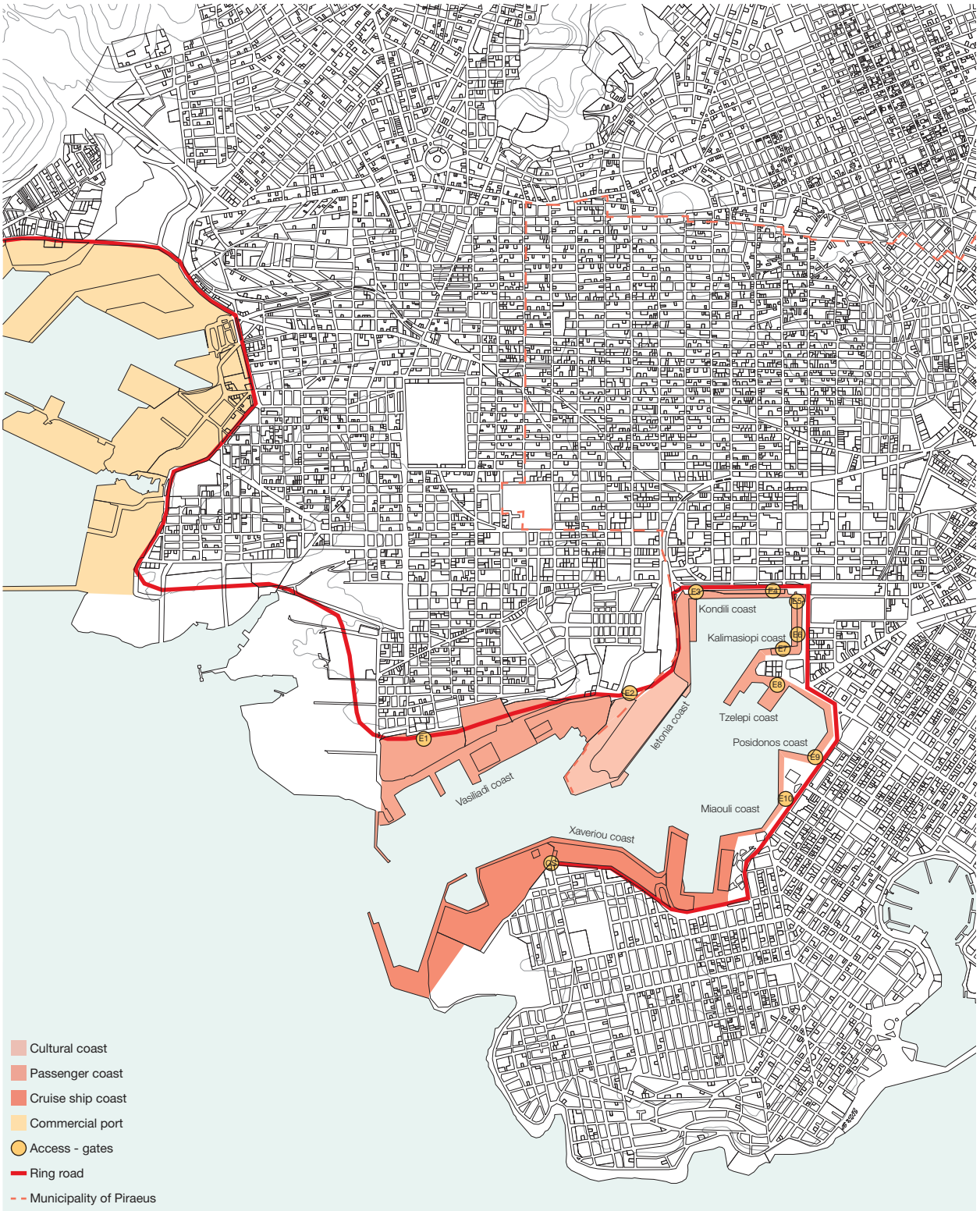
frequency and a small capacity. However, the extension that was made and connected stations such as Roof, Agios Ioannis Rendi and Piraeus was a fundamental change for the everyday life of these residential areas. Previously these neighbourhoods were isolated and had a difficult access to public transport. A part of the old railway is today abandoned and still bisects the northern par of the city. A future extension is planned to include the port of Lavrio to the suburban railway network.

Today, the existing metro network serves 34 stations around the Attica basin and yet, it doesn't serve areas on the west suburbs of Athens, where public transport is considerably poor. As it can be seen on the map, a project for a further extension of the blue line is under construction, extending the line for about 7,6 km from Egaleo to Piraeus. It will serve the following stations: Agia Marina, Agia Barbara, Koridalos, Nikaia, Maniatika, Piraeus and Dimotiko Theatro.

From a spatial planning point of view, we observe that there is a clear inequality between the east and the west side of the city. Since the 19th century when the first railroad was constructed, segregation problems between the east and the west side started to occur. Today, this problem is still present and a solution for a spatial cohesion has to be thought in order to turn the "barrier" of the abandoned railroad into a unifying element.

According to Soltaniehha, Peric and Scholl, Athens should apply the polycentricity model not only in a regional but also in a local scale.[14] Each centre must be well connected not only to other centres but also to the different parts composing the core. Piraeus has a good connectivity to other centres but not to its inner. Future projects that are underway seem to solve this issue. The improvement of the inner connectivity will lead to an intended decentralization that would possibly solve congestion and segregation problems.

14. Soltaniehha, Peric, Scholl, "The Port of Piraeus: Industrial Zone or Urban Continuity", Switzerland, 2014


Kondili coast
Kalimasiopi coast
Tzelepi coast
Posidonos coast
Miaouli coast
Xaveriou coast
Vasiliadi coast
Ietonia coast
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
C5
Cultural coast
Passenger coast
Cruise ship coast
Commercial port
Access - gates
Ring road
Municipality of Piraeus

PASSENGER PORT

Since the 1880s and the industrial revolution, the port of Piraeus has acquired the important status which maintains until today. Its geographical location, the opening of the Canal of Corinthos and the urban importance of Athens were factors that contributed to its growth. The port during its history has had various expansions and upgrades and was destroyed and reconstruct several times. A huge and continuous process of reconstruction, making it the single and most important port project implemented in Greece. By the end of the last century, the commercial port including heavy, shipbuilding and maritime functions moved to Ikonio. Thus, the passenger port was left with vacated terminals and industrial buildings that were once used by the customs, the warehouses, transport infrastructures and so on. The warehouses, the silo, the conveyor belts and the loading cranes have been abandoned. The walls that were surrounding the old commercial harbour area were demolished.

Today, the passenger port is composed by three zones. On the western coast the old industrial buildings and infrastructure are planned to be converted into cultural functions and turn the old commercial terminals into a cultural coast. The central part of the harbour is used for passenger ships having national destinations. Since 2000 the eastern coast was upgraded in order to serve cruise ships. Currently, the passenger port is serving approximately 20 million of passengers per year and possessing the first place of the busiest ports in Europe.

Future cultural coast

Passenger coast

Cruise ship coast

In 2011, the port authorities of Piraeus (OLP) announced a master plan for an urban regeneration on the western coast (Ietionia coast and Vasiliadi coast) to turn the existing abandoned industrial buildings into an area designated to culture and leisure. Their goals are the revitalisation of the zone based on culture, the re-use of the existing industrial building stock, the unification of the western part of the port with the urban fabric and finally the transformation of the coast into a cultural pole. The project includes a variety of cultural program.

Tourism in Greece has increased remarkably the last few years becoming the biggest industry of the country. The size of the passenger vessels has increased gradually and Piraeus port administration (OLP) is planning to do an upgrade on the passenger terminals, situated in the central part of the harbour in order to respond to the huge demand by daily passengers and tourists.

Between 1998-2001, new terminals for cruise ships were constructed in the eastern part of the harbour in order to have the required infrastructures for the Olympic games of 2004. In addition, on the eastern side the reconversion of the old custom house into a large hotel is planned. However, today the port's infrastructures are considered to be insufficient. Few years ago cruise ships were not authorised to come to Piraeus if they didn't have the port of Piraeus as their starting or ending destination. This was due to the fact that cruise ship passengers weren't



Ticket points around the port

contributing on the local economy (flight tickets to Greece, no consumption on site, etc.). After the lift of the cabotage a couple years ago, and the strong interest of cruise ships to include Piraeus to their schedule, a big need of upgrading the current infrastructures occurred. The port authorities have already a plan to expand the capacity of their cruise ship terminals in order to be able to welcome a bigger number of vessels. In addition, the existing infrastructure in the passenger coast is outdated. Old and temporary structures of different agencies are used as ticket points all around the harbour. Inside the port we find a this friction of scale, looking at the small kiosks that sell tickets across the imposing ships ready to moor. A partial concentration of these ticket points and lounges in strategic points of the port has to be thought in order to be more efficient, effective and offer the necessary comfort to the passengers.

