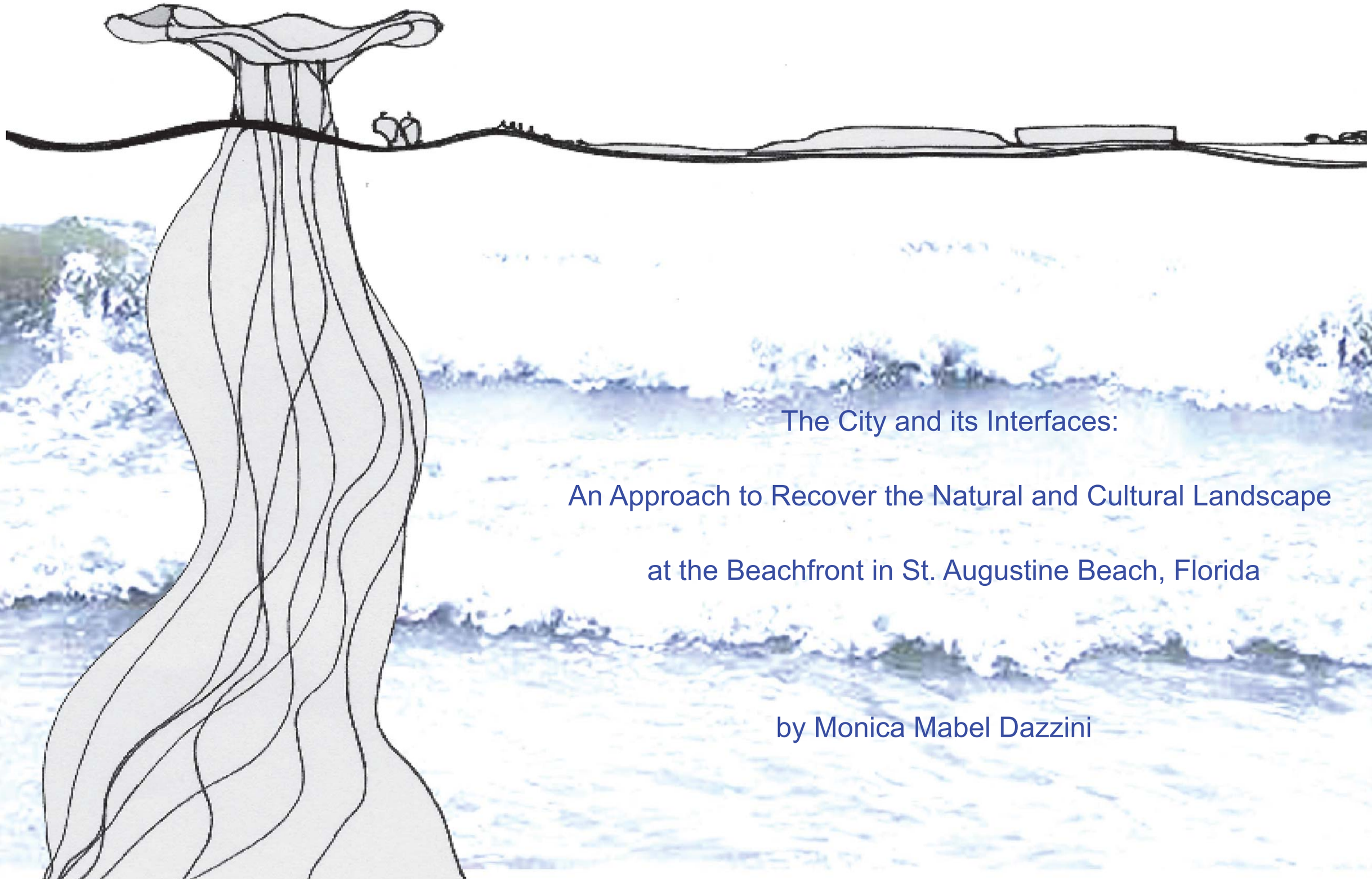

The City and its Interfaces:

An Approach to Recover the Natural and Cultural Landscape

at the Beachfront in St. Augustine Beach, Florida

by Monica Mabel Dazzini

The City and its interfaces:

