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## **Aqua\_Culture: Recognizing New Institutional Models for the Reactivation of Inherent Values in the Urban and Cultural Landscape of Arecibo**

Cynthia M. Dorta-Quinones

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final draft [thesis prep]  
arc 505 | prof. rosa

## aqua\_culture

recognizing new institutional models for the reactivation of  
inherent values in the urban and cultural landscape of Arecibo



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*“We live in a changing world. Large cities, products of an industrial age, are giving way to a new kind of urban center operating in a knowledge-based economy. Bilbao is positioned to be a leader in the new Society of Knowledge. A city must have some essential features if it is to move into the new era: quality of life, universal education, access to information and knowledge, integration into global networks, the capacity to generate and attract new ideas and to innovate. It must possess aninvolved and connected community. A focus on people, knowledge and innovation.” [...] The new era has its demands. Either we are capable of creating knowledge or we must depend on the knowledge developed by others. Either we become part of the global community or we get left on the sidelines.”*

*- José Antonio Garrido  
“Bilbao 2010. Reflections on Strategy”*

## 2.0 | thesis statement

Natural resources have dictated the successful development of the city of Arecibo until the dissolution of the city's industrial models. This thesis aims to create a Marine Research and Educational Center that promotes the *engagement* between the city's urban dwellers and its waterfront in a desire to recover the city's valuable historical landscape while promoting new forms of social revitalization through the means of education.

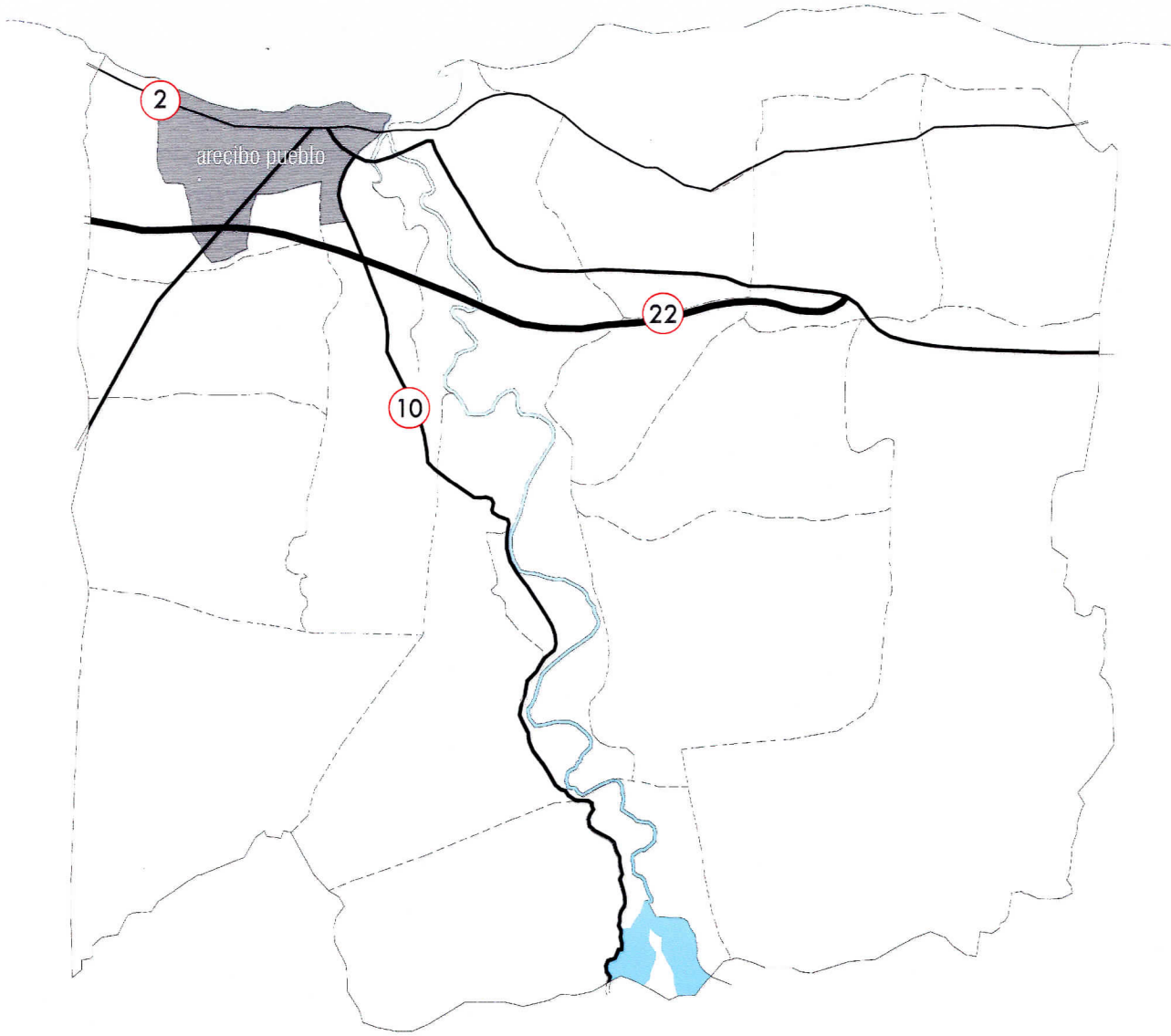


## 3.0 | synopsis

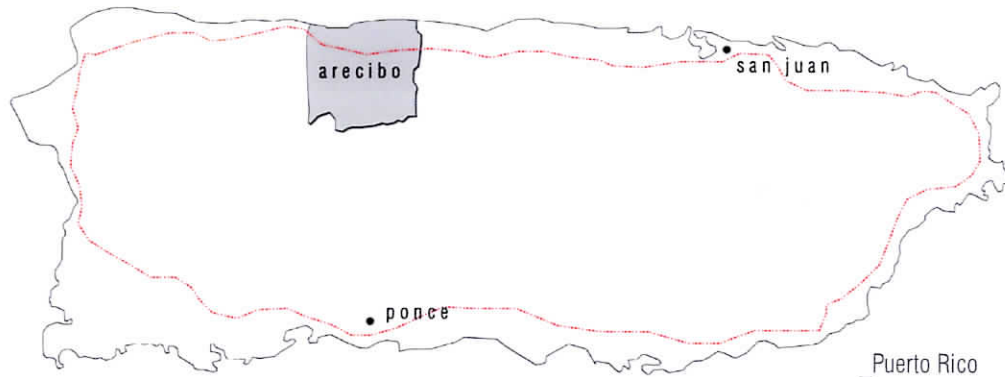
The evolution of the city of Arecibo became successful due to the value of its geographical assets and positioning. The fertile land and commercial waterfront that existed in this location offered the necessary tools for the expansion of political boundaries, development of a thriving agricultural and, later, industrial economy, and highly active urban life. However, the decline of the industrial models brought the city's infrastructure to a palpable state of negligence, strengthened by a lack of investment in its public future or cultural values. Providing new insight into people's vision for change is capable through an architecture that promotes cultural and communal activity while acknowledging the resources and context of its place.

To this date, the city has failed to recognize any potential in viable natural resources that could trigger new opportunities for the renewal of its cultural and urban landscape. The recent urban growth has ignored any connection towards the city's waterfront, isolating its inhabitants from a significant resource. This critical geographical condition remains a subject to be explored and exploited for the favorable revitalization of the city. A new educational institution can provide a new possibility for the renewal of the city's public institutions, becoming a tool that initiates a new agenda within the civic realm and the cultural landscape of the city.

Prominent educational institutions are already present in the Arecibo. The University of Puerto Rico has a campus located in Arecibo and the Arecibo Observatory, operated by Cornell University, is recognized as one of the most important national centers for research in radioastronomy, planetary radar and terrestrial aeronomy. The institution that this thesis seeks to create would re-assert Arecibo's educational while promoting new and distinct fields of social encounter through the combination of different programmatic qualities such as an aquarium, a school and a research center.



The shaded area in this map depicts the metropolitan area of the city of Arecibo in which the old city center is located. Arecibo is divided up into 17 'barrios' or territories. The main road, route 2, borders the north of the city and runs across the entire northern valley of the island. This path led directly to the heart of the city, however when the freeway was erected (route 22), route 2 was diverted towards the highway missing the entrance to the historic center. Route 10 allows direct access towards southern towns of Puerto Rico such as Ponce.



\_Arecibo is territorially one of Puerto Rico's largest municipalities. With more than 126 square miles of extension, it has some 35 kilometers of land that overlooks the Atlantic Ocean to the north. The city is composed of its old historic center and other seventeen rural 'barrios' or wards. It is located on the north coastal plain of the island in the alluvial valley of its river, Rio Grande de Arecibo. This body of water is one of the major rivers of the country. It stretches 40 miles long and dominates almost the entire northern side of the island.

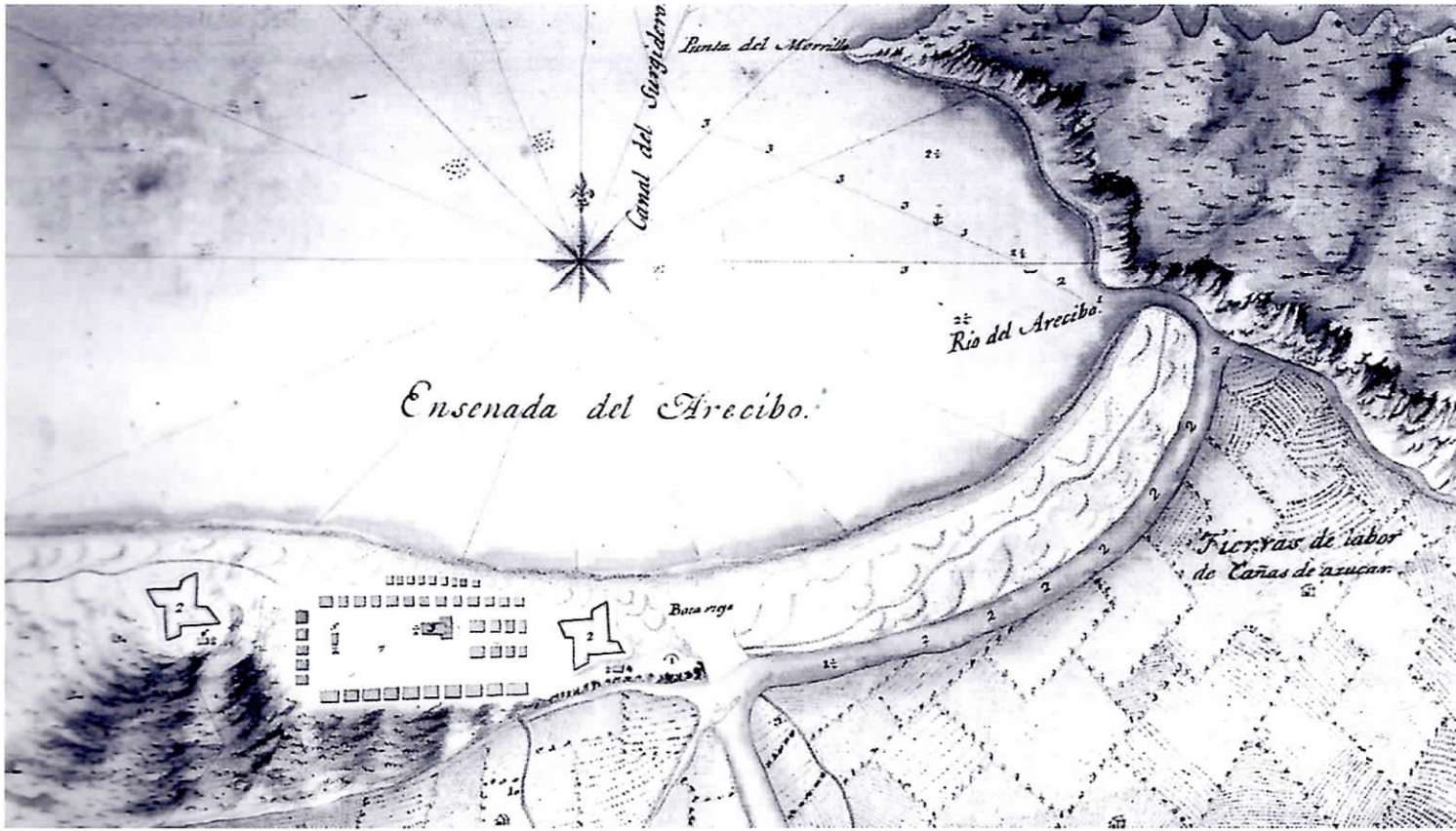
a new religious center. The city's origin begins amidst the colonization period of Puerto Rico. Native indigenous families already occupied the area by 1515 but when conquered by the Spaniards, the introduction of catholic religion, agriculture and farming was established. The first institution to command the center at this time was a religious hermitage, Ermita de Monserrate. The center of the city grew closely to the river's mouth. New families began to settle around the area by 1550. However, this location was cause for constant disruption of robbery and assaults from French, English and Dutch pirates leaving them in extreme poverty.

\_Slowly progressing, the city's economy was mostly based by raising livestock and fishing. During the next two centuries, the use of the land expanded to the cultivation of ginger and cacao, and fishing became widespread.

\_Politically Spanish military lieutenants governed the city until the very beginning of the nineteenth century. However, several attacks and battles, led by major European cities took place in major cities around the island, Arecibo being a significant one because of its positioning and accessibility.

\_By 1778, the village was officially declared a city. However, the actual acceptance of duty did not occurred until 1802 when Juan Lorenzo de





\_1770. The religious presence of the Spanish occupation was crucial to the city's colonization and development. As any European city, the center was governed by the presence of a religious institution and a public plaza. Around this structure a strict organization of institutional buildings would later on occupy its surroundings such as the city hall, jail, law court and markets. The public square was also a place that served for military parade ground.