Fences around the port

Fences around the port isolating it from the city

Piraeus port ring road and aerial bridge

Entrance to the port

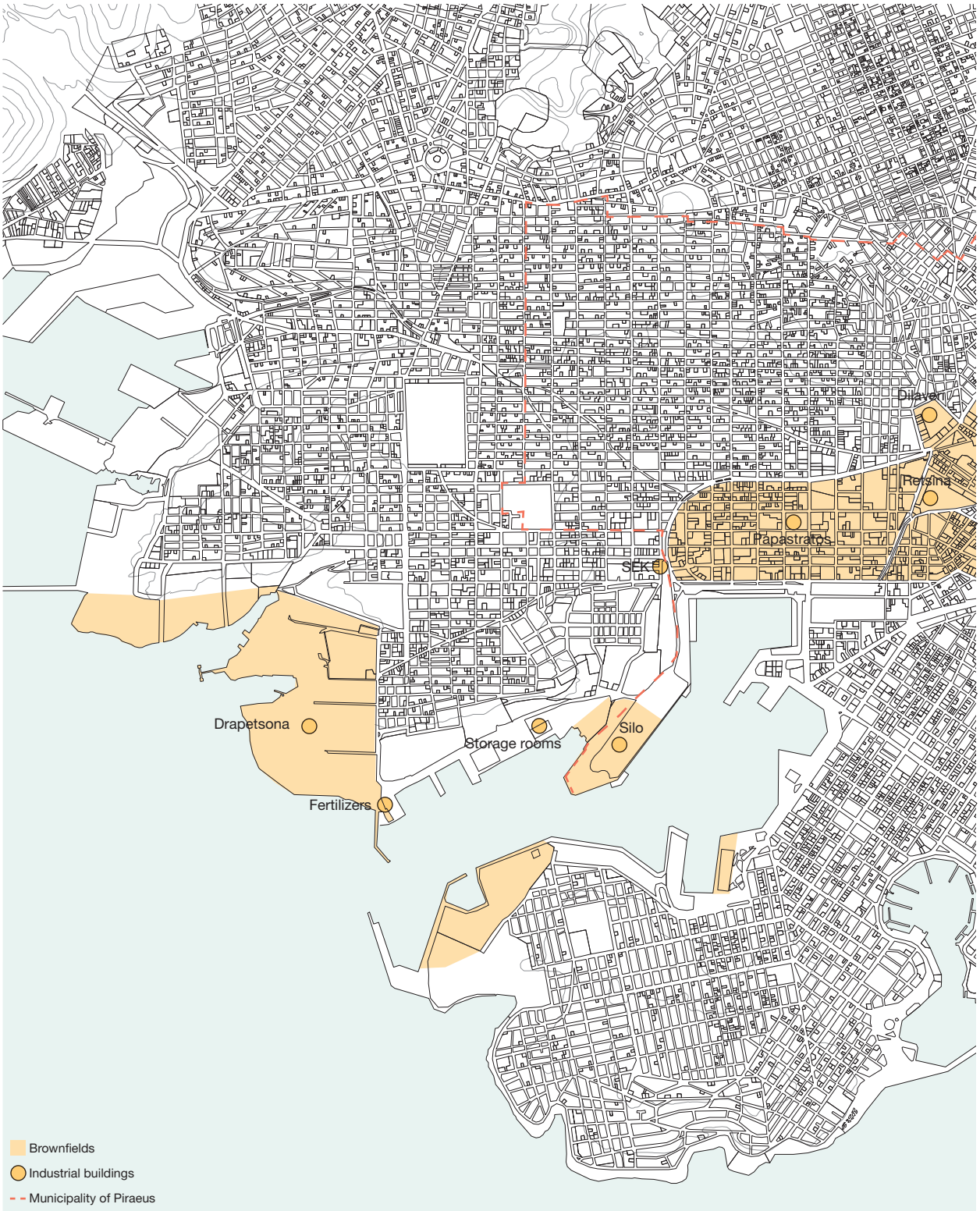
Cityfront, the difference of level is visible

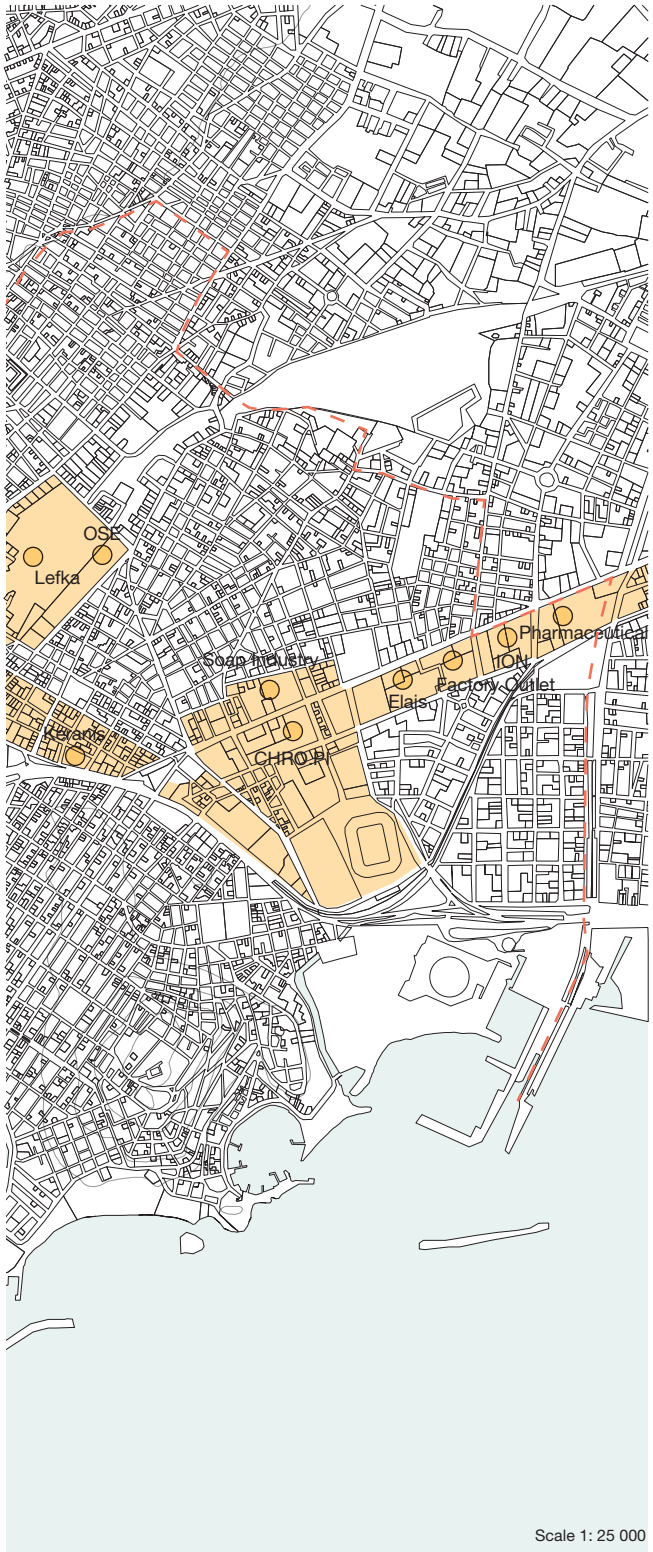
City and port

Arriving to the port of Piraeus we observe a constant collision of different scales, a collision between the city's scale and the scale of the harbour's infrastructures. The urban fabric extents until the limits of the port, surrounding it and producing a really narrow, asphyxiated and awkward space. This harsh confrontation between the city's buildings and the maritime infrastructure and its "floating buildings" is mainly due to the remarkable absence of generous buffer zones. Nowadays only a street separates the dense city, ready to extend until the sea, from the harbour. This results a tremendous problem of traffic congestion. Every day this street is flooded with cars, taxis and people who are ready to embark and sail towards the Greek islands and the Mediterranean sea. A constant movement and a relative chaos dominate the site. The change of status from a commercial to a passenger port hasn't been followed by any questioning of the harbour's new function and form or any ameliorations of the city's infrastructures connecting these two entities. A solution of managing the different mobility flows of different scales has to be thought to improve the relation between the urban fabric and the port.

Although the presence of this proximity and cohabitation, the segregation of these two elements is undeniable. A variety of elements separate the port from the city. A peripheral road with heavy traffic around the port cuts it off from the city , making the access for passengers really complex. An aerial bridge is built in order to connect the railway station and the above ground metro with the maritime area. In addition, on the eastern part of the harbour we notice a height difference of several meters between the two elements. Finally, a peripheral continuous barrier is indicating the port's limits for security reasons, having in total 11 gates for passengers and vehicles. This several barriers are transforming the port into a cluster.

In my opinion, a re-organisation of this relationship has to be thought in order to highlighting the identity of this historic harbour, which is being lost in Piraeus since the relocation. The passenger port has to be partially included to urban activities and redevelop the old waterfront hosting today the abandoned industrial buildings. According to professor Nikos Belavilas, the port of Piraeus had a tremendous opportunity in 2004 when the Olympic games took place, to revitalise the dead areas that were left after the relocation of the commercial port. Having as example the redevelopment of Barcelona's waterfront for the big event of 1992, the port city of Piraeus was hopping for an overall revitalisation of its city. The big infrastructures were finally implemented further on the Athenian coastline. (Falirikos Ormos, Agios Kosmas)


Olayen
Retsina
Papastratos
SEK
Drapetsona
Storage rooms
Silo
Fertilizers
Brownfields
Industrial buildings
Municipality of Piraeus



ABANDONED INDUSTRIAL ZONES

With the relocation of the commercial port to Ikonio by the end of the 20th century an important industrial inactive building stock was left behind. The industrial zone is considered to be compact and continuous separating the city centre of Piraeus and its western residential areas. In addition, it appears to be an impassable obstacle for the western neighbourhoods to reach the waterfront. This industrial area is developed in the maritime areas of Ietionia and Vasiliadi coast and Drapetsona, in Agios Dionisis and the abandoned railway, in the area of Kaminia and continues along Pireos street as it can be seen on the map. It is composed by brownfields and empty industrial buildings. Their typologies resulted by their old utilities vary from maritime activities, industrial functions, storage spaces and transportation infrastructures.