An Approach to Recover the Natural and Cultural Landscape at the Beachfront in St. Augustine Beach, Florida

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This thesis submitted to the faculty of the Virginia Polytechnic and State University
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Abstract

The fast growth of the urban population affects city life by degrading natural and social resources. Urban developments modify resources such as forest, land, and water, but also modify the intimate relationship of people with the landscape. Many times, the damage of those resources is irreversible, and provokes dramatic changes in the natural landscape and the uniqueness of the place is missing. Despite the intense discussion that landscape architects and scientists worldwide hold about social and environmental aspects in urban environments, many questions about how to support natural and cultural landscapes, or why to keep them are not answered in the existing waterfronts and re-developments at the water's edge. For this reason, the recovering of urban waterfronts is an opportunity to promote ecologically healthy environments, address sense of place, support human gatherings, and encourage economic revitalization. This thesis and its research analyzes the components of the natural regional landscape in recovering waterfronts in order to avoid the loss of the uniqueness of a place. A section of beachfront in St. Augustine Beach, Florida that has suffered beach erosion and development pressures was choosen for the study. The result is an alternative proposal to costly dredging and beach reclamation that includes a series of tools, interventions, and landscape modifications of this threatened site. This proposal aims to return the site to a balanced and friendly landscape. Waterfronts in cities are an opportunity to reconnect communities with their cultural and geographic landscape.

Acknowledgements

Several people encouraged and helped me to accomplish this work. I know that I can not name each one at this moment without forgetting one of them. However, I will never forget their faces and their essential advice, critique and insights.

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Contents

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Introduction

“The changing scene at the edge and the placelessness
that goes along with it has become a battle ground between efforts
to preserve rural land and the relentless forces of urbanization.”
(Hough, M. 1990. Out of Place: Restoring identity to the regional landscape.p.88)

PART I: Introduction

A. Landscapes: A cultural appropriation of the land

The U.S. National Park Service defines cultural landscape as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values”(Slaiby 2003: p.10). Many times we also use the word landscape to simply refer to a natural environment where people live. During the XXI century, we will face increasing challenges among humans and natural landscapes (Sasaki 2004). Under a human perspective, the ultimate goal of natural landscapes is supporting the life of the community. Human communities transform the natural landscape to build places to live, and each community has a particular way of appropriation of natural landscapes that shows the cultural relationship between the community and the landscape (Hough 1990).

Human appropiation of the land defines the cultural landscape of a community. Human settlements provide many functions such as housing, commerce, recreation, food provision, education, and transportation. These settlements have different sizes, and vary in functional complexity, in dependence of the size of their population. The way settlements are positioned in the landscape is strongly related to several factors such as topography, climate and microclimate, soil type and structure, vegetation, and water availability, all of which contribute to the quality of a site. However, landscapes are not only the expression of geographic conditions, but also they are the recepient of the culture of a community and condense its beliefs and knowledge (Whittlesey 1929, Rudovski 1964).

Machu Pichu, Peru (1983). An Inca settlement with a strong relationship between topography, housing and agriculture.