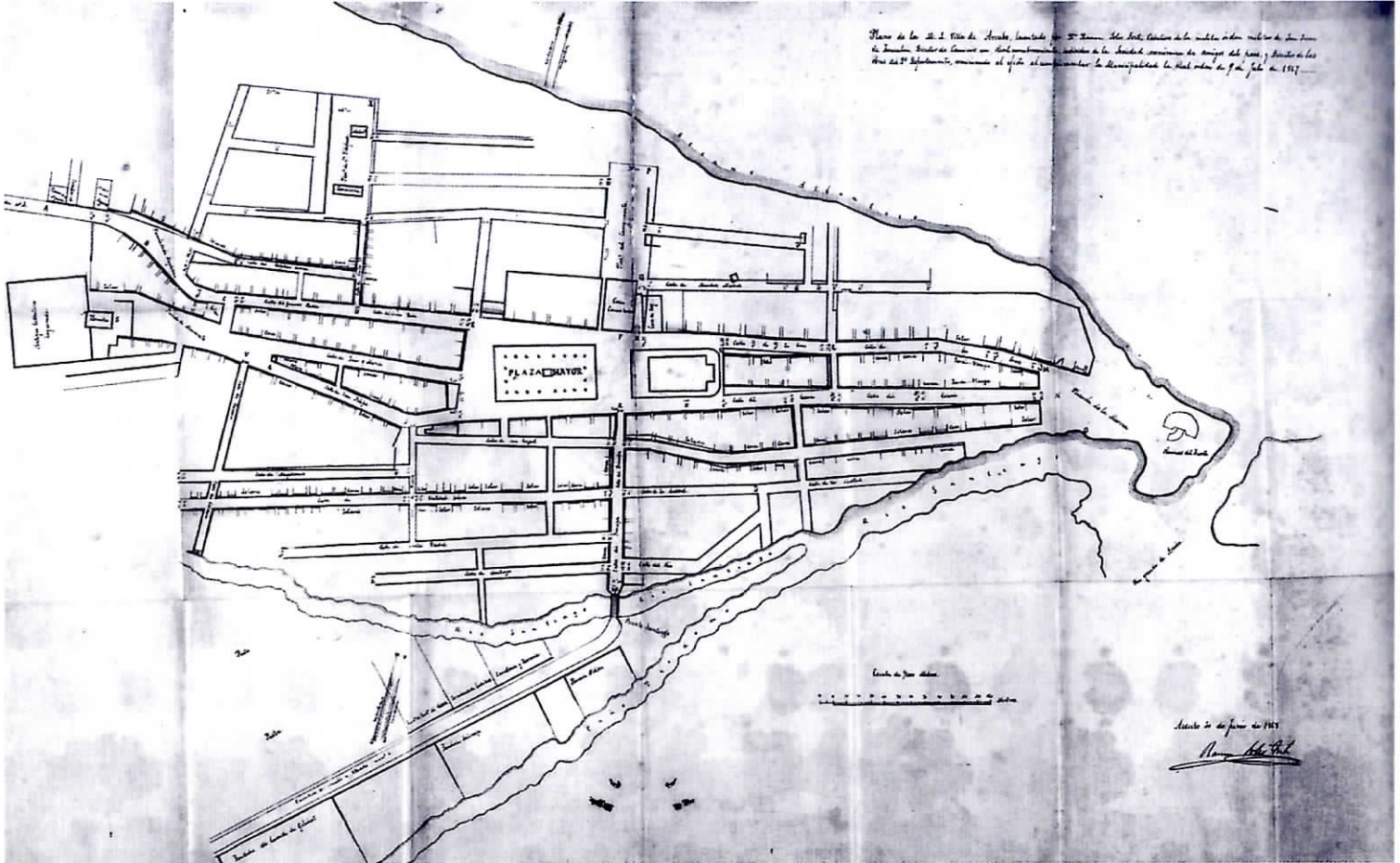
Olmo was elected mayor of the city. However a slow process of economic development was taking place. Fray Iñigo Abbad, religious deputy of the district, describes the inadequate use of the fertile lands and reduced profits that were gained from the vast plains of land. The poorly unemployed lands had been driven to a limited cultivation of less than the specific products needed to subsist. Citizens lived in farms located at the river shore. Here they raised cattle as oppose to dedicating it to cultivating crops. As stated also by a French naturalist who visited the island in 1797 "they still don't know how to develop the advantageous position that nature has provided".

\_The strong religious influence was the driving force that in the formation of the city the center. Two chapels were now set up to the east and west of the city defining its boundaries and the parish church of San Felipe occupied the center across from the Plaza Mayor.

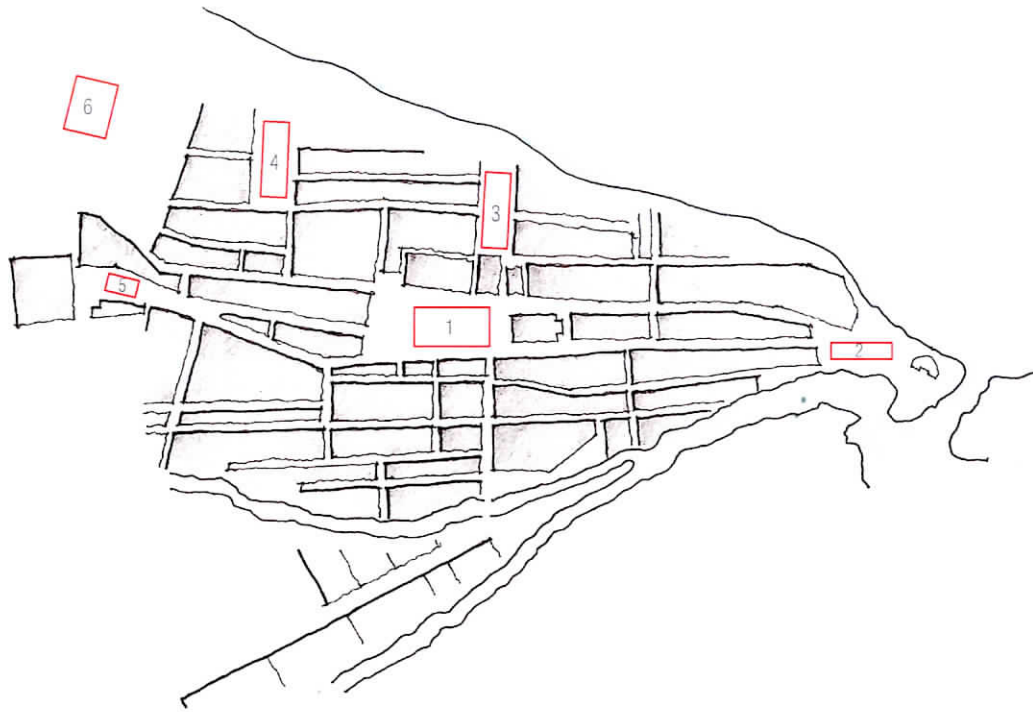
\_An increase in the amount of families was eminent as nearly 4,500 inhabitants now occupied the area instead of the initial thirty families of the sixteenth century.

\_By the 1800's the king of Spain granted a 'Cedula de Gracia' to increase the European population of Puerto Rico by awarding land grants to immigrants from South American colonies, Spain and other European countries. Thus began the century of change from small farms to large coffee estates ending up in the very wealthy era of the sugar plantations.

\_With this new decree and a new administration, Arecibo initiated a brand new prosperous age of commerce, agriculture and growing industries that provided employment for all natives, town neighbors and settling foreigners. Sugar plantations reached its outmost maturity. Towards the end of the century three large sugar plantations were already built producing up.



1861. Defining a new urbanity. This new plan reveals a desire to create an urban center that organizes and structures the commercial growing activity of the era.

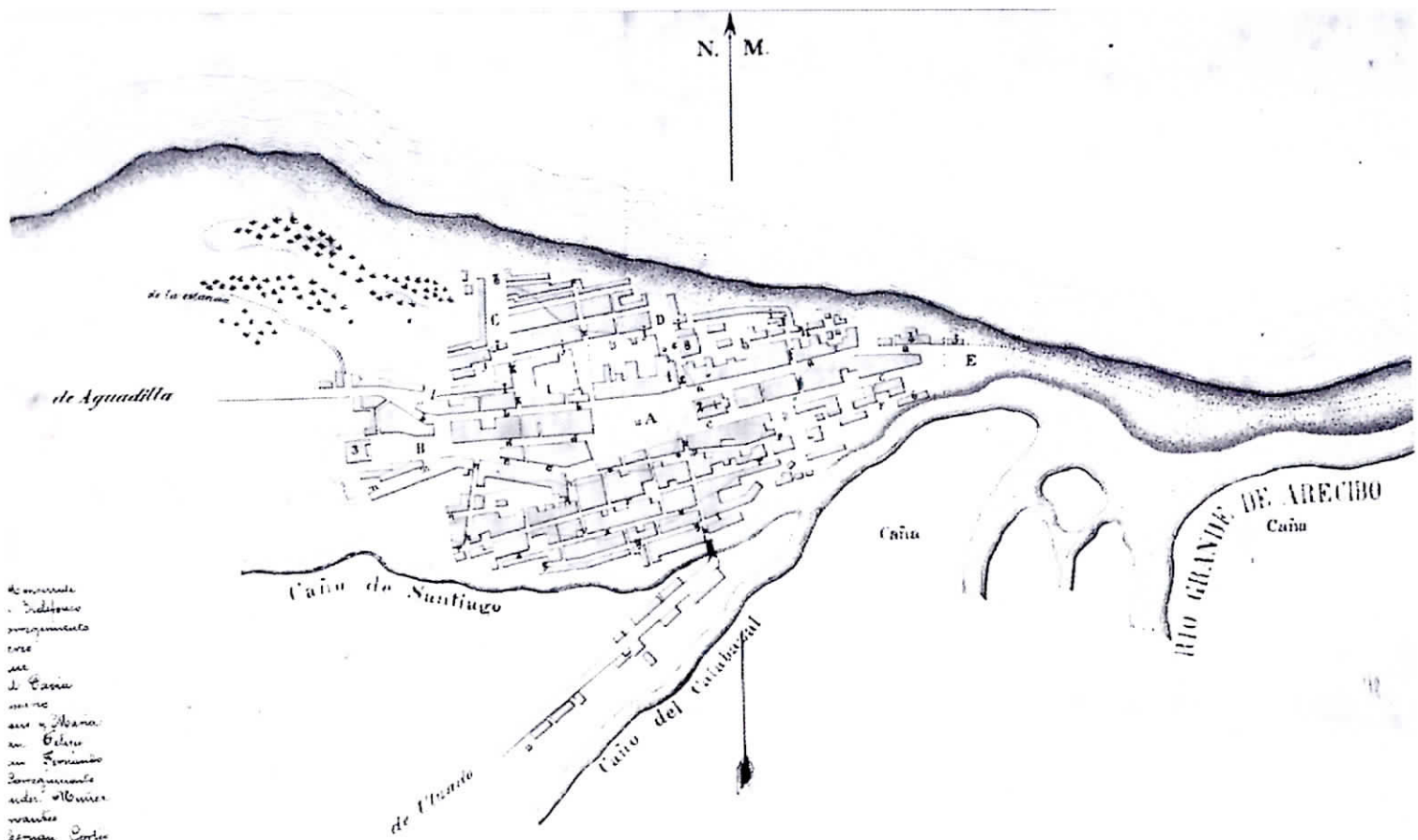


*\_existing plazas surrounding the city of arecibo with specific programmatic values: 1. plaza mayor [religious/civic center], 2. plaza de la marina [port entry], 3. plaza del corregimiento [political center], 4. plazuela san idelfonso [market], 5. plazuela monserate [religious center], and 6. plazuela magdalena [ point of entry/exit from/to west villages].*

*\_a new public infrastructure.* The most crucial factor for the economic development of the city was the increasing growth of sugar cane cultivation. By the end of 1820's various 'haciendas' occupied the stretches of the riverbank as well as three major refineries. The city fully participated in a regeneration of agricultural and commercial expansion. By the end of the century, the incrementing commercial activity and escalating transportation volume of goods obligated the construction of a new port at La Puntilla. Smaller landing piers near the river were being rehabilitated at the disposition of those who owned 'haciendas' and needed to transport their goods locally. The highest economic activity for the city was recorded for the period of 1840 to 1878. Historical records highlight the United States as being the major recipient of the products exported from the city's port. Other major countries that participated as sources of exportation were England, Germany, and Spain.

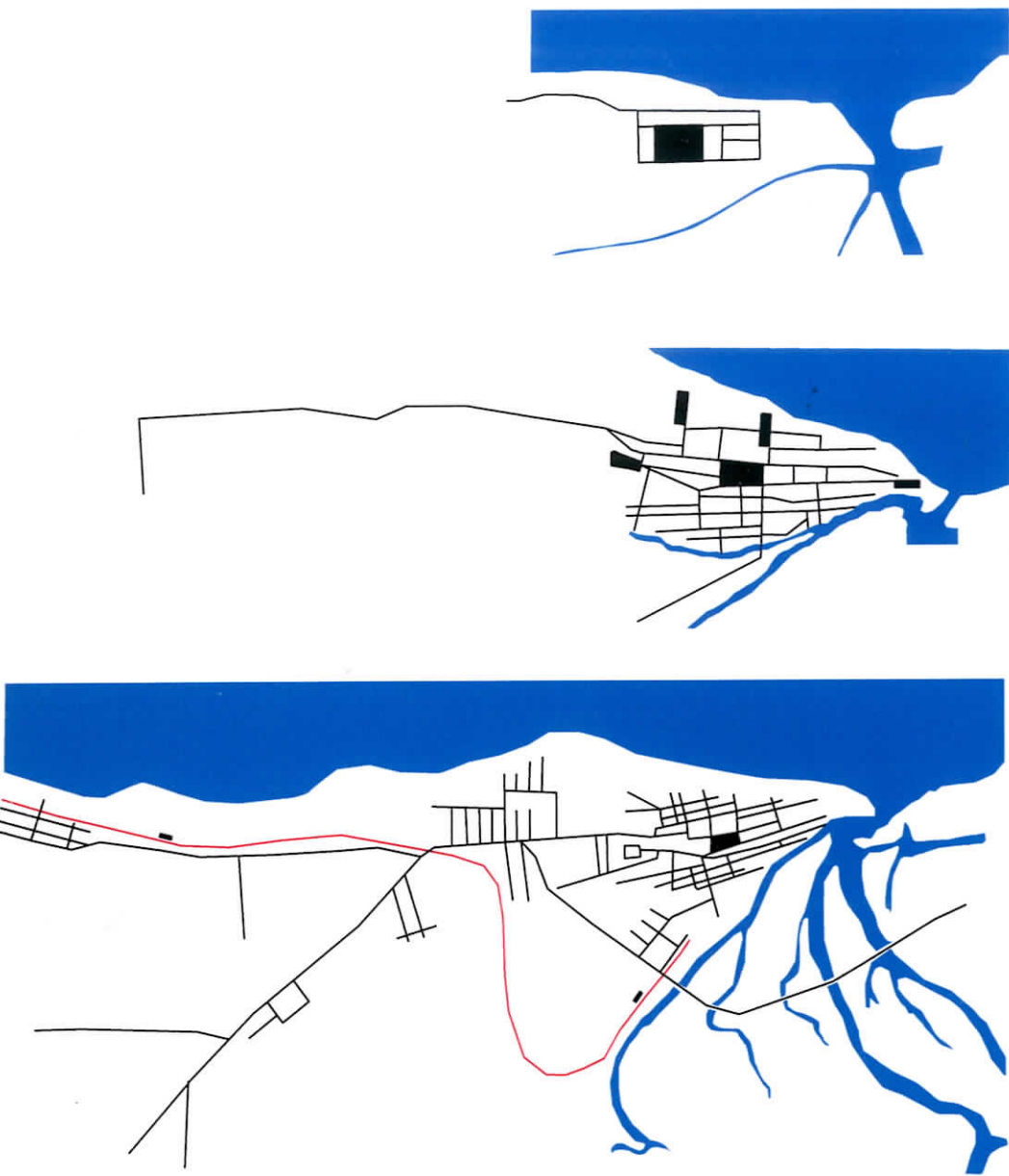
The thriving development brought afloat drastic changes to the cultural and social standards of the city's configuration. A new seat for the local government was created with the construction of a new city hall in 1866. The San Felipe cathedral at Plaza Mayor was now being reconstructed after a major earthquake hit the area. Around 6 public and private schools were in function. Civil guard and infantry barracks also occupied the region along with immigration facilities, theater, butcher shop and slaughterhouse. In 1868, given the growth of new public institutions the municipality commissioned Don Ramon Soler Fort to prepare a new plan for the 'alignment and progress' of the city. Along came the erection of a new bridge that went over the river as well as the construction of roads contiguous to the east and west of the viaduct.