Today, these industrial buildings are considered to be an important industrial heritage and shaped Piraeus's identity and morphology across the years. In 2003, in Nizhny Tagil in Russia the "charter of Nizhny Tagil" was written in order to manage the industrial heritage. The charter of Nizhny Tagil is reffering to the value of this industrial heritage and implies the need of recording and study industrial residues to attain their maintenance and conservation. It introduces also definitions and notions such as industrial heritage, and industrial archeology and focuses on a particular period of time, the industrial revolution.

The brownfield of Drapetsona is located on the waterfront between the passenger and the commercial port of Piraeus and has an overall surface of about 245 000m2. In the beginning of the 20th century several industries were installed in this location such as the factory of fertilizers, the cement factory, a variety of oil facilities, the plaster factory and several other industries. People living in the social neighbourhoods of Drapetsona were working daily on this industrial complex for almost a century. Today, the biggest part of this complex is demolished and only a few buildings that were considered to be important for the industrial heritage were kept. These are the old factory of glass, the old electric station, some slaughterhouses and an old institute of research.

A bit further, on the Ieitonia coast are located the two granaries built, in 1936. The cereals until then were stored outdoor and then were moved to steam-mills. This high rise buildings changed drastically the skyline of the port and improved the capacity of the storage by 20 000 tons. The main building is 49,97m long, 29,50 of width and 56,20m of height. It is characterised by the huge void in its inner and the 78 storage cells.[15] Nowadays, the Silos is considered to be an example of industrial heritage. By the two Silos, two basins constructed by the early of the 20th century were used to repair damaged vessels. Today, these basins are still in use.

15. N.Belavilas, "I peripetia tis kataskeuis enos sinchronou mesogiakou limaniou, i anaptiksi ton limenikon ipodomon tou Pirea eos to 1949", Athens, 2001

The old glass factory with the characteristic chimney

Old infrastructure belonging to the fertilizers' factory

Old warehouse

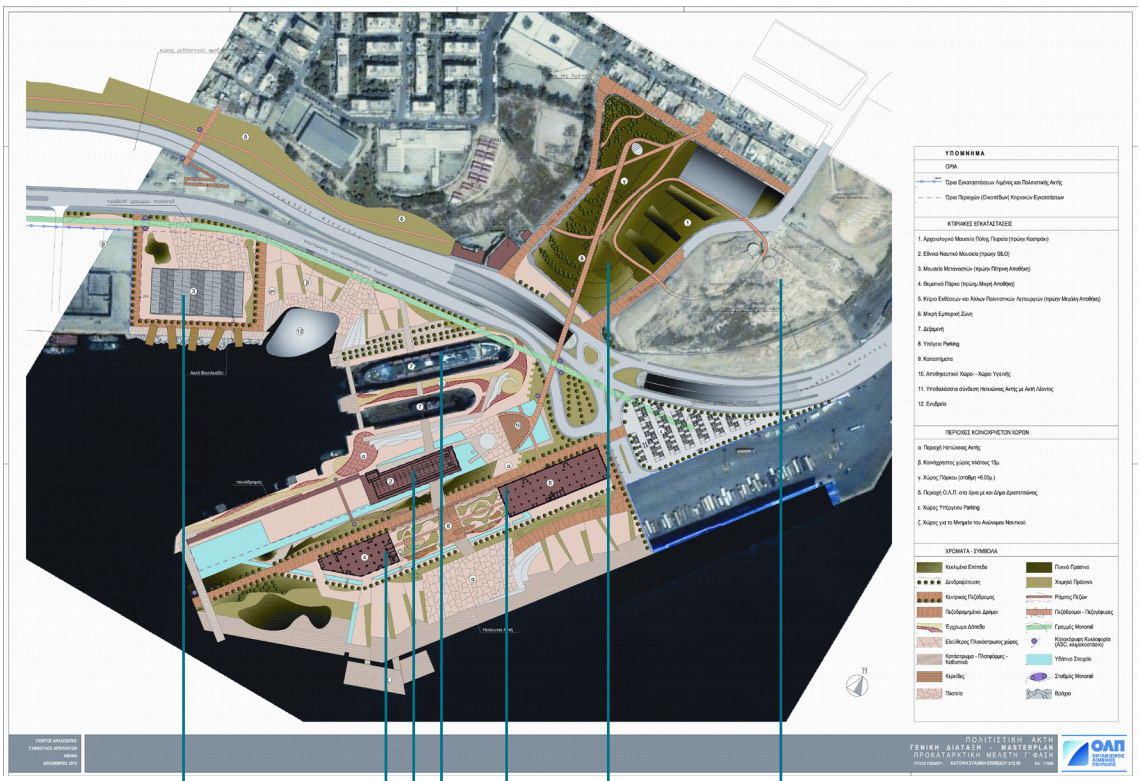
Outside the harbour area close to the archeological site of the Ieitionia gate (Long walls) the old railway station is situated. It used to transport freights and passenger from Piraeus towards the capital and Larissis station. This route is today done by the suburban railway. A project suggested the reconversion of the railroad into a pedestrian and bicycle street has been proposed. In the region of Neo Faliro, Kaminia and along Pireos street we encounter a numerous of old and inactive industrial buildings. The most important ones are the tobacco factory Keranis, the colour factory CHRO.PI, the alcohol factory IVI and the olive oil factory Elais. In the brownfield next to CHRO.PI old factory, a football stadium was built in 2004. All these industrial buildings are being inactive and several suggestions have been made in order to renovate them and introduce cultural programs. All these suggestions are in continuation of the cultural regeneration program of industrial buildings situated at the other extremity of Pireos street close to Athens (Gazi, Keramikos).

Old warehouse of cereals and the two basins still in use

The old and abandoned railway station

The old tobacco factory, Keranis

The olive oil production factory, Elais



Master plan of the "Cultural coast"

Archeological museum and park

history museum of immigration
(old stone warehouse)

Exhibition and cultural activities
(Old big warehouse)

Exhibition space
(Old basins)

Archeological site of
Ieitionia Gate

Thematic park
(old small warehouse)

National maritime museum
(Silo)

In 2011, the port authorities of Piraeus (OLP) announced a master plan called "Cultural coast" that proposes the reconversion of the industrial building stock into four new museums and other cultural places. This urban regeneration of the area will bring urban activities inside the harbour area until they reach the waterfront in the Ietonia and Vasiliadi coast. The old Silos will be transformed into the new national maritime and Underwater Antiquities museum. The old warehouse will be converted into a history museum of immigration, a museum that will mean a lot to the local population and its roots. The museum of railways and railway industrial history will be located in the abandoned railway station. Finally, the existing basins will be hosting events such as concerts, exhibition and theatrical performances. Their main goal is the revitalisation of the zone based on culture by re-using the existing industrial building stock in order to highlight the historic identity of Piraeus.[16]

According to the Nizhny Tagil Charter For The Industrial Heritage (2003) the ***Industrial heritage*** *consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.*

In addition the ***Industrial archaeology*** *is an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes, created for or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present.*

Today, this compact industrial zone is creating industrial voids in the urban fabric and separates the city of Piraeus in two parts. Piraeus has a valuable industrial heritage and landscape that firstly has to be studied and analysed in order to understand its historic and spatial importance. Any future reorganisation of the waterfront and the existing infrastructures need to highlight and promote the existing industrial building stock.

16. http://www.piraeusculturalcoast.org.gr/index.php?lang=el

PORT ADMINISTRATION

"Piraeus Port Authority S.A" (from now on "PPA S.A." or "Company") was established in 1930 as Civil Law Legal Corporation (C.L.L.C.) by Law 4748/1930, which was revised by L.1559/1950 and was ratified by L.1630/1951 and converted into a Societé Anonyme (S.A.) by Law 2688/1999. The port administration of Piraeus (OLP) is state owned organisation (75% is owned by the state), manages both the passenger and commercial port and its main activities are:

1) The Company's main activities are ships' anchoring services, handling cargo, loading and unloading services as well as goods storage and car transportation.