a. The growing speed of human land occupation: Demands for urban public spaces

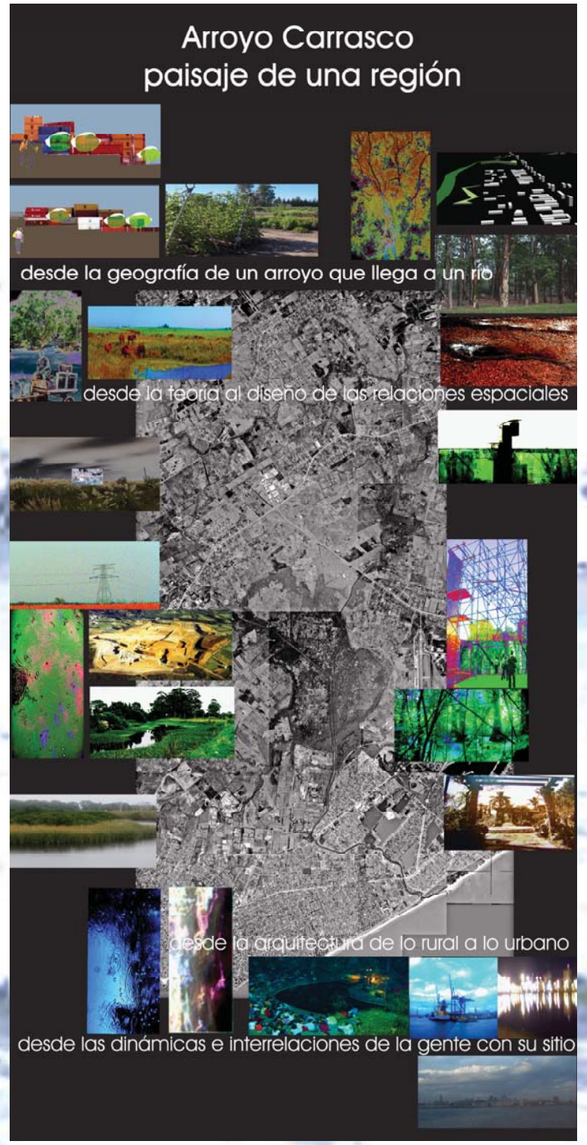
Nowadays the transformation of natural landscapes for human occupation is dramatically intensified. The amount of land allocated to meet human needs and the speed of landscape transformation pose a threat for many natural resources such as forests, rivers, soils, and vegetation. These valuable resources guarantee the multiple functions of landscapes. The growth of urban areas risks the environment and natural resources. This situation is aggravated by the intensification of mass transportation systems, and the access to new technologies, which allow a greater number of people to move from one place to another (Kullenberg 2001). Therefore, landscape architects, planners, and decision-makers will be challenged by problems of environmental degradation, freshwater availability, food supply, soil erosion, and air pollution (Barbiere 2001).

Pacific Ocean at the North of Chile (2004)

In 2001, Kullenberg discusses the spatial distribution of world population, and demonstrated that human populations are typically located at the coastal edges in a fringe of 60 km from the sea. The World Population Prospects, 2004 Revision of the United Nations, points out that for 2005 the world population is growing annually 1.21 percent with an expected world population of 10.6 billion people for 2050 for the medium variant. This is a record rate in human history. The population of coastal cities will significantly increase in a near future.

The ways cities expand also intensifies the use of cars, and new road systems provide much needed transportation. The intensification of transportation, public or private, increased pollution, and the use of streets as urban public space is unsafe and not enjoyable. These conditions make streets lose their function of social integration. Hough, in 1990, writes “the street becomes a separator rather than an integrator of people” (Hough 1990: p. 93).