The newly planned city consisted of twelve new align roads traveling from east to west, three from north to south, and ten other minor streets.



de Aguadilla  
 de la estacion  
 de Utranto  
 Caño de Santiago  
 Caño del Calabozal  
 de Utranto

\_ 1887.

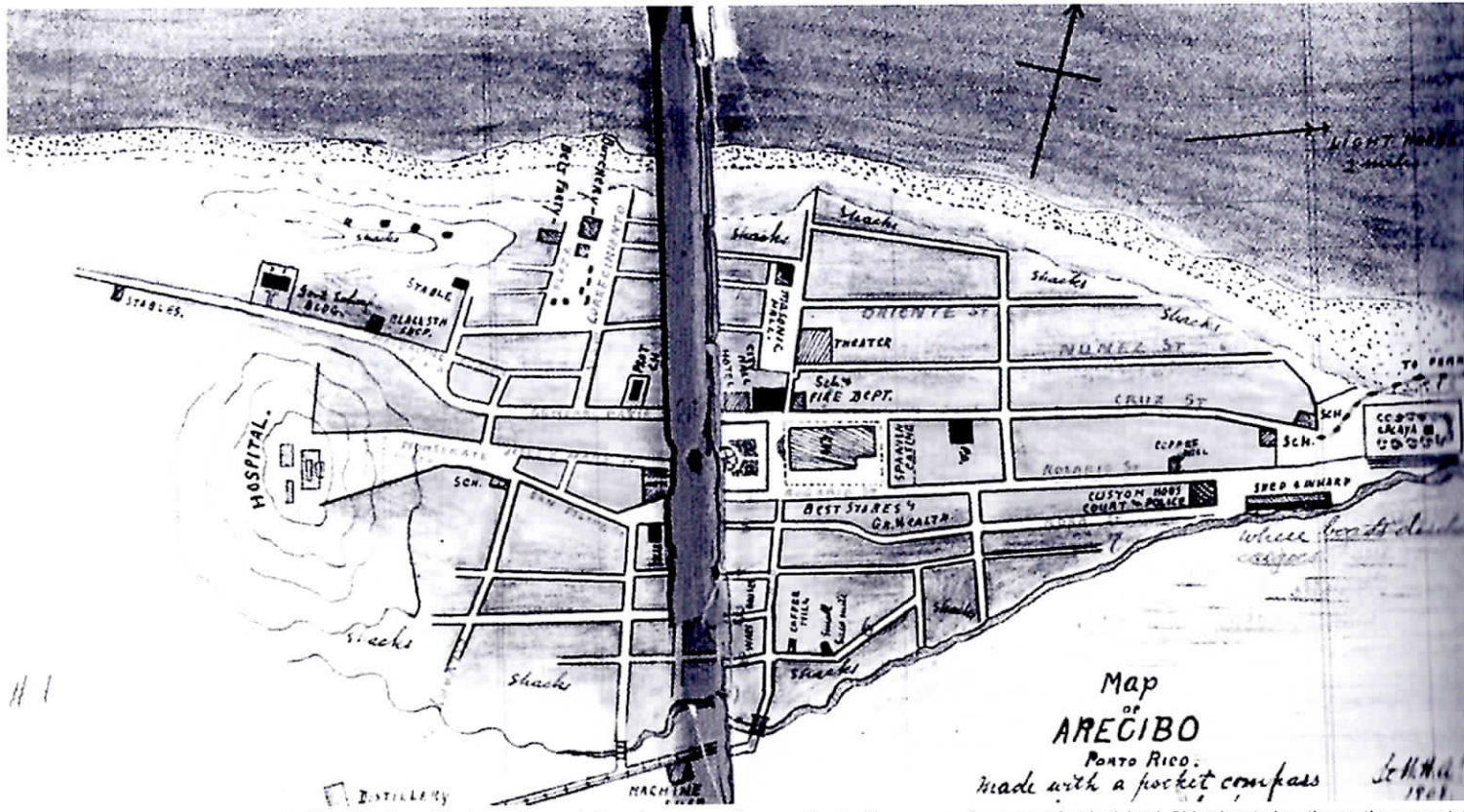


Transformation of civic spaces | 1778 - 1950

\_The Plaza Mayor occupied the center of the city and five other minor plazas with specific uses dominated the surroundings: Plazuela la Marina, a place for entry from the sea at the river's mouth, Plaza del Corregimiento situated to the north in front of the Old Mayor's House was an active corner as the city hall, fire station and theater all bounded its limits. Plaza San Idelfonso was a catalyst for commerce as it was located between a butcher shop and a slaughterhouse, Plazuela de Magdalena situated to the west border of the city, another point of entry/exit location to the city, and finally Plaza Monserrate where the first religious monastery, Ermita de Moserate was located.

\_Continuous assaults were still being a menace to the city. In 1829, the Military Chief of Arecibo ordered the construction of a fort to the north-east of the city, close to the river delta in order to intercept any possible attacks. By 1883, after all threat had passed, the fortification was demolished and a new Salvage Station for the shipwrecked along with a new plaza paid homage to the 'heroes of the sea'.

*change of guard.* The turn of the century brought major changes to the face of the city. The Hispanic American War in 1898 when North American troops seized the island and conquered led to a period of expansion and progress where Arecibo or any other major city in the island flourished as major industry and civic centers. Streets began to be paved in order to facilitate accessibility to adjacent towns for North American troops during their occupation. A steady development of public institutions gave way; a newly built hospital was now sitting at the west side of the city, a food market situated to the north close to the beach at Plazuela San Idelfonso and a fire station now provided its services to the city. Sugar cane took a predominant position in the economy of Arecibo. Although traditional cattle raising, and cultivation of



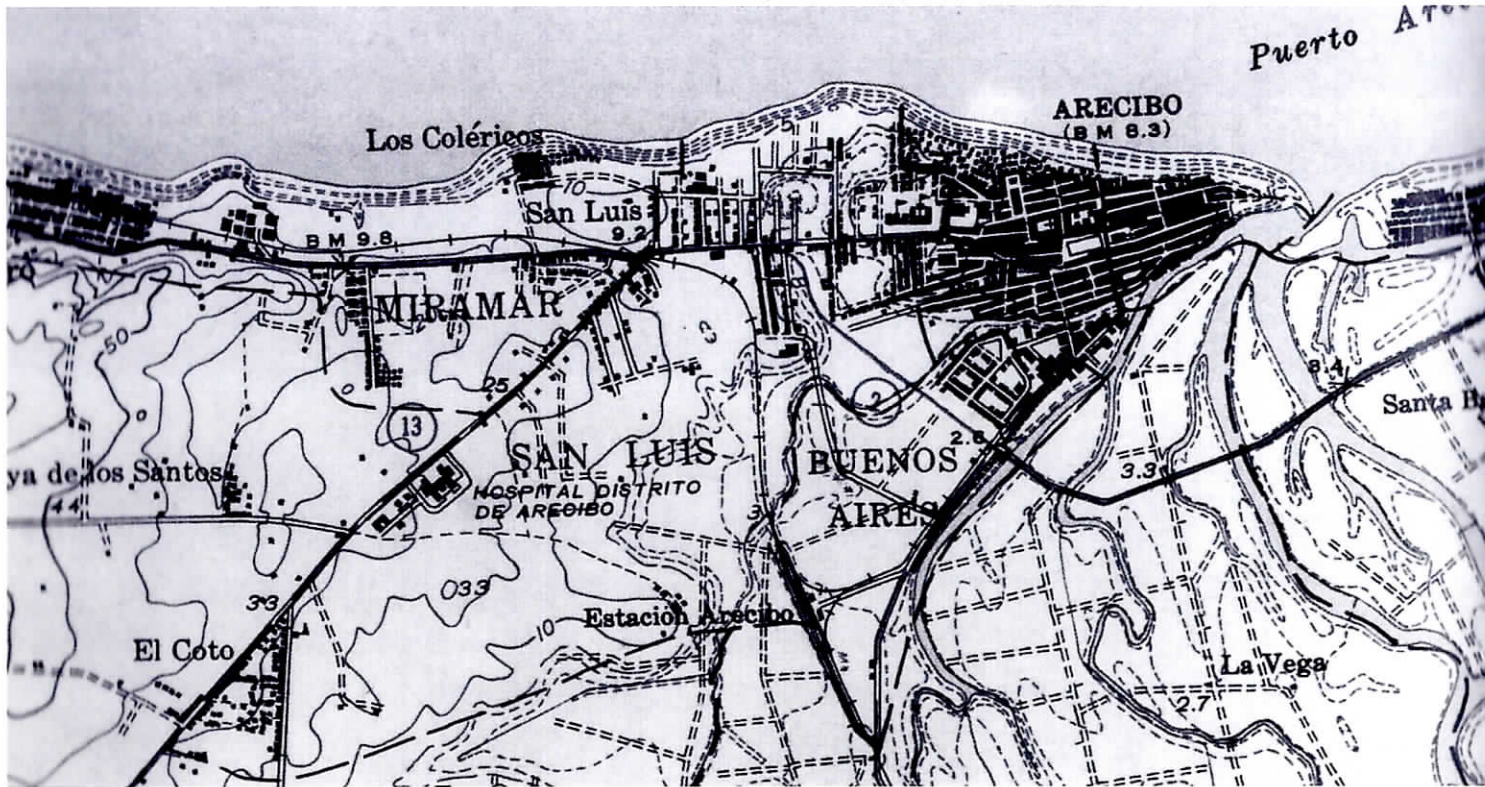
1908. After the American occupation in 1898, the cultivation and exportation of sugar cane became the leading source of economy for the island. Cities located on the northern coastal valleys benefited economically and socially from its production. The shape of these cities saw new changes in terms of urban growth and social activity stressing the needs for schools, public services, food markets, hospitals and public squares.

tobacco and coffee were still present, sugar cane represented 68% of the agricultural product of the municipality. As part of this growth some of the haciendas started to produce spirits and liquors from the residues of manufactured cane.

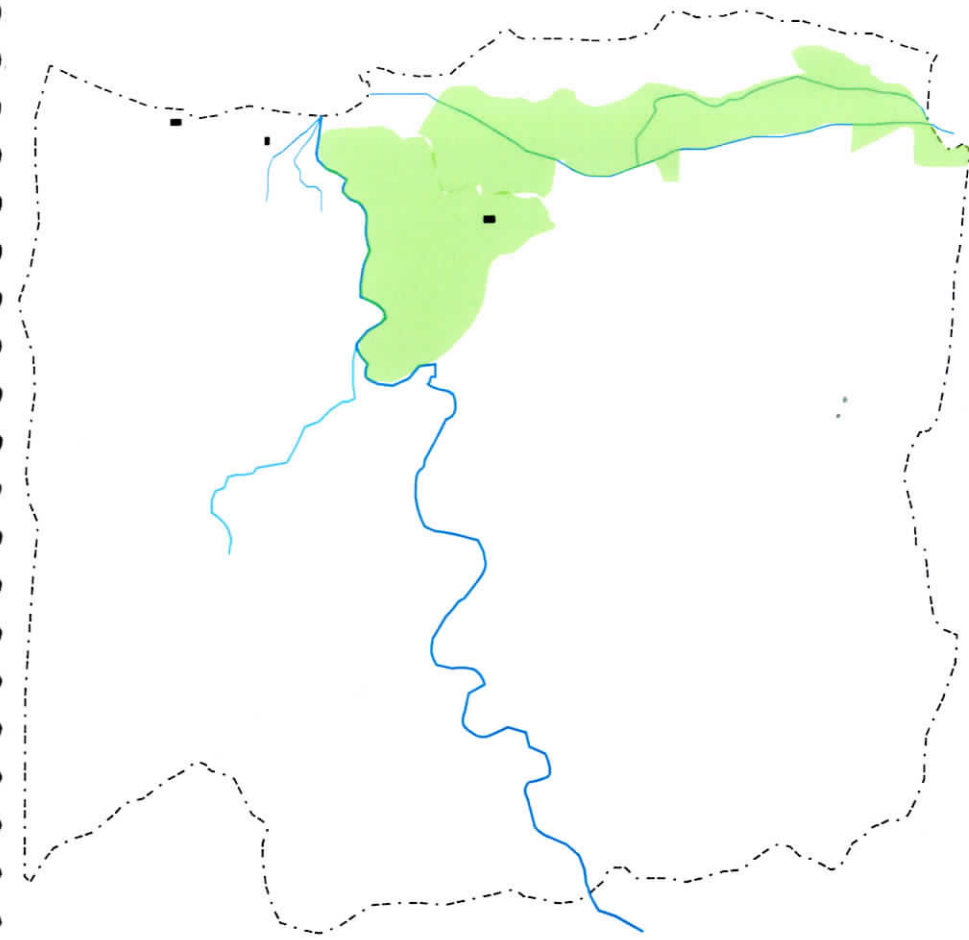
*the liquor industry*. It is from this interest that a new era of industrial productivity comes about. Around 1870's small businesses and sugar cane 'haciendas' dedicated to the production of brandies and liquors and some would age them to produce rum. Towards 1901 about five liquor companies were established in Arecibo. In 1911 they met together with the idea of creating a large corporation that strictly dedicated to the distillery of rum. The Puerto Rico Distilling Co, Inc. was thus established. It started operations right away supplying distilled rum to those companies who formed part of the Corporation and others around the island. The Company also obtained a permit to produce denaturalized alcohol to supply the necessities of institutions around the island and for export to the United States. Their site for production was located near a newly built railroad southwest of the city center.