2) The Company is also responsible for the maintenance of port facilities, the supply of port services (water, electric current, telephone connection etc supply), for services provided to travellers and for renting space to third parties.[17]

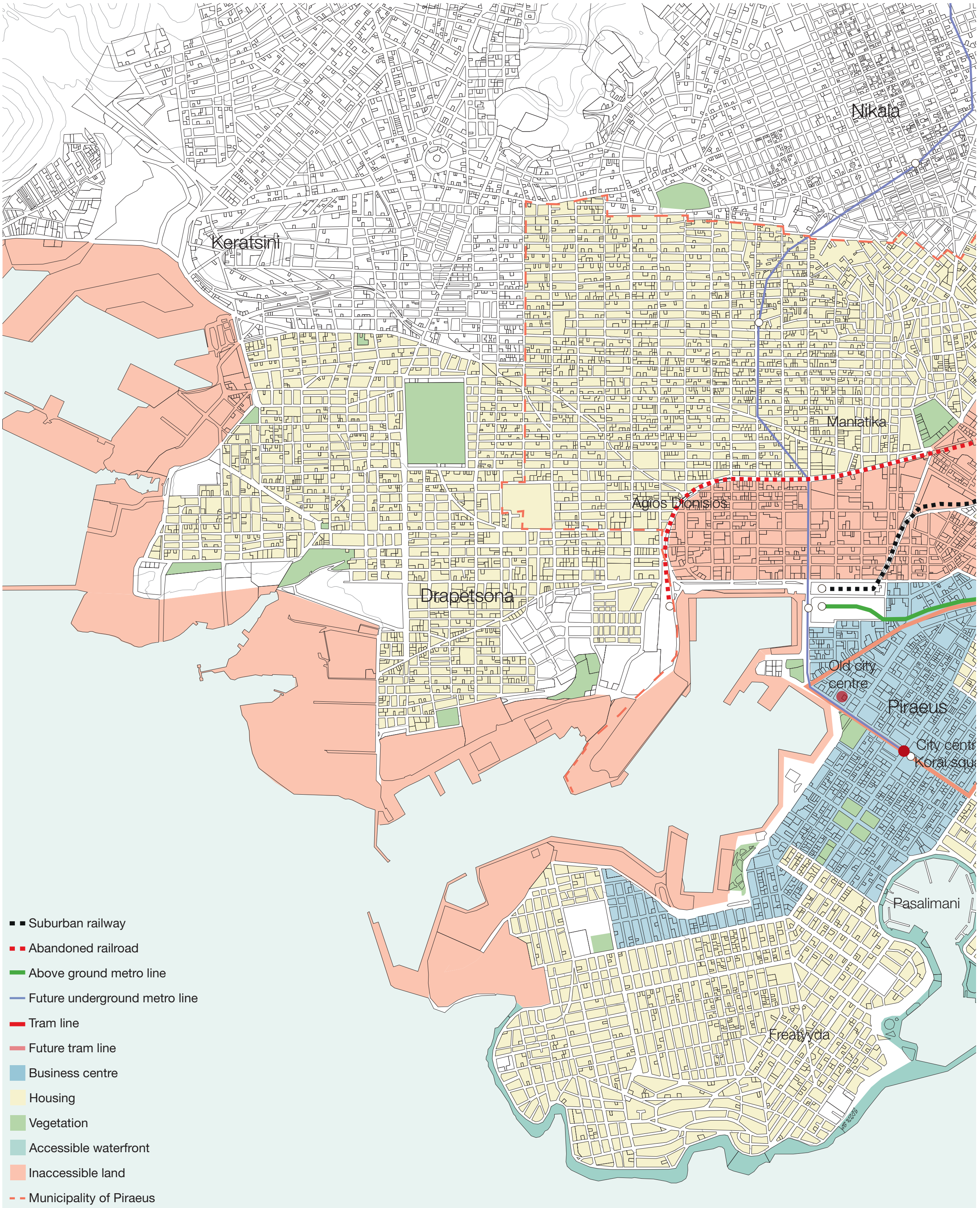
By comparing OLP with the Port Authority of Rotterdam we observe mainly similarities but also some differentiations. Both of them operate in two domains, the area of management of the port area as well as the traffic management, to ensure secure handling of shipping. The main difference is that the Port Authority of Rotterdam is a public limited company with two shareholders: the Municipality of Rotterdam and the Dutch State. On the contrary Piraeus port Authority is a state owned organisation. This has strong impacts on the port city of Piraeus.

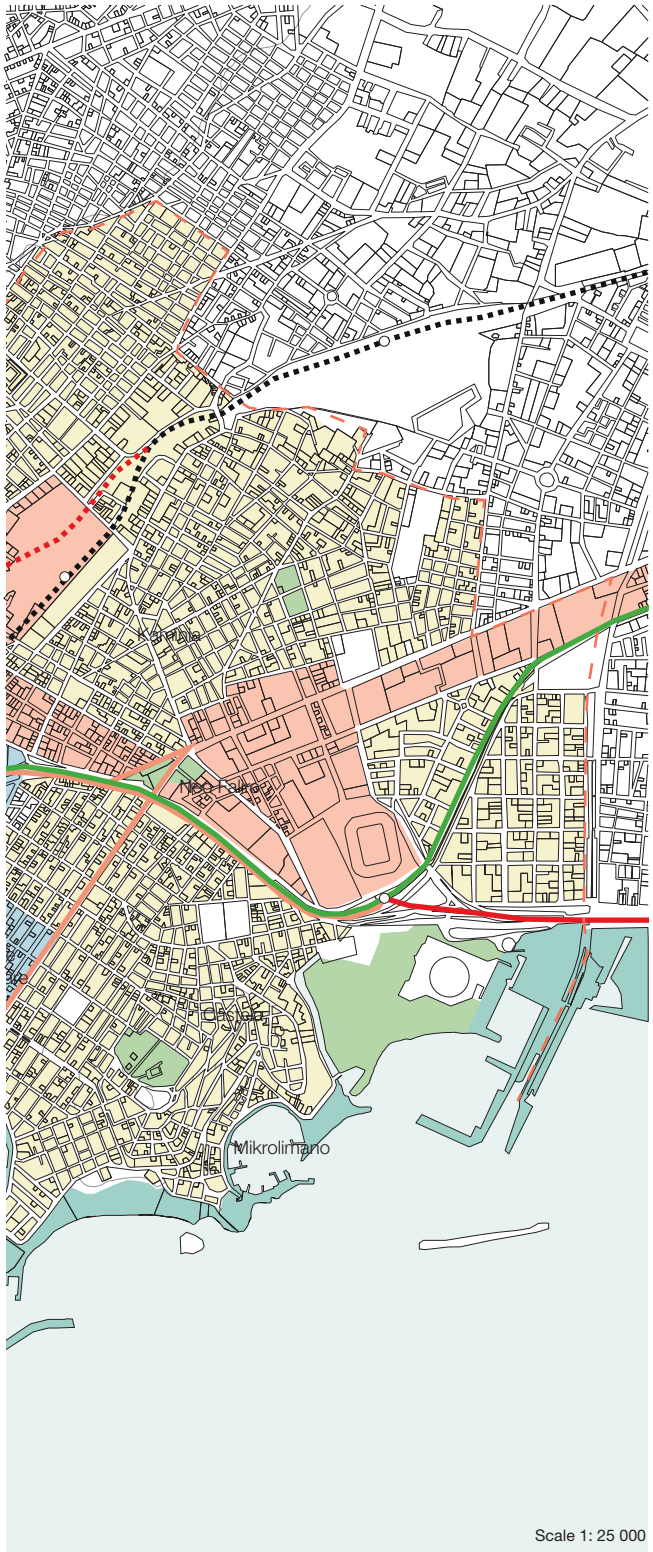
The port authority of Piraeus has in its possession numerous buildings around the port. Some of them, such as the old exhibition centre, have an important cultural and urban value for the city of Piraeus. Any decision taken by the port administration for transformation, demolition or renovation of the specific buildings will have an impact on the city due to the proximity of the urban fabric and the maritime area. The fact that regional and municipal bodies do not have any representative members in the management board of OLP, results decisions affecting both parts, that are only taken by the first side. Thus we often face a conflict of interests.

In addition, the municipality of Piraeus has zero income from the port. Port's income goes straight to the country. The difference of scale is visible also in the political and economical level. The harbour belonging in a national scale is "ignoring" the city of Piraeus framed in a local scale. However, the city of Piraeus and other municipalities such as Drapetsona and Keratsini are clearly affected by any maritime activity. Right now in an administrative and economical level the city of Priaeus is left without its port, resulting huge financial problems to the municipality. The activities by Cosco and all the benefits that they are bringing do not affect at all the local economy, besides the creation of a few new job opportunities. The port administration and the municipality should collaborate in order to have an homogenous vision for the future of Piraeus.

17. OLP, "annual financial report 2011", 2011

Aerial view of Piraeus. The linear industrial zone is bisecting the city of Piraeus until it reaches the area of Eleonas


Nikaia
Keratsini
Maniatika
Agios Dionisios
Drapetsona
Old city
centre
Piraeus
City centr
Korai squa
Pasalimani
Freatyyda
Suburban railway
Abandoned railroad
Above ground metro line
Future underground metro line
Tram line
Future tram line
Business centre
Housing
Vegetation
Accessible waterfront
Inaccessible land
Municipality of Piraeus



INACCESSIBLE LAND

The analysis based on five different themes and the production of five maps respectively, showed the presence of a strong segregation between the maritime area and the urban fabric. This segregation doesn't only appear in a spatial but also in a political and economical level.

By overlapping the inaccessible land to the public (ports, brownfields, abandoned industrial buildings) of the wider Piraeus we observe a strong segregation not only between the port and the city but also between the northern part and the southern part of the city. The residential areas of Drapetsona and Keratsini have no outlet to the sea due to the presence of the two harbours and the brownfield of Drapetsona. In addition, their access to the eastern side of Piraeus seems to be problematic due to the presence of the inaccessible "industrial voids" and the abandoned railroad. This results a western part completely isolated from everything with no public transport besides the bus and a slight amount of public spaces and vegetation. Despite the proximity, the connection by car between the two sides is problematic resulting a daily traffic congestion.