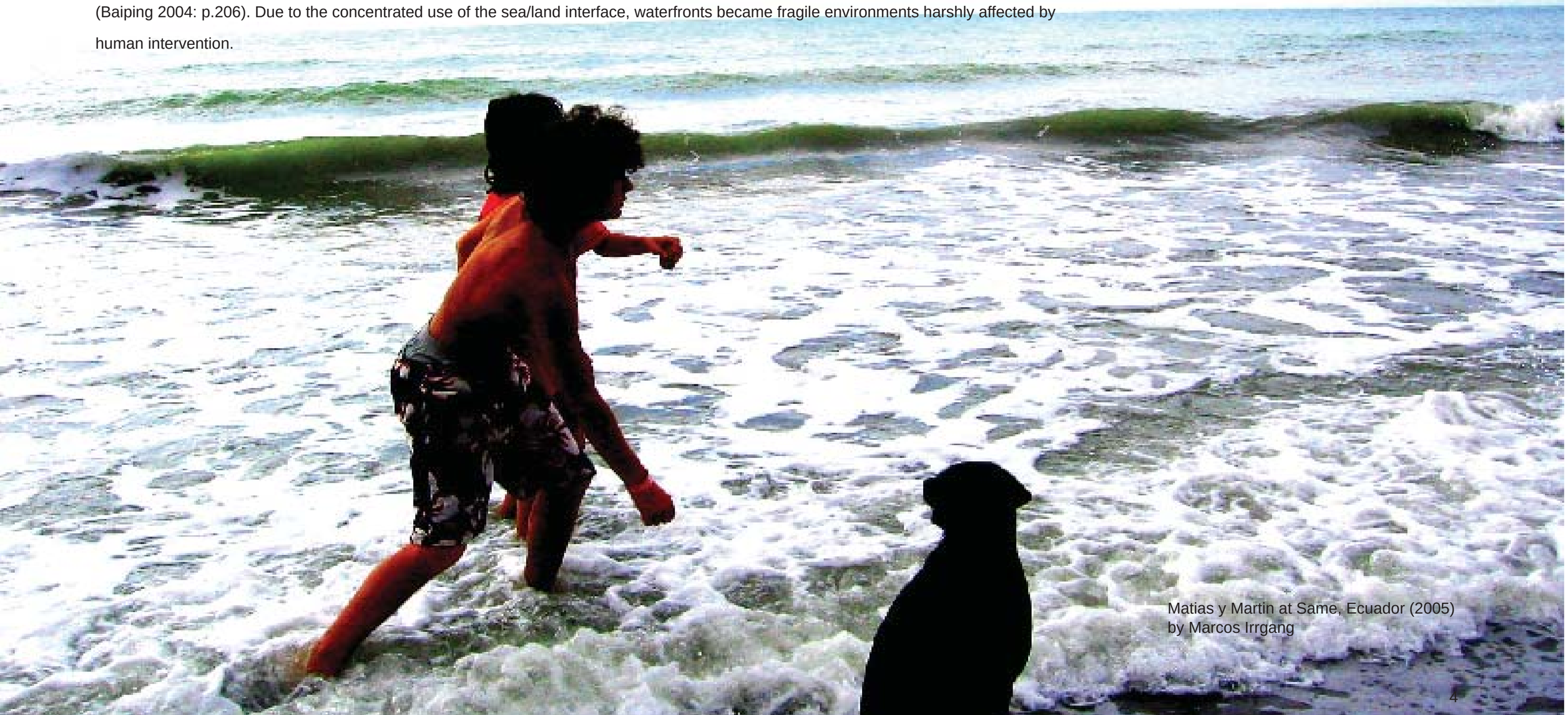
There is a need to look for safety public spaces where communities meet each other in an environment that satisfy communities needs and desires (Barbiere 2001). Urban environments are under pressure to provide solutions to new land use demands. New demands must balance natural landscapes and building areas by establishing limits on the use of the land (Jackson 2004). Attractive coastal landscapes meet the requirements to balance natural and urban landscapes. Beachfronts are one of the largest recreational public spaces and offer an exceptional opportunity for socialization.



Montevideo, Uruguay (2005)
International Workshop “Arroyo Carrasco: Landscape of a region” Overpopulated areas, pollution, waste, and economic shorcuts contribute to the loss of identity of a place.

b. Waterfront designs: Global trend or local identity?

One of the most appealing areas in which natural landscapes have an increased economic value for human appropriation is the beachfront or waterfront. Coastal landscapes at the waterfront display the beauty of their distinctive ecosystems and support sensitive fauna and flora (Jackson 2004). In 2004, Baiping stated that places with high aesthetic quality develop into highly populated areas. He established that “unsuitable local management systems for scenic spots and profit-oriented development” are one of the main causes of urbanization (Baiping 2004: p. 208). The search for short-term economic benefits “destroys the natural state of land and ecosystems.” (Baiping 2004: p.206). Due to the concentrated use of the sea/land interface, waterfronts became fragile environments harshly affected by human intervention.



Matias y Martin at Same, Ecuador (2005)
by Marcos Irrgang

Wonderful coastal landscapes drive interest in today's urban waterfront design. However, it is common to look at the same waterfront program, the same spatial design with little variation, in many urban waterfronts across the world under very different natural and cultural landscapes (Meyer 1999; Talesnik 2002). The central objective of urban waterfronts is to recover the economy of urban areas based exclusively on economic development, and many times these designs do not preserve the major attraction of waterfronts which is the unique coastal landscape. To some extent this objective fails to preserve the local identity and local cultural values, which are intimately related to the uniqueness of the place. Waterfront designs fail to link natural, and cultural landscapes and communities when these designs do not support the individual characteristics of the landscape (Millspaugh 2001).