However, in 1918, the U.S. passed the prohibition Law banning any type of alcoholic drinks. A referendum was carried out in Puerto Rico and by a small margin it supported the prohibition. Every liquor company was allowed to clear their inventory within a year. Smuggling reached its highest as alcohol could be easily accessed at any various points across the island. In order to survive, the company dedicated solely to the production of industrial alcohol that could be exported to the United States and denaturalized alcohol that was sold in Puerto Rico. As of 1943, the prohibition ended and the Distilling Co. entered a new era of wealth and progress. Florida Cane Products created a new corporation along with the Puerto Rico Distilling Co. under the name of Ron Rico





1943. The high demand for labor force at sugar cane plantations allowed many peasants to move into the city in search of job opportunities. In 1935 President Franklin D. Roosevelt creates the Puerto Rican Reconstruction Administration, which provided aid for agricultural development, public works and electrification.

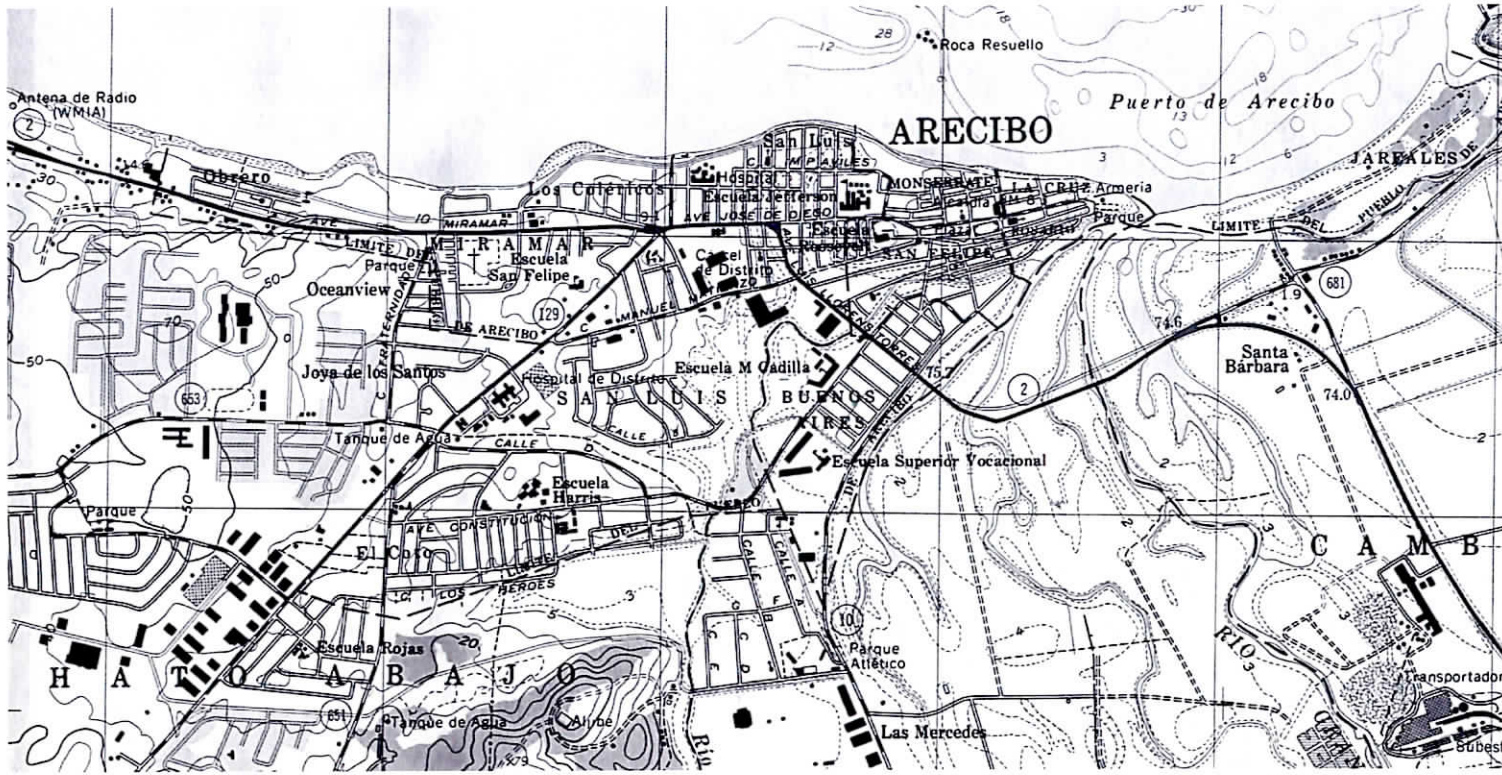


*sugar cane fields and industries across Arecibo | These fields are now part of the Federal Forest Reserve of Puerto Rico.*

Corp. The distiller enjoyed a period of great success selling the most products in the U.S from 1935 to 1941. In December 7, 1941 the Second World War broke out. For the liquor industry it created temporary demand for rum products produced in the Caribbean. Rum manufacturers in Puerto Rico were given the advantage of exporting rum to the United States without paying taxes for customs in order to suffice and produce the same quantities of liquor that Americans sold in their states. Also, the manufacturers were given better offers and benefits if they sold their products in the U.S.

Due to high sales and success, Ron Rico Co. bought the Puerto Rico Distilling Co. new terrains along the seashore in Barrio Miramar to build new facilities for the on-growing demand and production of rum. The new amenities, along with the already established sugar plantation Central Cambalache, provided massive amount of job opportunities and support for hundreds of families around the city. They became the major source of income economy in Arecibo as well as new flourishing industries such as the Arecibo Lumber Yard and coffee exportation.

The economy was so prosperous Arecibo specifically owned a sum of \$21,388.91 leftover money that the federal government used to invest in new public works. An exodus from the rural areas towards the coast started to take place. A growing district of working class families started settling near the factories and along the beachfront, as it was the only unoccupied land available that was close enough to the city center and the industrial activity. This displacement worsened housing conditions but it lead to an organization of workers unions for the development of new housing projects. Major housing developments took place as part of F.D. Roosevelt's PRRA (Puerto Rican Reconstruction Administration) which provided agricultural development, public housing and electrifica-



\_1964. Growing suburbanities

tion. Numerous sums of money were being invested in a master plan that would connect these projects to the wharf and downtown Arecibo. Streets and major routes were paved; new bridges began to run across the river. By 1938 the city's port had 171,897 tons in movement and transportation. Discussions began to hopefully expand facilities in order to reach 400,000 tons.

\_Great investments in infrastructure and incentive programs took place in Puerto Rico during the mid twentieth century. Also external investment in industries such as petrochemicals, pharmaceuticals, and recently biotechnology started to govern the island's source of economy.

\_The Puerto Rico Distilling Co. remained the major source of income for the city of Arecibo. During the 1960's the facilities were completely expanded and improved: new distilling units were built as well as quality controls laboratories. The company also brought in specialized technicians to operate and maintain the great services and qualities of its products. During this period the company enjoyed a successful market by merging with different companies of the U.S. In 1985, the company finally ceased operations and sold its stocks except Ron Rico's brand to the firm of Serrallés in Ponce, the second largest distiller company still active in Puerto Rico after the Bacardi Corporation. The municipality of Arecibo bought the distilling company facilities that consisted of nearly 17 'cuerdas' (one 'cuerda' is almost equivalent to an acre) and 28 building structures.

*“ These waterfront redevelopment projects speak to our future, and to our past. They speak to a past based in industrial production, to a time of tremendous growth and expansion, to social and economic structures that no longer exist, to a time when environmental degradation was an unacknowledged by-product of growth and profit [...] Because their size and complexity, these sites require: innovative mechanisms for their consideration”*

[Marshall, 2001]

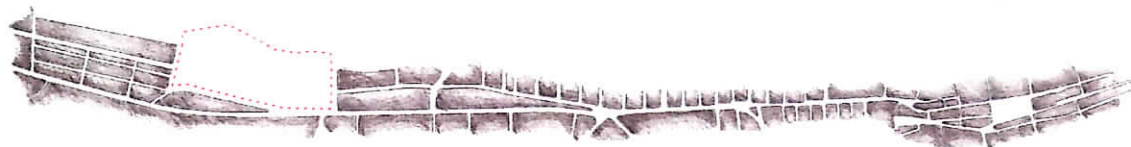


## 5.0 | site

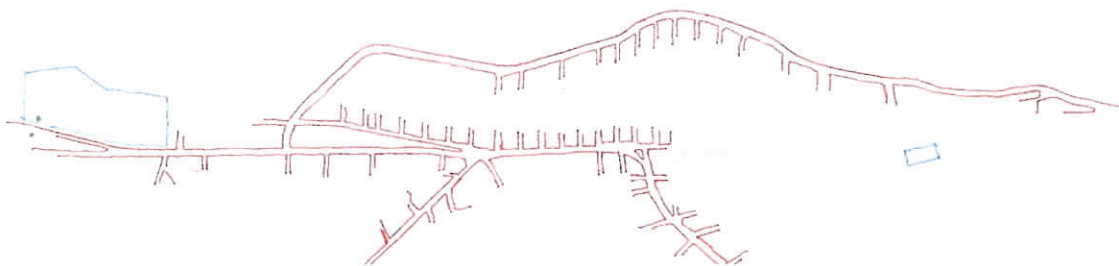


*aerial view of site, 2005. reconsidering the isolated*

The Puerto Rico Distilling Co. had a strong influence on the structuring and organization of the city's economy and social growth. Its significant presence provided support to more than one hundred families across the city. However, the site became a desolated place since the company's closing in 1985. It became a wasteland of deteriorated and vandalized buildings until its recent demolition during the summer of 2006. Nevertheless, along with its historical prominence, the occupied territory holds value and strength in its positioning. It is located right at the edge of the original old city boundary marked by the cemetery, which dates back to the 1800's. The primary Route 2 runs parallel to site linking every northern town from east to west of the island. Its location offers a great deal of potential to become an entry way into the city center of Arecibo. But the most valuable opportunity relies in the recovery of a reconnection of the urban landscape towards the waterfront. The site provides a chance to reconsider a revitalization of the city's ignored assets: history, coastal edge and what was an active civic center.