The port city of Piraeus is composed by a variety of elements of different periods, scales and functions, all characterised by a strong proximity and a very bad connectivity resulting isolated and segregated entities. A single link has to be thought in order to homogenize the different parts and create the cityport of Piraeus as a whole.

Piraeus port ring road

PIRAEUS

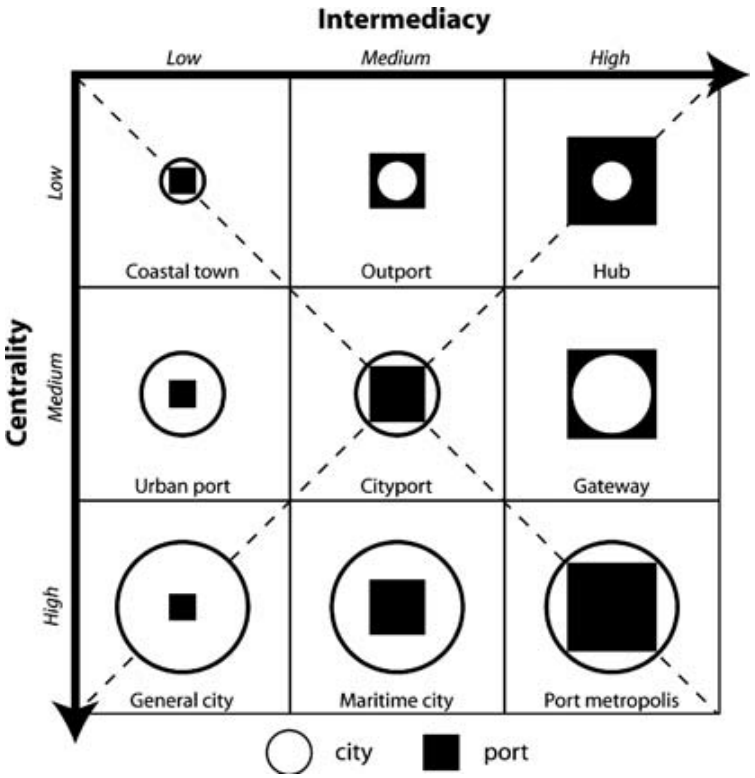
A "city-port"

PORT-CITY INTER-RELATIONS

Worldwide, by the late of the 20th century port cities are in a phase of transition. On one side, the port activities having a constant need of improvement of production and accessibility and at the other side the city facing an urban growth and development. The port facilities are not anymore related to local benefits and start to be part of a global maritime network. Thus, a conflict of spatial interests resulted the relocation of the commercial port leaving behind an industrial building stock and heavy industrial machinery. In contrary of other port cities around the world, Piraeus characterised by its strategic geographical situation, hasn't had a waterfront redevelopment yet. Nowadays, a clear and undeniable spatial, economic and administrative segregation between the commercial port and the port city of Piraeus is present. The commercial port is a transit hub, the biggest in east Mediterranean sea and has the potential to become one of the most important in Europe. It is considered to be an international gateway for international freights towards the European mainland. On the other side, the passenger port is the busiest port of Europe in terms of passenger traffic. The proximity of only 5km and the ring road connection of these two maritime areas, are the appropriate conditions to make Piraeus as a whole, an **intermodal transport node** for passengers and freights in order to be able to sustain and manage this massive amount of mobility.

In a regional scale, the city of Piraeus was gradually assimilated to Athens being part of the Athenian **conurbation**. By the early of the 20th century the two centres were characterised by a bipolarity. Today, Piraeus is considered to be a complementary centre of Athens and has economical, spatial and functional relations with the capital. Spatially, the two centres are connected by a dividing but simultaneously unifying industrial zone. Pireos street, the historic road transferring goods and passengers from the port to the capital and vice versa has seen its role weaken due to the high speed avenue of Syggrou and the new railway connecting the commercial port with the Greek mainland. The relation between Piraeus and Athens is considered to be quite unique due to the historic evolution of the port and the city of Piraeus. Thus, the approach that has to be adopted is radically different than the relation with other centres of the Athenian **polycentricity**.

Looking at the matrix of port-city relationships made by César Ducruet we notice the difficulty of introducing Piraeus in this diagram. On one side, the presence of two urban cores (Piraeus and Athens) and on the other side the spatial separation of the commercial and passenger port, result a really complex phenomenon. Locally, Piraeus is considered to be out of scale compared to its passenger port which is perceived as a national infrastructure. Regionally, the wider Athens seems to have a stronger relation and interdependence with its passenger port, being both in the same scale.



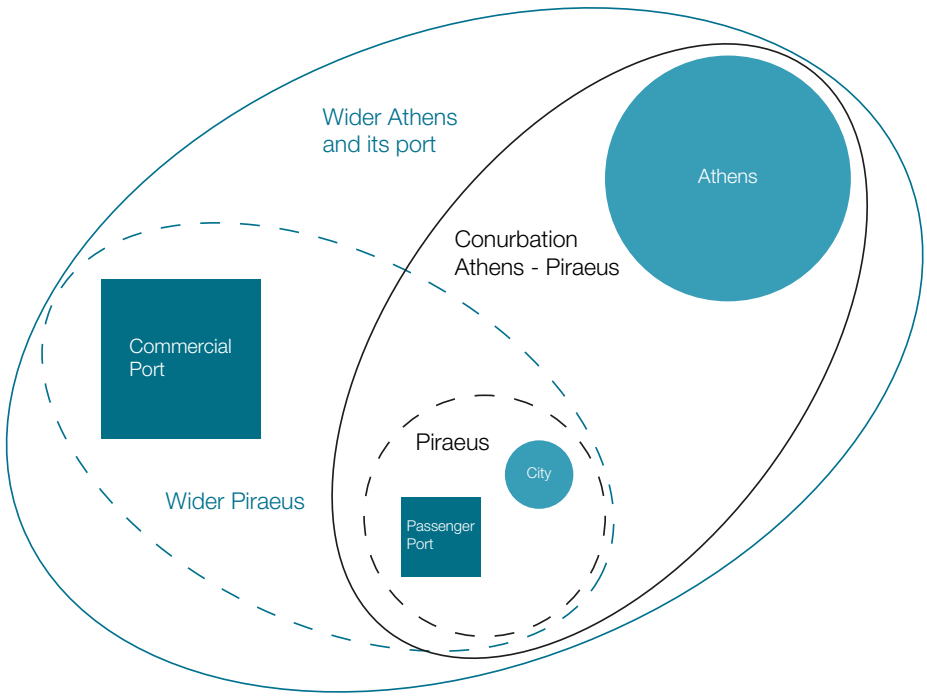
A matrix of port-city relationships, by César Ducruet

SEGREGATION

Zooming in the port city, we observe a cohabitation of different fragments constituting the wider Piraeus. Since its re-birth in 1834, three main elements have shaped Piraeus; the city, the passenger port and the old linear industrial zone. Across its whole history, the city of Piraeus and its port have been developed together as a single entity. This symbiosis between the urban and maritime activities started to shake during and specially after the de-industrialisation process. Several spatial and social changes were the reasons for this disunion. The relocation of the historic and commercial city centre, situated next to the port, towards Piraeus' peninsula changed the gravity centre of the city, away from the harbour. The resulted separation wasn't only between the port and the city but also in the city itself. The presence of the suburban railways reinforced the link with the capital, however it also bisected the city. The working class housing concentrated in the west part of wider Piraeus was cut off the new city centre and the recreational areas. This social class division was reinforced after the relocation of the commercial port and the de-industrialisation when a compact linear almost inactive industrial zone was left behind.

In addition to the spatial divisions, several divisions, this time economical and administrative, are taking place. The majority of the commercial port is managed by the Chinese firm Cosco and by the Greek port administration. The Greek port administration (OLP) is managing the totally of the passenger port without the representation of Piraeus municipality. Thus, the municipality doesn't get any profits from the maritime activities. This results a conflict of interest between the two sides and more important an ambiguous and often contradicted vision of the future of Piraeus.

Overall, we observe a strong **segregation** in the relations between ports, port - city and the city it self. These segregations are found in several levels (spatial, social, economical, administrative), different scales (local, regional, national, international) and functions (maritime, urban activities). Another element that adds to this presence of variable fragments, is the phenomenon of **stratification.** A variety of constructions dating from different periods of time are composing the port city of Piraeus, often producing spatial congestions. Today, the wider Piraeus is a patchwork of a variety of fragments that coexist but do not merge into a whole. Finally, the presence of different actors on the same site and the lack of collaboration fail to present an homogenous vision for the future of Piraeus.