*\_relationship of site to city center*



*\_disconnectivity from waterfront*



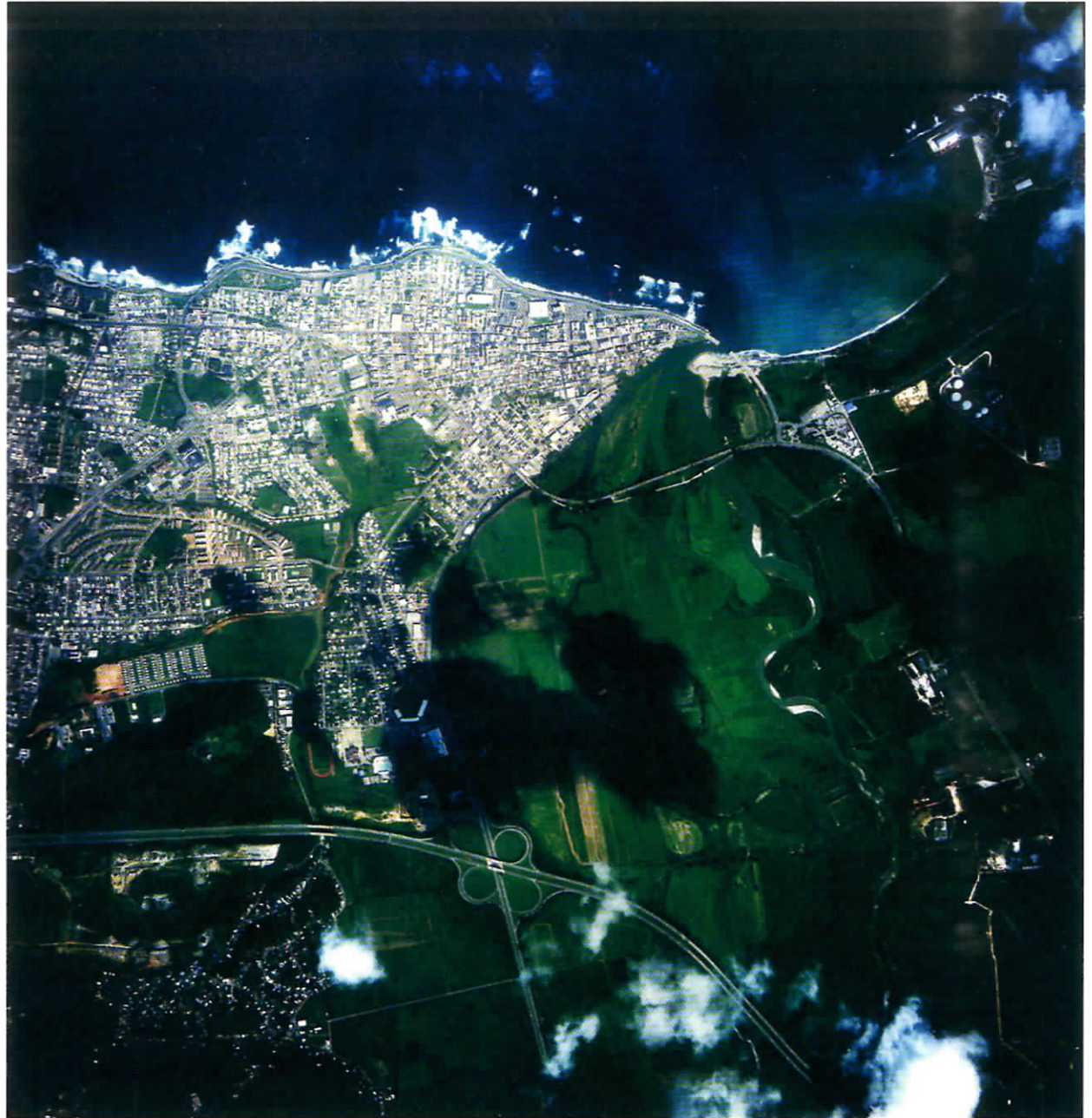




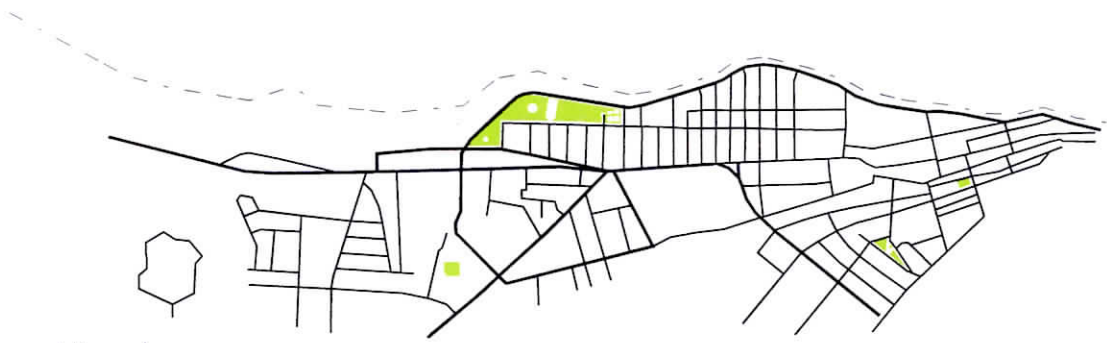


*\_occupation of waterfront and density around urban center. 1950.*

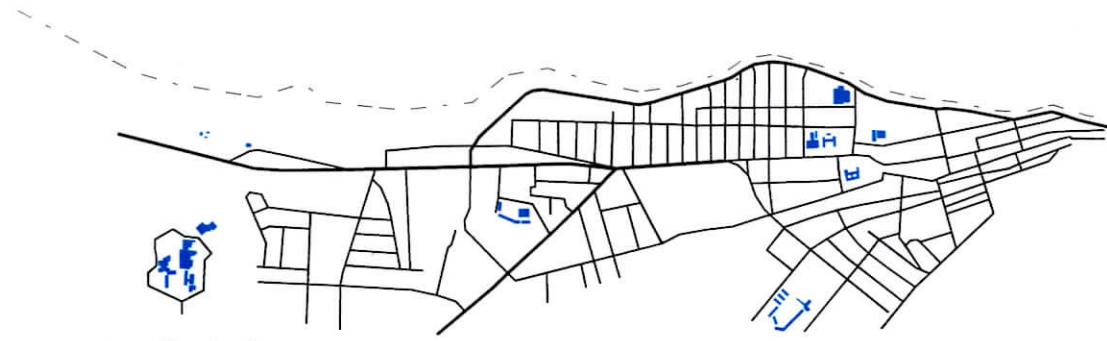




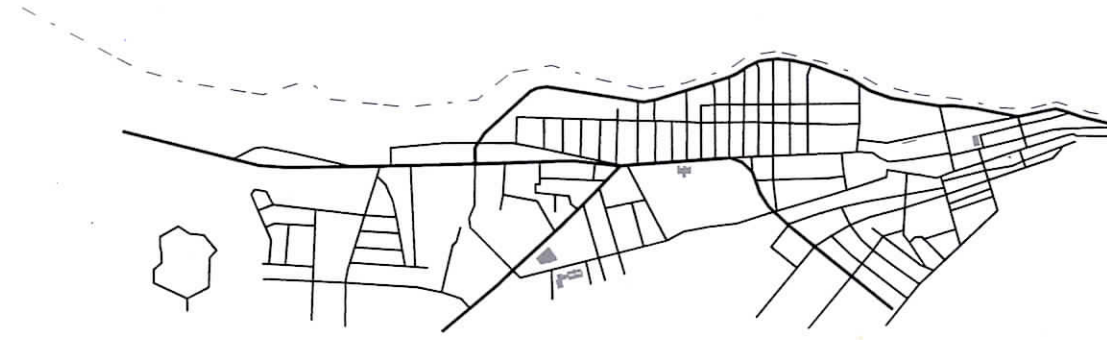
*growth of infrastructure. 2000*



\_public parks



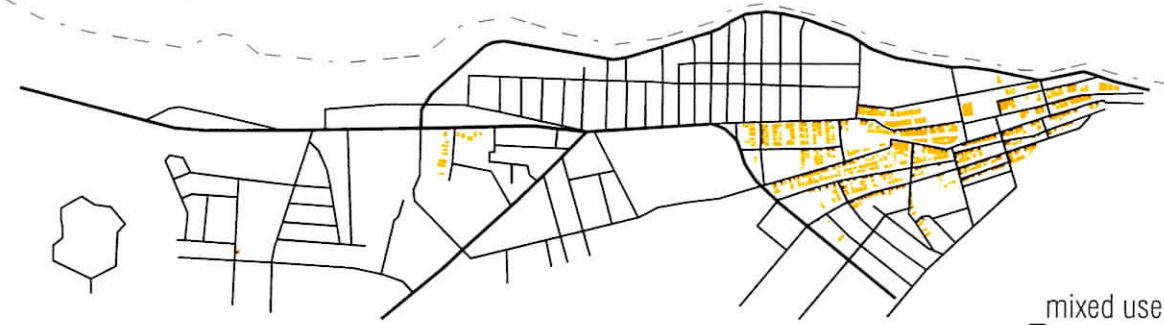
\_educational institutions



\_governmental



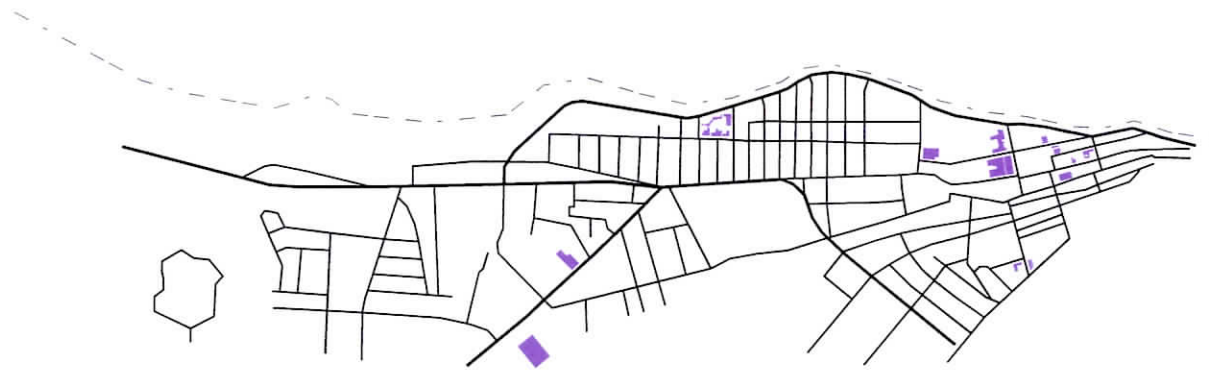
\_commercial



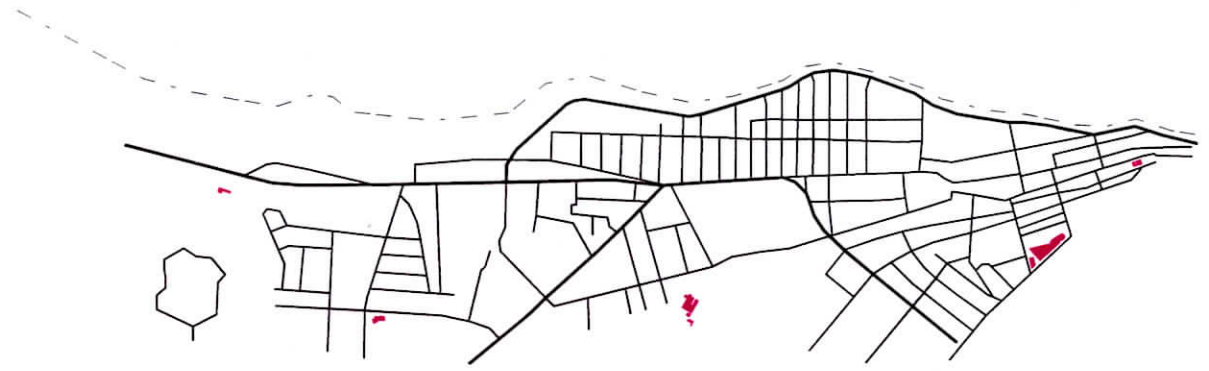
\_mixed use



\_residential



\_public institutions



\_public venues



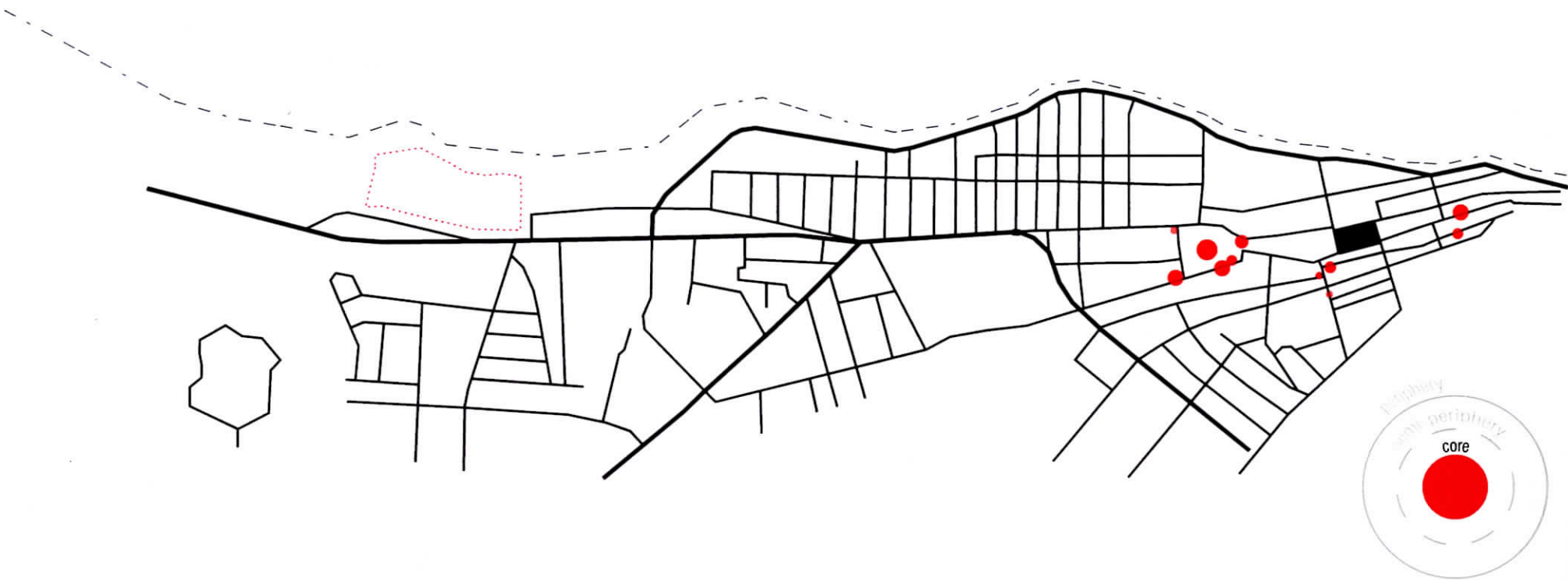




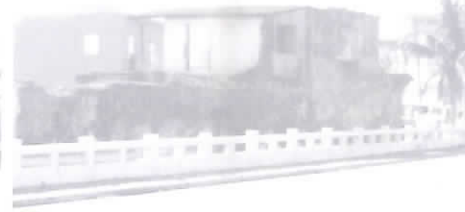
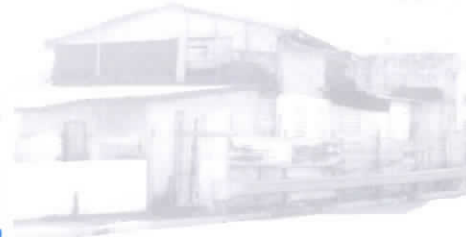
# decentralized and abandoned public institutions | 2000



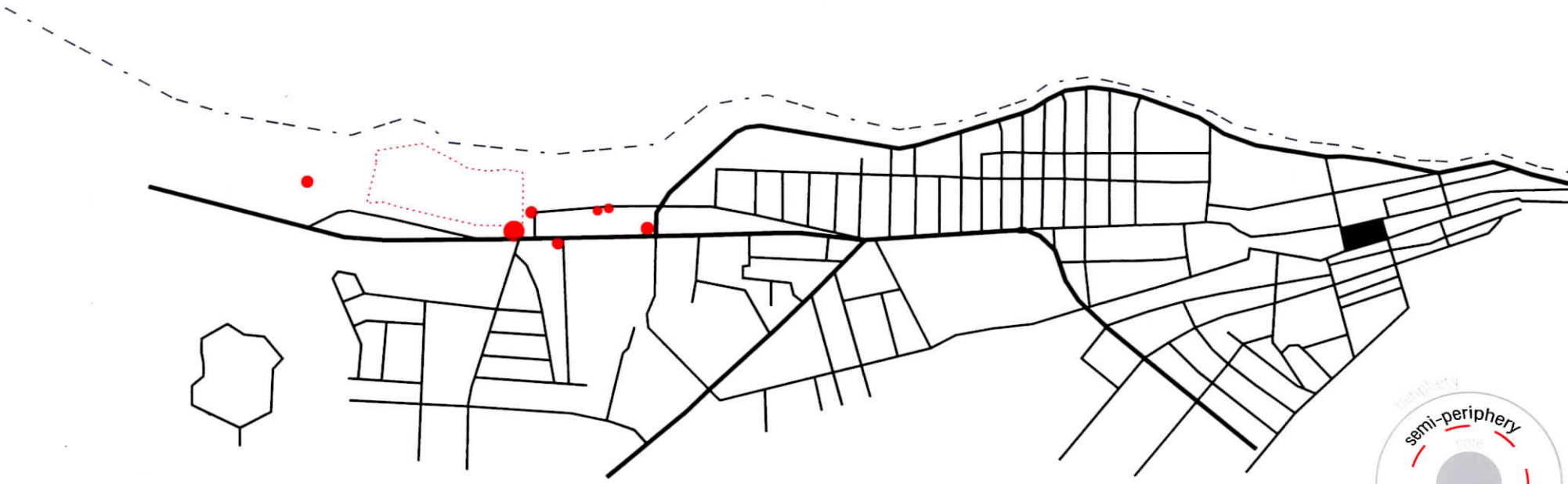
# the city | neglected properties



[city center]

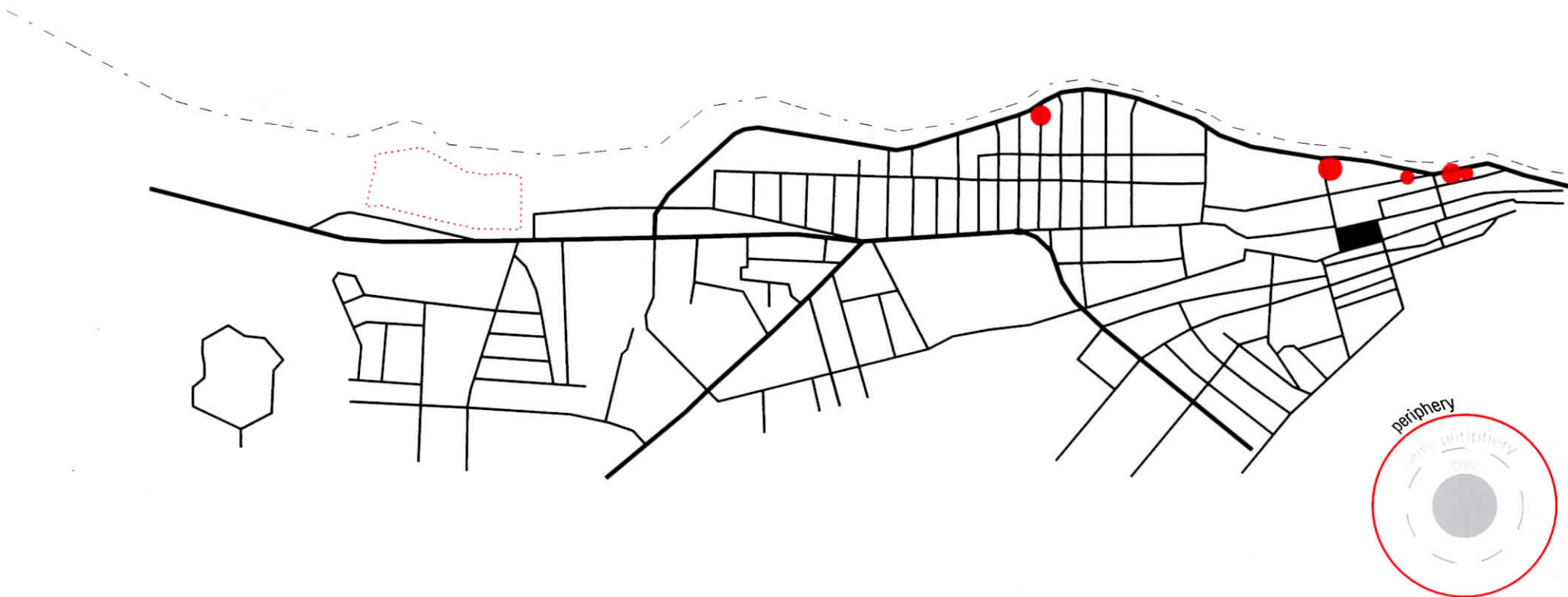


the city | neglected properties





semi-periphery





periphery [coast]



Arecibo Pueblo 10,596

Arenalejos 2,997

Arrozal 1,218

Cambalache 64

Carreras 1,294

Domingo Ruiz 3,444

Dominguito 4,998

Esperanza 2,130

Factor 6,819

Garrochales 2,366

Hato Abajo 22,597

Hato Arriba 7,947

Hato Viejo 2,097

Islote 6,080

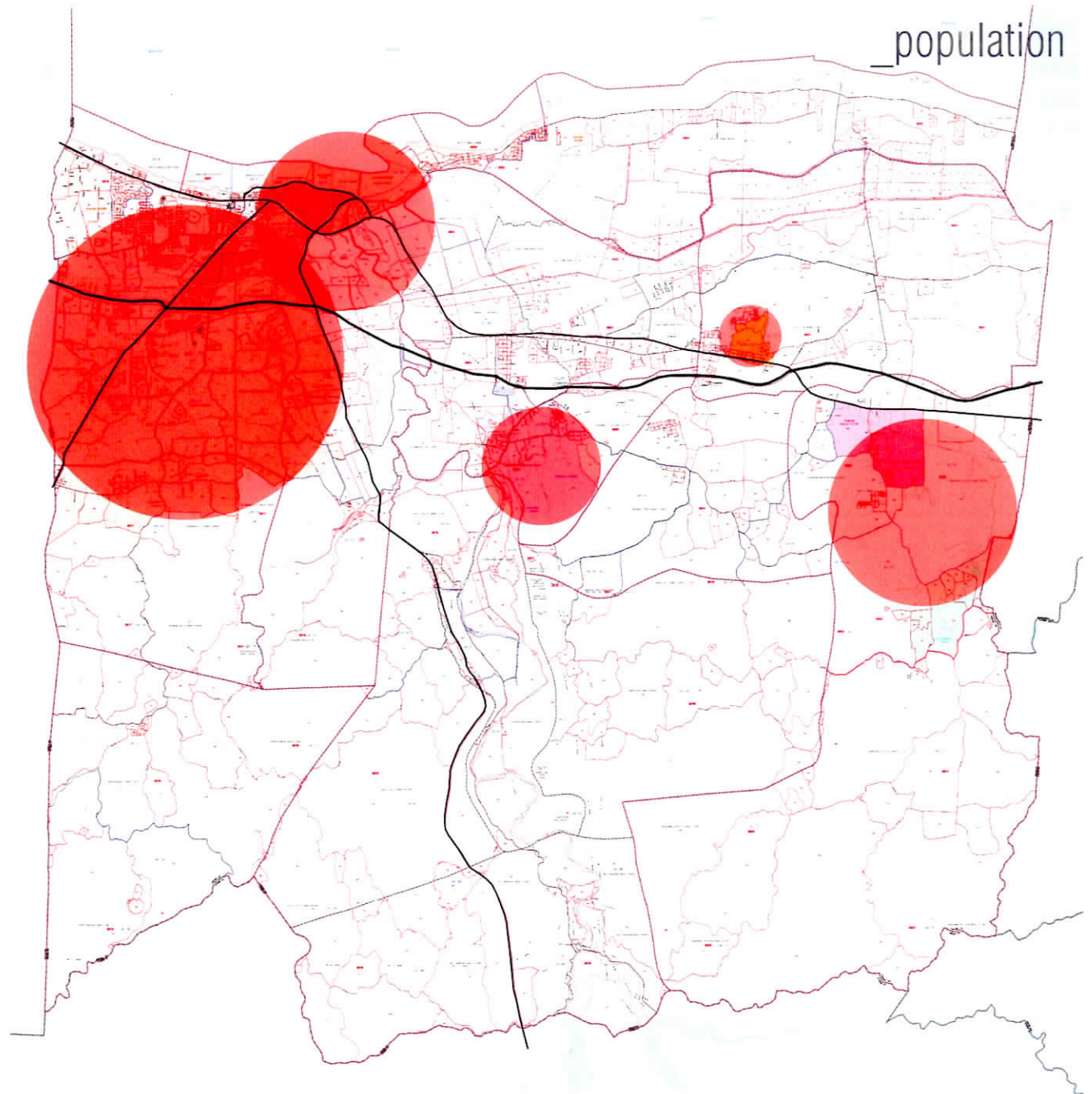
Miraflores 5,122

Rio Arriba 1,028

Sabana Hoyos 11,064

Santana 4,857

Tanama 3,413



## conclusions | arecibo, the neglected city

\_Short after the closure of the Puerto Rico Distilling Company, Arecibo lost one of its major sources of income. The city still operates as an industrial center that dedicates to the manufacturing of certain products such as clothes, electronics and medical equipment. However, these do not supply a significant input into the city's economy. Since the 1980's the city has undergone a period of poor or very little progress. The continuous expansion of the city away from the city center, and the construction of commercial centers in the suburban areas has left the downtown portion of the city in a complete state of isolation. The reason behind this abandonment relies on the suburban sprawl, the lack of urban planning and carefully considered transportation methods. The ready access to freeways, and construction of shopping malls become attractive places for families who wish to have their own piece of land and home-owned property away from any congested or busy areas.

\_Some of the institutions mentioned in the historical account of Arecibo have completely disappeared. The central market, as described by local author Lopez Aresti, was surrounded with an infinity of small, picturesque businesses and cafes. The Plaza was opened twenty-four hours a day and always chockfull of people from every social background, age and race. Everyone could eat as well as buy fresh products and traditional food. Early mornings at the Plaza saw the arrival of peasants that came everyday to city ready to sell the crops they grew distances away. Entertainment venues such as the grand Oliver Theater and the Arecibo Casino closed down due to a lack of maintenance.

\_A lack of political attention towards cultural consciousness and conservation has left its scars in one of the city's most important spaces, Plaza de Recreo (what was called Plaza Mayor), its main public square, a place that lived every laugh and tear of its citizens and historical accounts. As media and communication did not develop until mid 1900's, the plaza acted as a repository of people who wanted to know, see, and learn. From the balconies of buildings surrounding the plaza news and important events were announced daily to the public. The west avenue also played an active performance in the life of the city as military marches, religious processions and cultural festivities took place during certain months of the year.

\_The loss of these valuable spaces become critical in the way we start thinking about the regeneration of the city's urban landscape. A new public architecture that provides a strong and influential agenda can become the primary player in the reactivation of the city's urban life.

*“Our oceans, lakes and bays offer potential for food, for minerals, for medicines. At the same time they also provide the setting for very special places, places which help define who we are, places we revere as well as use.”*

[center for marine education. humacao. pr]

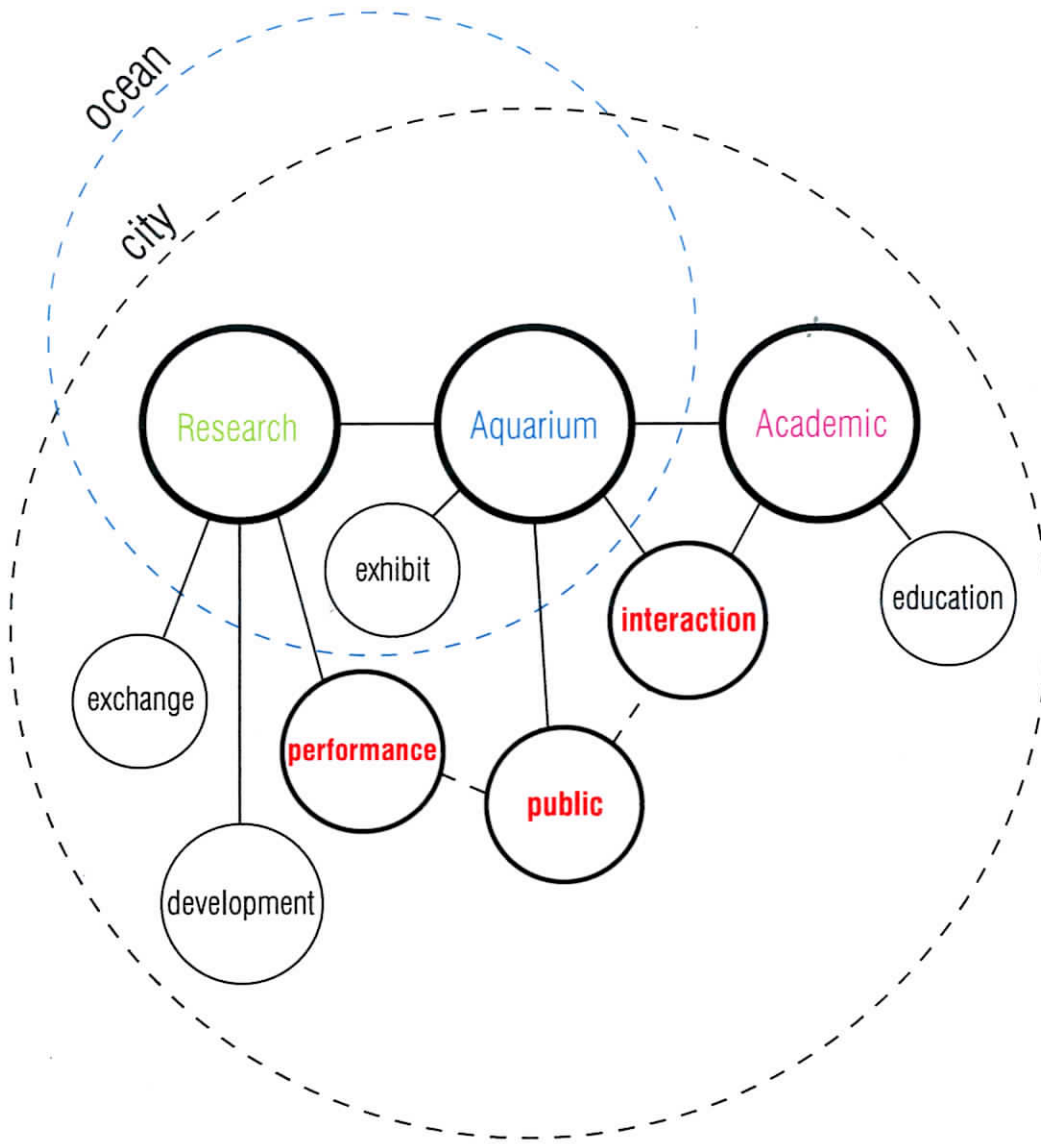
## 6.0 | program

Given the background of Arecibo, the program aims to create a cultural educational institution that advances the quality of life of the city through a program that strengthens the city's value, resources, and surroundings. It intends to reactivate a new public life through an urban space that engages the public with the waterfront, taking advantage of the city's assets: coastal edge, urban center, history, and population.