Graph showing the different segregations and explaining the relations

URBAN CONSTITUTION

In the last century, most of ports were able to mutate from an agricultural to an industrial economy keeping their autonomy in relation with the city. Today, the success of ports doesn't only depend on their infrastructures and facilities. Therefore, there is a need to rethink the role of the port city in this new context. An **interdependence** translated into a mutual commitment of port-city is required in order to have a cityport adapted to todays economic conditions. The current economic conditions require cities that can offer manufacturing sites, bringing together flows, activities, and wealth (interactions) at regional, national, and international level. Port cities have always been places of exchange, open internationally, suitable for activities directly associated with traffic flows. The difficulty of this mutual commitment is due to the determination of appropriate uses that will create the necessary synergies between urban and maritime functions, that will reinforce the exchange of flows and will ensure a successful city-port integration. Nowadays, the real challenge for port cities is to plan their development based on the equilibrium of different activities, interests and group of people that will generate "a port that functions in a city that lives". According to César Ducruet,

"*Successful port cities are not necessarily those who increase their traffics in absolute numbers or create an attractive waterfront, but those who manage to sustain an equilibrium between different temporalities, different functions and different scales".*

How can this interdependence be achieved between several elements being part of different scales? In the case of Piraeus, what actions are needed in order to attain complementary relations and not competitive?

a. The spatial separation between the city and the commercial port has to be kept. The commercial port is being part of a global network and its heavy maritime activities are in direct conflict with the city. However, these two elements have to be complementary by having relations in an economical and administrative level. The maritime activities have to contribute to the local economy.

b. In a regional scale, the conjugate metropolitan centre of Piraeus and Athens has to be promoted. A revitalisation of Pireos street and its existing abandoned industrial buildings stock, will strengthen the link between these two important centres and will give a new identity to the street. This will also enable a future exploitation of the industrial zone of Eleonas.

c1. In a local scale, the spatial, administrative and economical reunification between the passenger port and the city of Piraeus has to be promoted under a single spatial project. A territorial strategy with a homogenous vision has to promote the industrial heritage of the site and give access to the city to the waterfront.
c2. Promote the polycentricity of wider Piraeus. Establish a good connectivity between the segregated residential neighbourhoods in order to reunify spatially the city and reduce the social disparities.

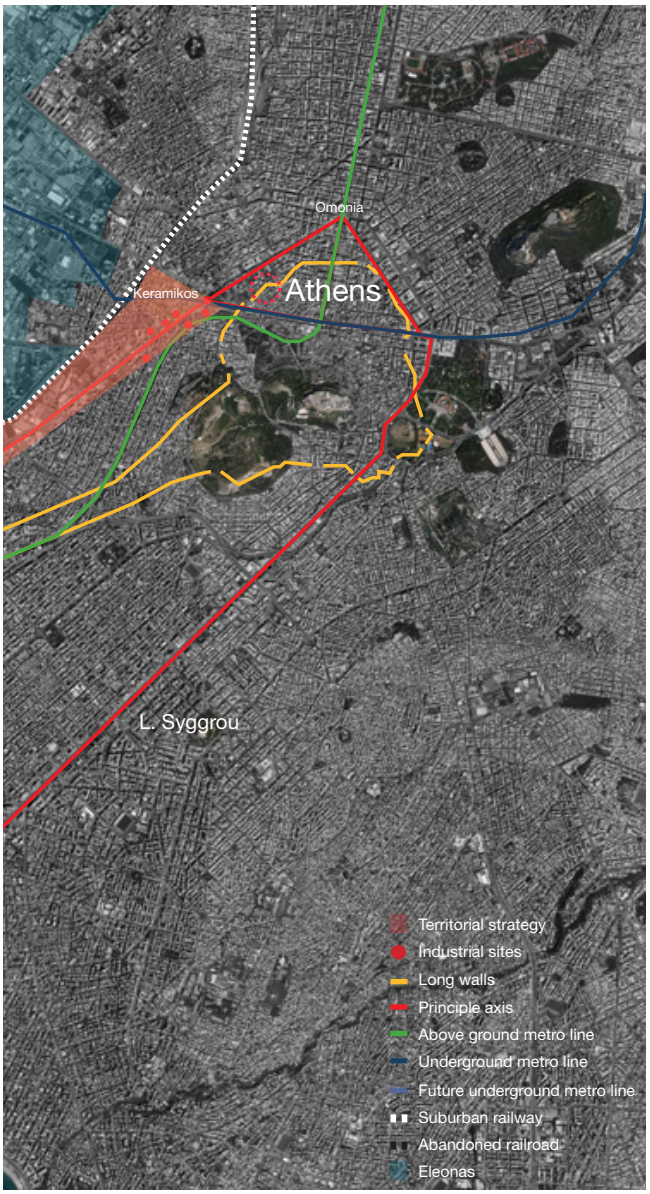
Piraeus suffers from the cohabitation of different fragments, often heterogeneous, that constitute the port city and produce all kind of conflicts. So far, minor and punctual interventions have not solved this confrontation of elements. Therefore, a single and homogenous vision is needed in order to propose a territorial strategy that will unify these segregated elements. In order to respond to points *b* and *c,* a territorial strategy using as a tool the existing compact and linear industrial zone, is proposed. This project is applied in a regional scale due to the inextricably link of Piraeus and Athens. In order to achieve this vision, the gathering of a variety of actors, such as the port administration (OLP) and the municipalities is required in order to collaborate and possibly create an adequate organisation with this particular objective.

The proposed territorial strategy is having as a goal the socio-economic and urban renewal of Piraeus and its hinterland. Starting from Keramikos and the historic triangle of Athens, it continues along Pireos street, arrives to Piraeus and opens up the city towards the sea. The existing industrial building stock is promoted and highlighted. The program proposed along this linear strategy includes public spaces, cultural sites and urban activities such as tertiary sector related to industrial and maritime activities. The development is based on notions of equilibrium, diversity and parity between the activities, the different zones and social classes. Each future punctual intervention has to follow the general directives and guidelines given by this spatial project.