An educational institution provides the necessary tools for the exchange, communication, conservation and acquisition of ideas. Through a dynamic interaction of different programmatic elements such as research, exhibition and instruction, this intervention can promote new modes of social interaction while acknowledging and celebrating the waterfront as a valuable natural resource and a catalyst for the renewal of the city's civic and urban life.

The Marine Cultural Institution intends to deal with the resources available in the site, working closely with the public realm and the city's coastal assets. The research aspect will be the primary instigator for encouraging the conservation of coastal areas, protection of the natural environment and improvement of the economic situation of coastal cities through sustainable development. As a free-choice learning institution, it will provide educational programs, lecture, courses and activities for every individual in the community. Ultimately, through research and education, the aquarium becomes the ground that mediates the private and social practices of these institutions. It becomes a place for exhibition and interaction while exploring and promoting new social encounters between people and their environment.

## 6.1 | program goals



### Research

projects devoted to the conservation of coastal communities and marine resources within the city, Puerto Rico and the Caribbean

### Aquarium

becomes a public institution that promotes public engagement with the city's coastal resources by providing the grounds for social interaction and public life.

### Academic

education becomes an open and accessible device in which to promote the exchange and communication of ideas.

## 6.2 | program components

### \_ Research + Academic Institution

- \_ Analytical Laboratories
- \_ Fisheries and Mariculture Laboratories
- \_ Indoor Wet Labs [unfiltered seawater aquaria]
- \_ Outdoor Pool Tanks
- \_ Data Center
- \_ Mechanical [seawater plumbing system]
- \_ Storage
- \_ Classrooms
- \_ Conference/Seminar Rooms
- \_ Auditorium
- \_ Offices
- \_ Administrative Offices
- \_ Dormitories
- \_ Kitchen
- \_ Docks

### \_ Aquarium

- \_ Lobby
- \_ Museum [hands on experience]
- \_ Exhibit tanks
- \_ Water Analysis Laboratories
- \_ Food Preparation Areas
- \_ Quarantine Tanks
- \_ Mechanical [plumbing and filtering system facilities]
- \_ Administrative Offices
- \_ Shop
- \_ Restaurant

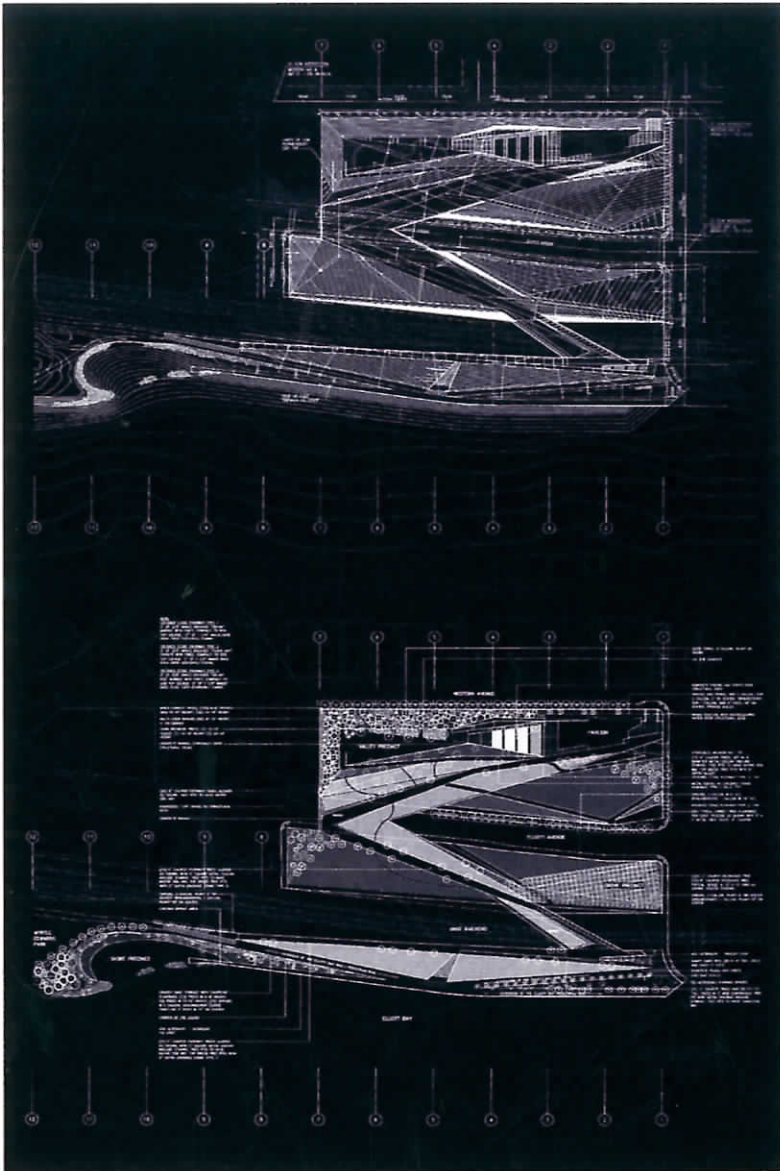
### \_ Public Realm

- \_ Public Plaza
- \_ Water docks
- \_ Water walkways



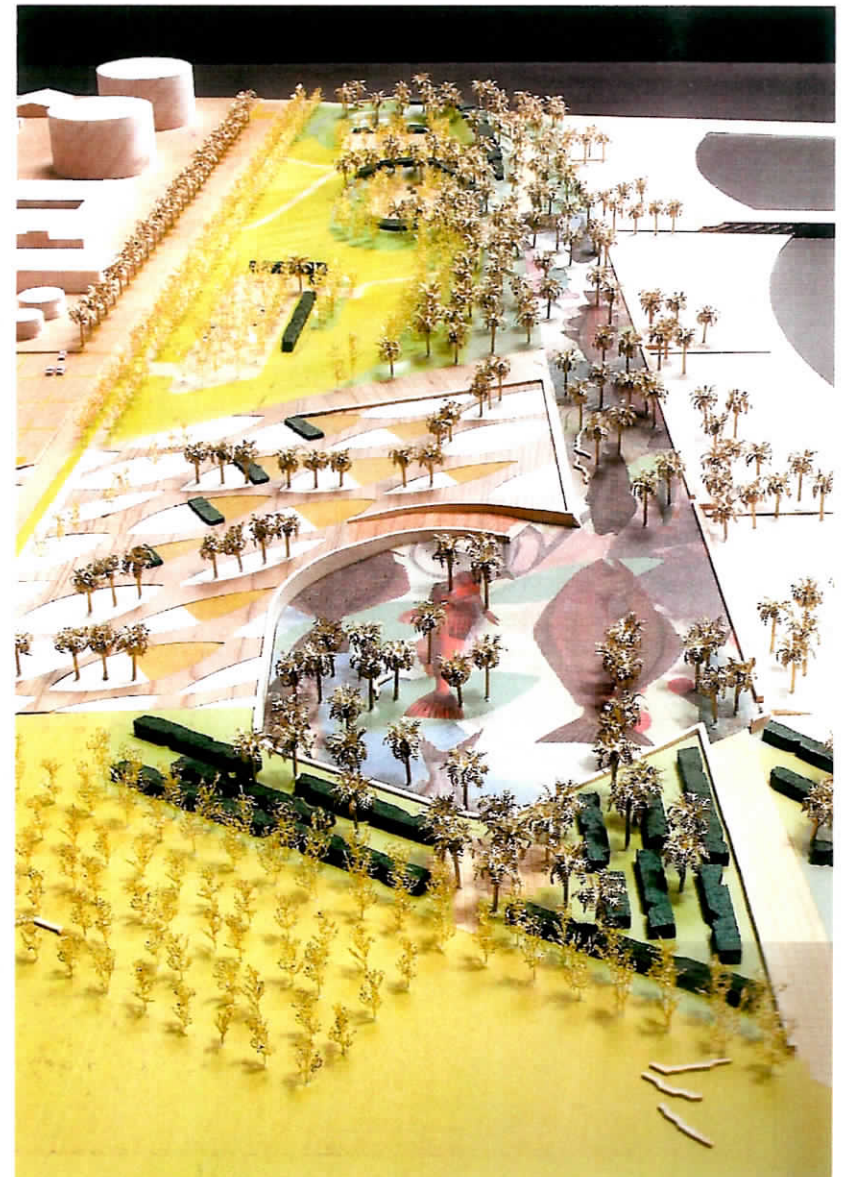








*The park innovatively integrates the means for cultural diversity while promoting sustainable design and development. The value of its programmatic organization relies on the interaction of public spaces (park, marina, beach) with private practices (municipal recycling and education center). The dynamic interaction of these programs working cooperatively reconsiders new modes of urban and waterfront revitalization.*



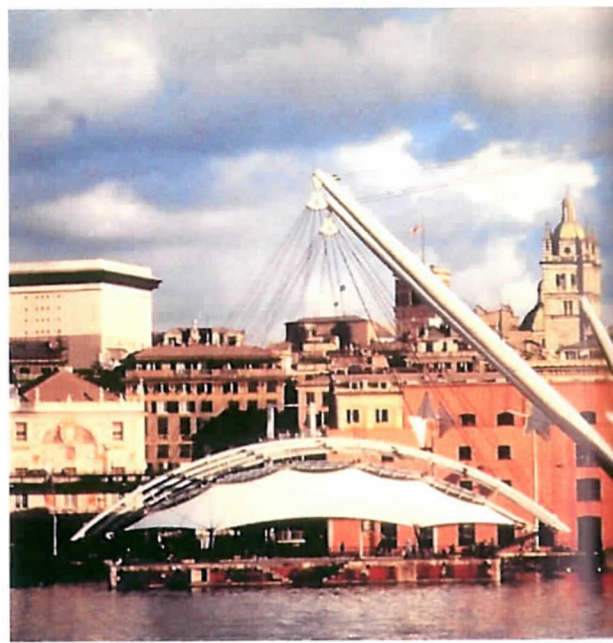
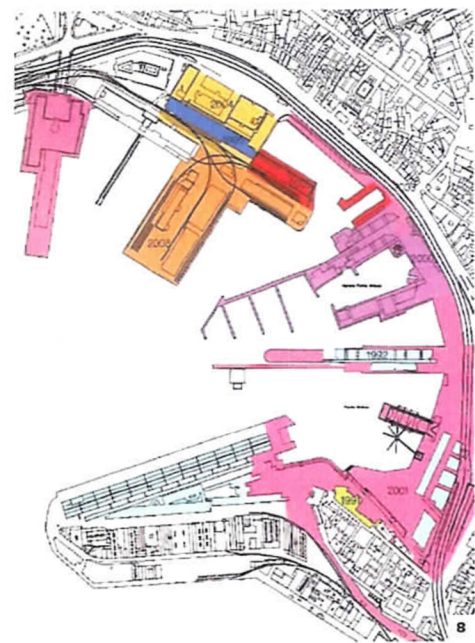


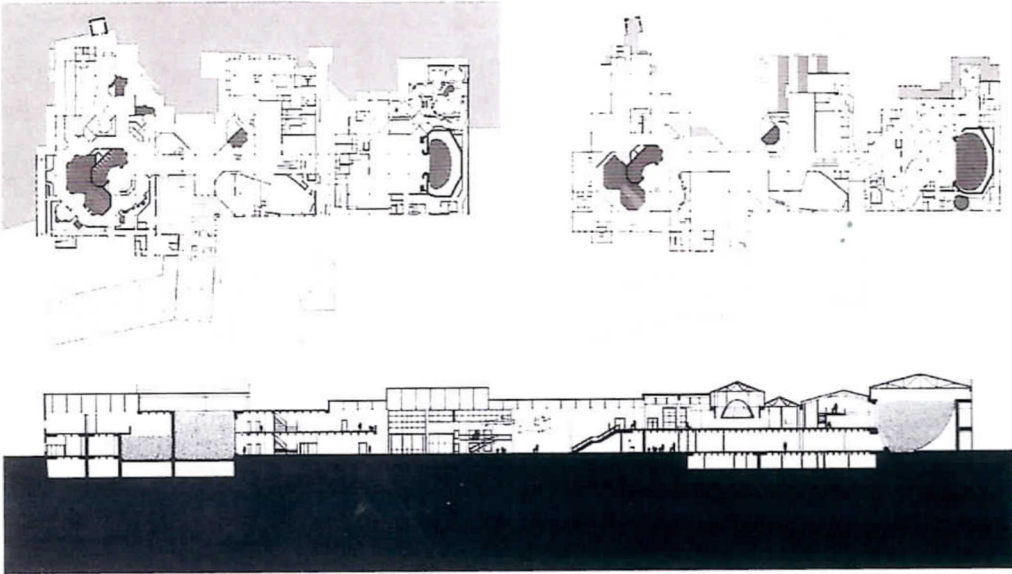
*"A key element in Bilbao's success is the understanding that the potential of the city can only be fully realized through a coordinated effort between the public administration and the private sector". The careful study of the role of people and technology in the emergent societies of the world led the city to take a strong position into conserving its own cultural values while opening itself to the world through institutions that prove healthy to their economy and their civic life.*

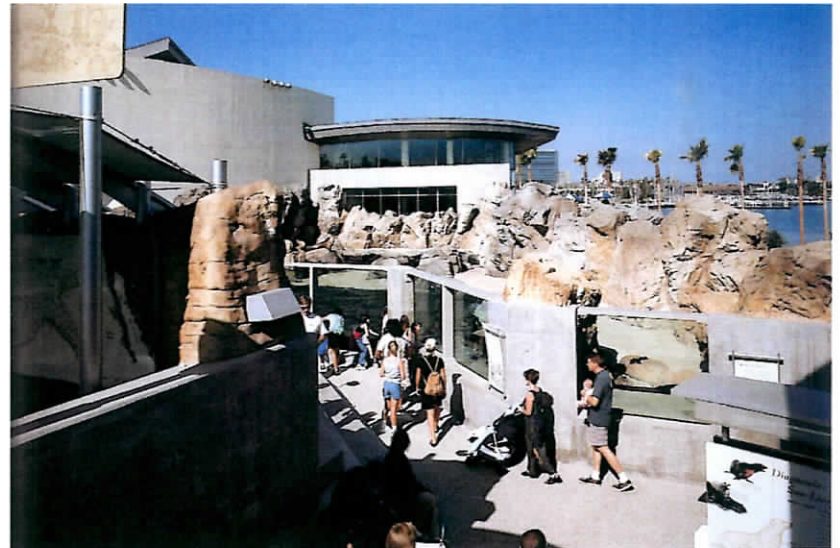
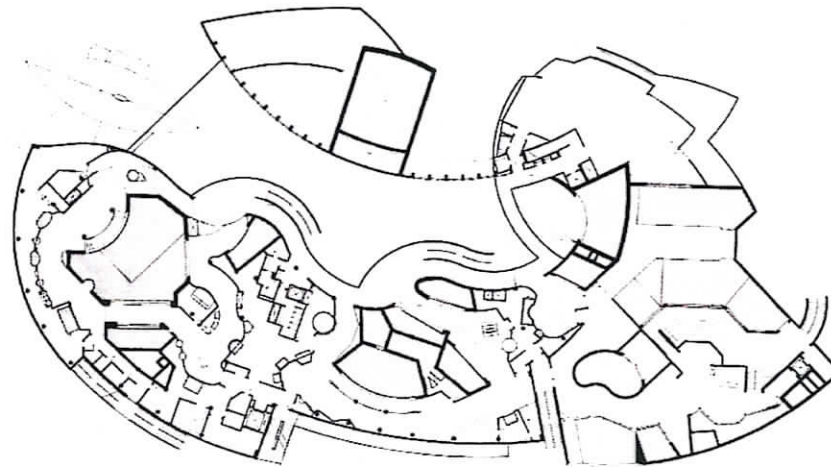
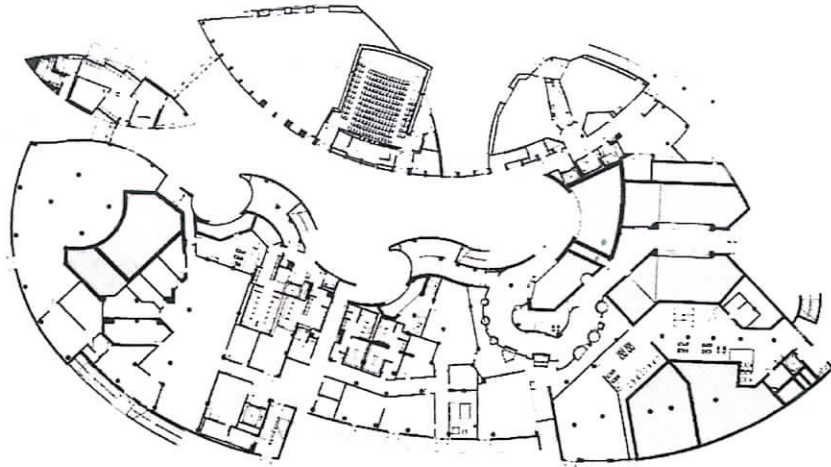
[Marshall, 2001]  
*Waterfronts in Post-Industrial Cities*

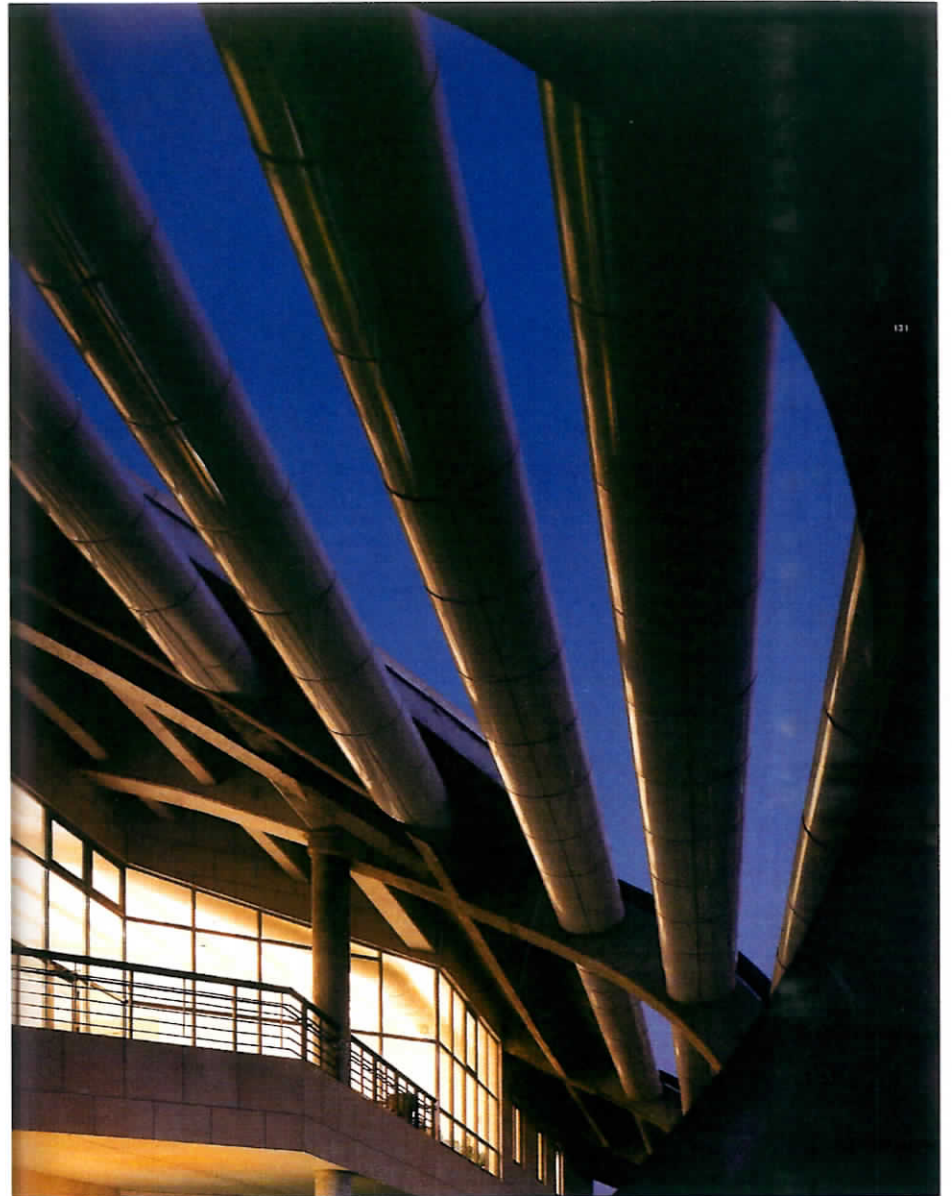
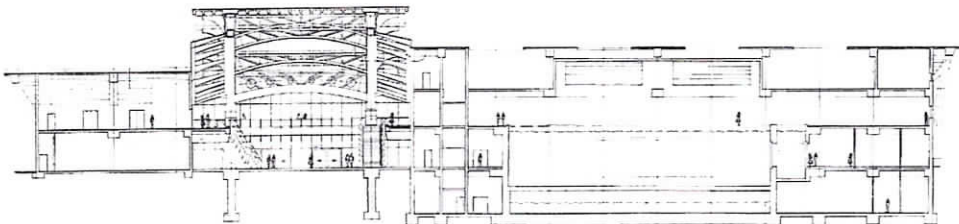
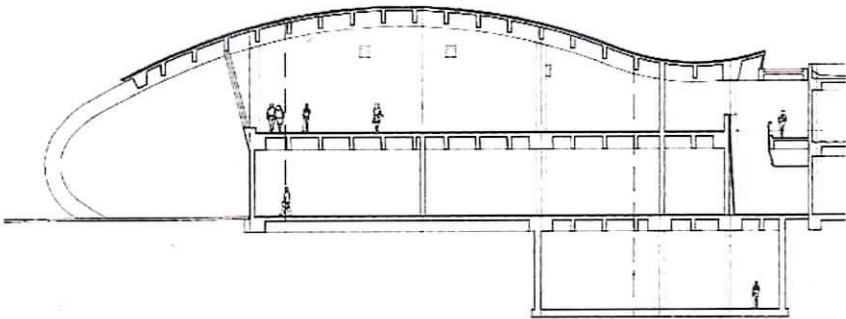
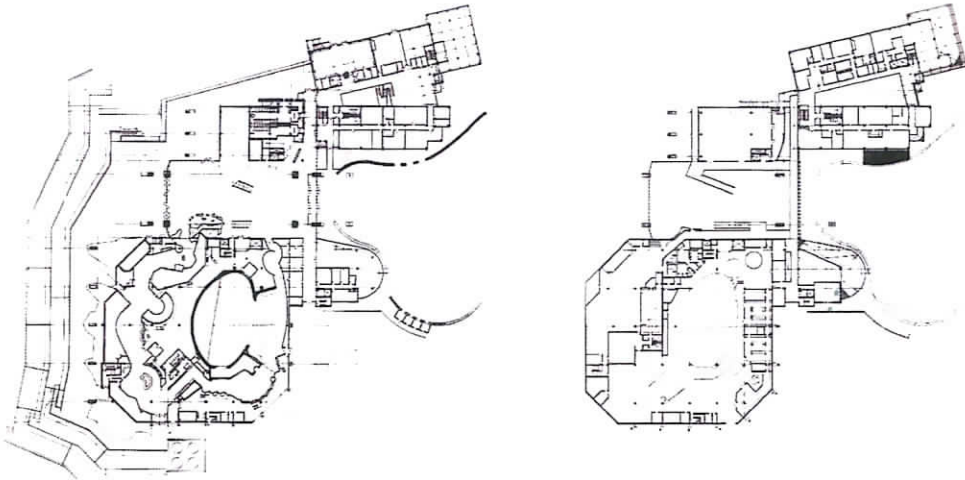
genoa. italy.  
reconstructing the urban port

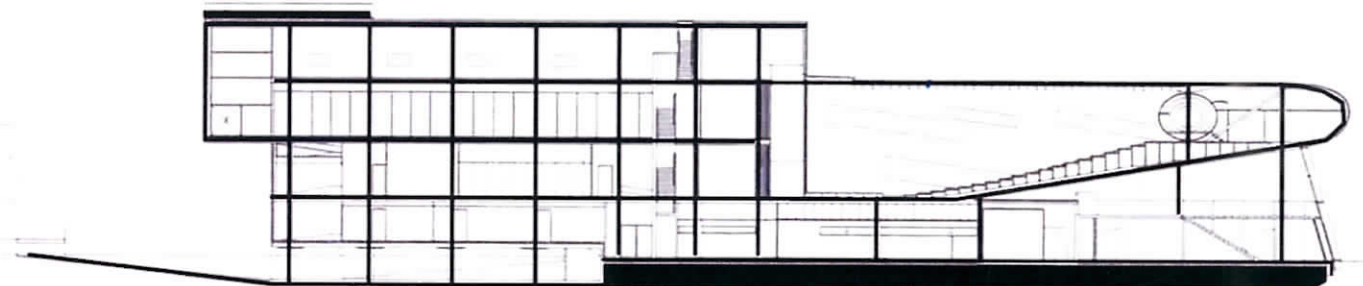
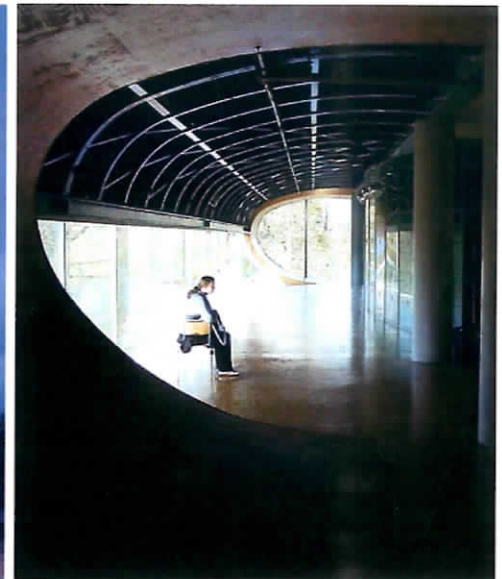
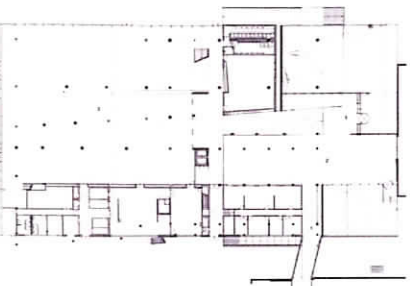
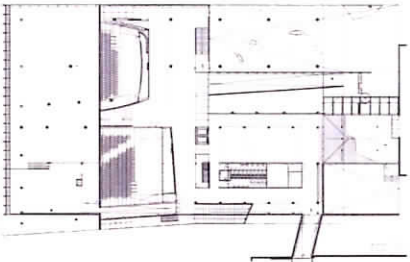
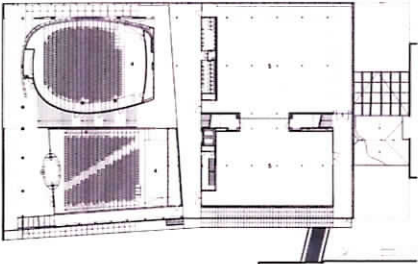
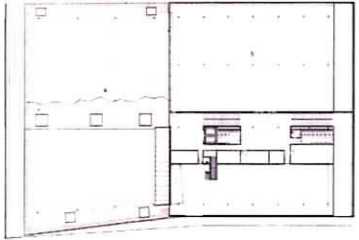
# urban revitalization











*The multi-functionality of the educatorium provides a feasible approach to the highly active life of students at the Uithof University Campus. The facility accommodates lecture halls, examination rooms, performance venue, and study space. Because it is shared with the rest of the campus faculty and research institutes, the building becomes a place for the communication and exchange of activities and ideas.*



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