Territorial strategy from above

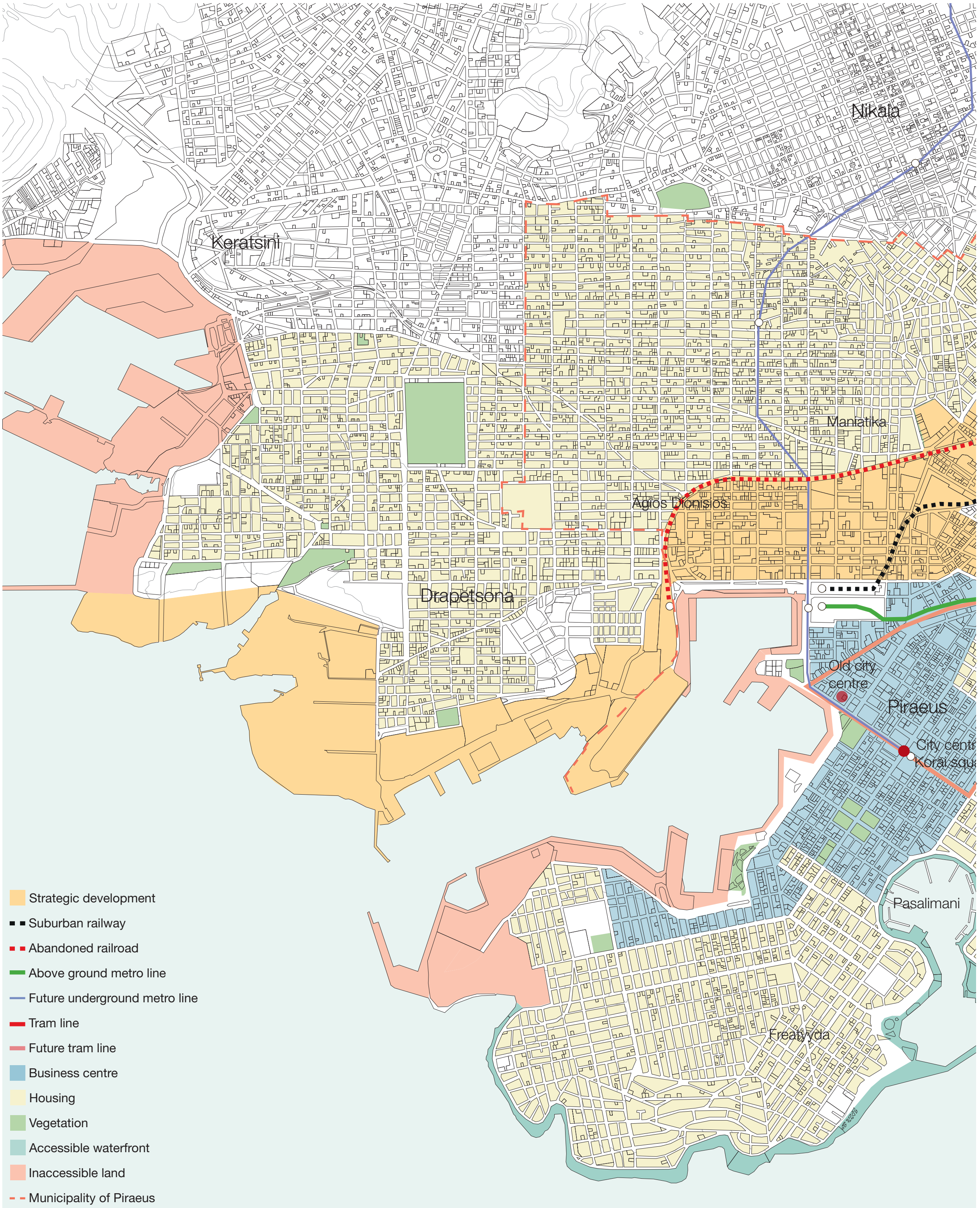
Territorial strategy

TERRITORIAL STRATEGY

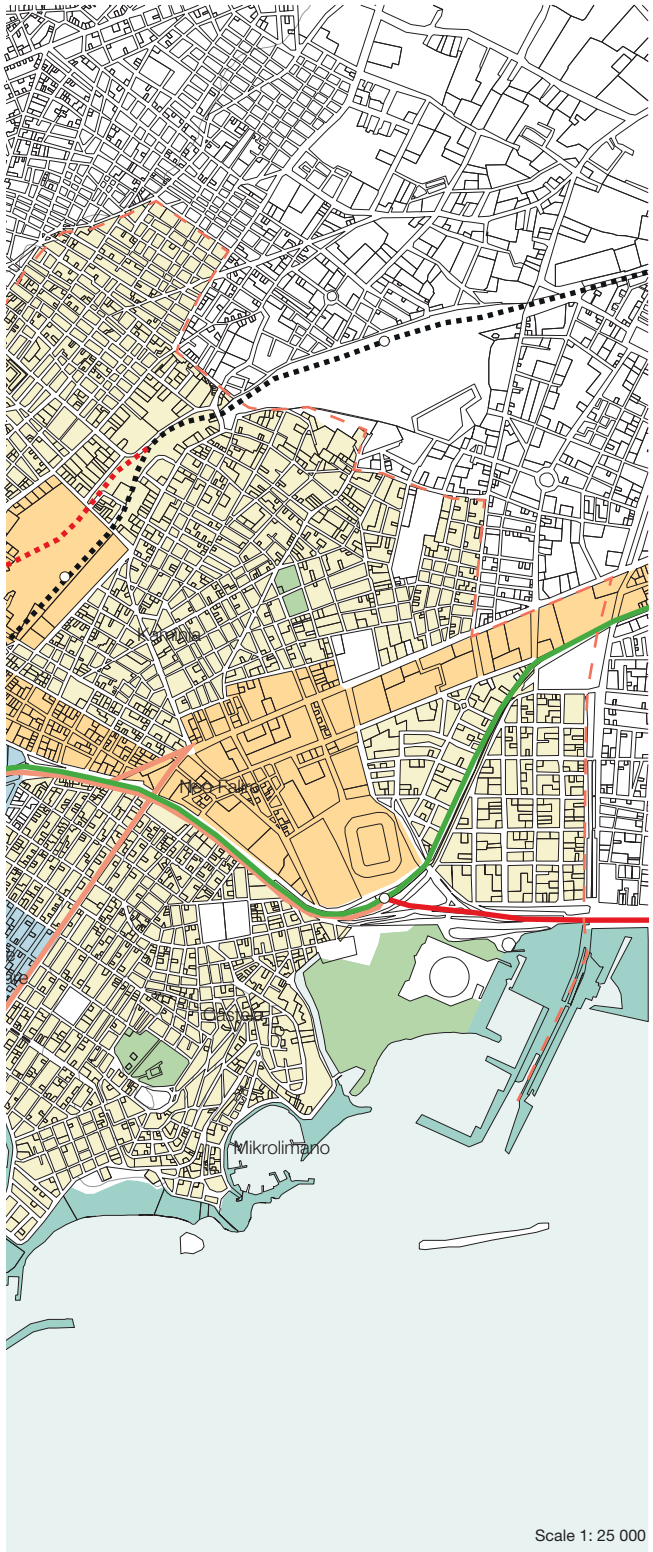


The territorial strategy developed on the existing almost inactive linear industrial zone is proposing the continuation of the transformation of Pireos street into a cultural axis, which is underway. Nowadays, transformations have been made mainly in the extremity close to the city centre of Athens. Along with the cultural program, the old fragments of the Long wall will be excavated and highlighted. The existing industrial building stock will be analysed, evaluated and then promoted. Existing industries will be preserved and priority will be given to new industries and start ups willing to settle. By injecting open public spaces, such as squares, pedestrian streets and parks, the four municipalities along the axis will be re-linked and their spatial connections will be strengthened. The inclusion of the suburban railway in the projected revitalisation area, will reinforce and accelerate the growth and also help the organised development of the urban regeneration.

These changes will give a new identity and role to Pireos street, a role that has been lost due to the Thriassian railway connection with the port and the construction of the high speed avenue of Syggrou. This revitalisation will also help reinforce the link between the city of Athens and Piraeus. Finally, new opportunities for the future development of the industrial zone of Eleonas will appear. This zone will have a key role connecting the dense pattern on the eastern side and the spread and unregulated pattern on the west.



Nikaia
Keratsini
Maniatika
Agios Dionisios
Drapetsona
Old city centre
Piraeus
City centr
Korai squ
Pasalimani
Freatyda
Strategic development
Suburban railway
Abandoned railroad
Above ground metro line
Future underground metro line
Tram line
Future tram line
Business centre
Housing
Vegetation
Accessible waterfront
Inaccessible land
Municipality of Piraeus



SPATIAL DEVELOPMENT

In the local scale of Piraeus, the spatial model is proposing the extension of the city towards the sea until it reaches the waterfront, while the industrial heritage of the port city is promoted. By reaching the waterfront, the gravity centre of Piraeus will be relocated to the middle of the harbour and the port will no long be juxtaposed to the city, but will be surrounded. In addition, this redevelopment of the area aims to bring back the social cohesion and reduce as possible the social disparities. The waterfront revitalisation has to be a careful process because it can exclude a certain social groups, attracting mostly, people with a higher educational, cultural and economic status (phenomenon of gentrification). Therefore, the program injected has to make sufficient use of local skills. New universities and research laboratories which expertise on ports, logistics, cities, planning, engineering, and economic development (business cluster) are proposed. The employment rate associated to the port has dropped dramatically the past years. A re-orientation towards port-related activities should be encouraged. The maritime activities in the commercial port of Piraeus can also be benefited by these new functions and contribute to the local economy and society.

This outlet to the waterfront will finally give access to Drapetsona's inhabitants to the sea. Besides the port-related activities, cultural program related to the history of the city's link with the sea, will be introduce. Spatially, the strategy proposes, through a continuous network of open public spaces, the connection between the western isolated residential areas with Piraeus peninsula.

CONCLUSION

The intention behind this master thesis was to explore and investigate the case of Piraeus, a port city in a phase of transition. Nowadays, the relation between the maritime zone and the urban fabric has to be rethought in order to find new synergies and adapt in the current conditions and needs.

Recently, the commercial activities operated by Cosco put the port city of Piraeus in a global perspective and interest. However, the city seems to be ignored and neglected. The historic city is lacking today a clear identity and strategy of development. The goal of this work was to understand through different scales, factors and temporalities the relations between the elements constituting the complex phenomenon of the port city of Piraeus. Three extensive separated analysis of the same site, but in different scales, tried to isolate and define Piraeus profile. There were then linked together in order to understand the current complex situation and its relations. Finally, an urban constitution was presented and took position for each scale. A territorial model set spatial and program guidelines for the future development of Piraeus.

The work of the following semester will aim to give some solutions to the issues that were pointed out, through an architectural project. This project will follow the guidelines set by the territorial strategy previously presented and will be situated in the municipality of Piraeus.

INDEX

SELECTED BIBLIOGRAPHY

1. Vasias Tsokopoulos, 1984, “Pireas, 1835-1870, Isagogi stin istoria tou ellinikou Manchester”. Kastanioti, GR.
2. Brigitte Bertoncello and Jérôme Dubois, 2010, “Marseille euroméditerranée, accélérateur de métropole”. Editions Parenthèses, FR.
3. Paola Viganò, 2014, “Le projet comme producteur de connaissance, les territoires de l’urbanisme”. MetisPresses, CH.
4. Secchi Bernardo / Viganò Paola, 2011, “La ville poreuse, un projet pour le grand Paris et la métropole de l’après-Kyoto”. MetisPresses, CH.
5. Aggeliki I. Pardali, 2012, “To limani tou Pirea, Diachroniki metaschimatismi ke i anaptiksiaki tou simvoli”. Pireas, GR.
6. Pierre Gras, 2010, “Le temps des ports, déclin et renaissance des villes portuaires (1940-2010)”. Tallandier, FR.
7. G.A. Steinhauer / M.G. Malikouti / V. Tsokopoulos / V. Ganiatsas, 2012, “Piraeus, centre of shipping and culture”. Egiis, GR.
8. Dionisis Haritopoulos, 2012, “Ek Pireos”. Topos, GR.
9. Zisis Kotionis, 2006, “Pes, pou ine i Athina”. Agra, GR.
10. Christina Agriantoni, 2010, “I aparches tis ekviomichanisis stin Ellada ton 19o eona”. Katarti, GR.
11. Lila Leontidou, 2001, “Polis tis siopis”. Etva, GR.
12. Aristides Romanos, 2011, “To Elliniko ke i anaviosi tou kentrou”. Potamos, GR.
13. Nizhny Tagil Charter, 2013, Russia
14. IPEKA / NTUA, 2011,Phase A “Metalassomeni charaktires kai politikes sta kentra polis Athinas kai Pirea”, Greece
15. IPEKA / NTUA, 2011,Phase B “Metalassomeni charaktires kai politikes sta kentra polis Athinas kai Pirea”, Greece
16. IPEKA / NTUA, 2011,Phase C “Metalassomeni charaktires kai politikes sta kentra polis Athinas kai Pirea”, Greece
17. Annual report,”Port of Rotterdam 2012”, Rotterdam, 2012
18. Annual report,”Port of Piraeus 2011”, Piraeus, 2011
19. Annual report,”Port of Hamburg 2012”, Hamburg 2012
20. Annual report,”Port of Barcelona 2011”, Barcelona, 2011
21. Annual report,”Port of Marseilles 2013”, Marseilles, 2013

SELECTED ARTICLES AND WORKS

1. N. Belavilas, “Od’os”, Kathimerini, 13.10.02
2. N.Belavilas, “The port of Piraeus from 1835 to 2004”, Published in Patrimoine de l’ industrie/ Industrial patrimony, TICCIH-ICOMOS-Ecomusee de la Communaute Urban Le Creusot Montceau Les Mines, no7/2002, pp 75-82
3. N. Belavilas, “I peripetia tis kataskeuis enos singxronou mesogeiakou limaniou, i anaptisi ton limenikon ipodomon tou Pirea eos to 1949”, NTUA, 2009
4. F. Vatavali / N. Belavilas, “O metaschischmos tis odou Pireos”, Volos, 2007
5. M. Oikonomopoulou, “Apoviomichanisi ke politistiki politiki, i periptosi tis polis tou Pirea”, Athens, 2011
6. Alexandra Kassimi, “Symfonia cosco-trainose gia metafores apo kai pros thn kentrikh eyropi”, Kathimerini, 14.10.2014
7. Dean Andromidas, “China Develops Balkan Infrastructure that the European Union Won’t Build”, 2013
8. Daamen, T.A., Vries, I. “Governing the European port–city interface: institutional impacts on spatial projects between city and port”, J. Transp. Geogr. Delft, 2012
9. European Commission, “Building the Transport Core Network: Core Network Corridors and Connecting Europe Facility”, Brussels, 2014
10. César Ducruet / Sung-Woo Lee, “Frontline soldiers of globalisation: Port–city evolution and regional competition”, 2006
11. César Ducruet / Sung-Woo Lee, Dr Dong-Wook Song, “The Spatial Evolution in Global Hub Port Cities”, Geoforum 39(1), 372-385
12. César Ducruet, “A metageography of port-city relationships”, Wang J.J., Olivier D., Notteboom T.E., Slack B. (Eds.) Ports, Cities, and Global Supply Chains, Aldershot, Ashgate, pp. 157-172
13. César Ducruet, “Port-city relationships in Europe and Asia”, Journal of International Logistics and Trade 4(2), pp. 13-35
14. M. A. Pesquera and J. R. Ruiz,“ UNCTAD Monographs on port management”, Geneva, 1996
15. César Ducruet, « Typologie mondiale des relations ville-port », Cybergeo : European Journal of Geography [En ligne], Espace, Société, Territoire, document 417, mis en ligne le 27 mars 2008, consulté le 18 novembre 2014. URL : http://cybergeo.revues.org/17332 ; DOI : 10.4000/cybergeo.17332
16. N. Karachalis / E. Kyriazopoulos, “Greek port cities in transition: Regeneration strategies, waterfront development and the role of cultural and tourist resources”, Athens
17. M.Soltaniehha, A.Peric, and B.Scholl ”The Port of Piraeus: Industrial Zone or Urban Continuity” Switzerland, 2014

INTERNET SITES

1. http://www.kathimerini.gr
2. http://portusonline.org
3. http://cybergeo.revues.org
4. http://www.olp.gr
5. http://www.piraeusculturalcoast.org
6. http://www.ticcih.gr
7. http://www.trainose.gr
8. http://www.rfc7.eu
9. http://www.coscon.com
10. http://www.pireasnet.gr

MAPS AND DIAGRAMS

IMAGES

1. View of the port city of Piraeus, p.8
2. Port in the 17th century (painting by Claude Lorrain), http://eo.wikipedia.org/wiki/Merkantilismo, p.12
3. Industrial port of Belfast at the turn of the 20th century, www.belfasttelegraph.co.uk, p.12
4. Port of Hamburg (logistic centre), http://foldrajz.webnode.hu/vi-osztaly/nemetorszag/, p.12
5. Container, http://beneas13.blogspot.ch/2009/10/blog-post_843.html, p.14
6. Lift-on/Lift-off vessel, http://ukshippinglog.blogspot.ch/, p.14
7. Roll-on/roll-off vessel, www.dfdsgroup.com , p.14
8. Revitalisation of Boston's waterfront, http://pozadine.info/gradovi/, p.20
9. Revitalisation of Docklands area, https://www.flickr.com/photos/75487768@N04/14499851303/in/photostream/, p.20
10. Revitalisation of Genoa's waterfront, www.flickr.com, p.20
11. Stadshavens, Rotterdam's CityPorts area and its four districts, www.googleearth.com, p.22
12. Kop Van Zuid in Rotterdam proposing urban activities, http://alittlereality.blogspot.ca/2012_06_01_archive.html, p.22
13. HafenCity and Elbe island, www.googleearth.com, p.24
14. HafenCity project made possible the reunification of the city with the waterfront and the river Elbe, http://www.hafencity.com/en/overview/hafencity-the-genesis-of-an-idea.html, p.24
    City-port of Barcelona, www.googleearth.com, p.26
15. Nova Bocana area and its new iconic hotel, http://www.skyscrapercity.com/showthread.php?page=4&t=1401532, p.26
16. Marseilles' commercial port and its old historic port in the background, http://www.allaboutshipping.co.uk/2012/07/20/port-news-from-marseilles-fos-5/, p.28
17. Aerial view, http://www.acpasion.net/foro/showthread.php?26761-MUNDOTEKA-1-Europa/page196, p.30
18. Abandoned industrial site of Drapetsona, p,32
19. Prime minister of Greece and China in Piraeus, http://www.wsj.com/articles/chinese-trans-form-greek-port-winning-over-critics-1416516560, p.38
20. "Cosco go home", manifestations by Greek workers, www.koutipandoras.gr, p.38
21. Cosco's container ship, http://ashmadia.com/joeldufault/2010/06/05/3-factors-to-consider-when-selecting-a-clickbank-product-to-promote/, p.38
22. Railway connection between the commercial port of Piraeus with the Thriassian plain, www.googleearth.com, p.55
23. A typical warehouse in Thriassian plain, http://www.skyscrapercity.com/showthread.php?t=1749600, p.55
24. Thriassian complex (total area of 1 750 000m^2), www.googleearth.com, p.55

IMAGES

25. Commercial port of Piraeus at Ikonio, www.googleearth.com, p.58
26. View of terminal III under construction, p.58
27. View of terminal III under construction, p.58
28. Terminal II managed by Cosco, http://www.naftemporiki.gr/finance/story/718606, p.58
29. Terminal I managed by OLP, http://www.kathimerini.gr/775969/article/oikonomia/ellhnikh-oikonomia/3ekleidwnei-h-nea--kinezikh-ependysh--gia-ton-olp, p.58
30. Commercial port of Piraeus, terminal I, http://www.skai.gr/news/finance/article/245784/sum-fonia-olp-sep-gia-ton-provlita-3-anavathmizetai-to-limani/, p.66
31. Plan of Classical Athens, Ioannis Travlos, 1968, http://mlp-blo-g-spot.blogspot.ch/2013/02/blog-post.html, p.72
32. The Hippodamian sketch of the city of Piraeus, G.A. Steinhauer / M.G. Malikouti / V. Tsoko-poulos / V. Ganiatsas, 2012, “Piraeus, centre of shipping and culture”. Egiis, GR., p74
33. City plan of Piraeus by Kleanthis and Schaubert in 1834, Vasias Tsokopoulos, 1984, “Pireas, 1835-1870, Isagogi stin istoria tou ellinikou Manchester”. Kastanioti, GR.,p.76
34. Properties of land in early of 19th century, Vasias Tsokopoulos, 1984, “Pireas, 1835-1870, Isagogi stin istoria tou ellinikou Manchester”. Kastanioti, GR., p.77
35. View of the port of Piraeus in 1875, personal collection, p.78
36. View of the customs, personal collection, p.80
37. View of a basin, personal collection, p.80
38. View of factories, personal collection, p.80
39. View of the port of Piraeus taken from the custom house, personal collection, p.80
40. View of the port of Piraeus in 1910s, personal collection, p.80
41. The industrial axis Athens - Piraeus in 1920, Lila Leontidou, 2001, “Polis tis siopis”. Etva, GR., p.82
42. Silo on the Eetioneia coast, p.82
43. Silo on the Eetioneia coast, p.82
44. Relocation of the commercial port at Ikonio, p.85
45. Polycentricity,http://nikonrumors.com/2012/04/08/nikon-in-space-new-nightpod-intelligent-tripod-compensates-for-motion-when-taking-images-from-space.aspx/, p.89
46. Aerial view of Piraeus and its port, the linear industrial axis including Pireos street and Eleo-nas and the centre of Athens, https://www.flickr.com/photos/vikingman/2500405152, p.92
47. View towards Piraeus from Propylaia in 1890, personal collection, p.95
48. View towards Piraeus from Philopappou in 2010, https://www.flickr.com/photos/ikarosmat-soukas/, p.95
49. Pireos Street, Nikos Belavilas, p.95
50. Old walls findings under the railroads, Nikos Belavilas, p.95
51. L. Syggrou linking the city centre with the waterfront, Nikos Belavilas, p.95

IMAGES

IMAGES

NOTES