Talesnik (2002) argues that waterfront designs are homogenized due to global trends, and the new geo-economic order in the world. Steger, scholar in Economics and Human sciences raises the question, "does globalization increase cultural homogeneity?" (Steger 2002). Indeed, globalization is an umbrella used to describe the social turn given by the access to global socio-economic networks (Castells 1997; Dicken 2003). Talesnik in his work argues that there is a global trend towards homogenization in waterfront designs.

On the other hand, communities historically use the land and develop a particular landscape, under rules that express their culture and values. Each community has a unique way to use the land, to look at the land, and according with their knowledge they display the opportunities of land and climate (Hough 1990). Villages, towns, and cities are cultural products full of meanings.

Alicante, Spain (Summer, 2006)

The process of land appropriation generates social ties to the land, and enhances the sense of attachment to a place. Communities and places have been historically tied. However, decisions in waterfront designs such as the selection of tree species, or construction of structures that limit the access to the beach may possibly break the spatial connectivity between communities and natural landscapes (Loffler 2002). Waterfronts are one of the largest public spaces which provide the opportunity for the expression of natural and cultural landscapes (Breen 1996).

Martin at Atacames, Ecuador (2005)

c. A waterfront design in St. Augustine Beach: An ecological approach

Based on previous analysis, this study seeks to readdress the interface between the natural and cultural landscape of St. Augustine Beach's waterfront. Using an ecological approach, I analyze the land/water interface that supports the inner dynamics of the formation of the beachfront. In my case study, the natural and urban environment is represented by a coastal fringe at St. Augustine Beach, Florida. The study area is located at Lat. N 29°51'28.0" and Long -81°16'14" at the N.E coast of Florida state, with an area of 560m x 228m, approximately 12 blocks. Waterfront developments at Florida beachfronts are key elements for economic growth because waterfronts are one of the most effective strategies for the revitalization of local communities. Waterfronts are opportunities for reconnecting communities with their culture, heritage, and geography. This paper, emphasizes the role of waterfronts in linking local communities and natural landscapes (Weiland 2002). This research proposes a waterfront design, which addresses beachfront formation, and restates the natural and cultural system.

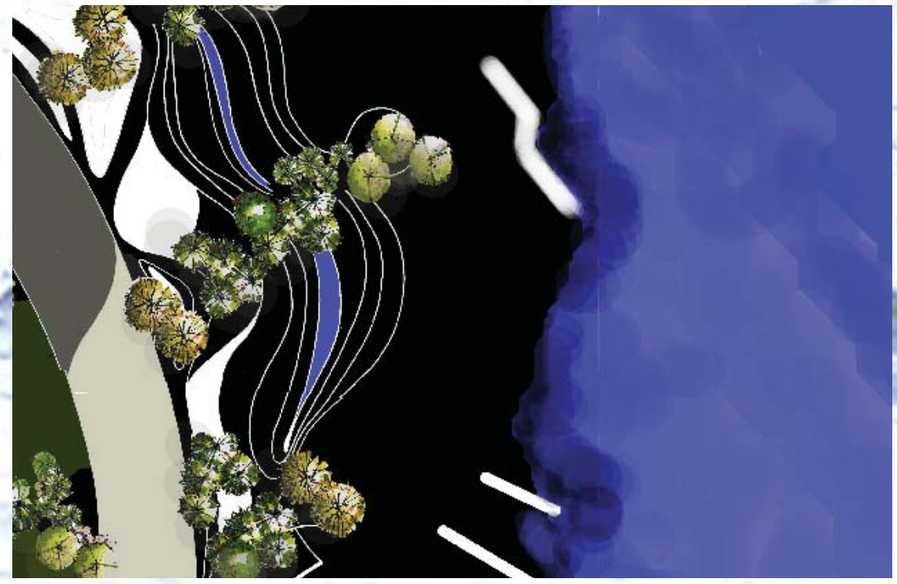
First, I studied the dynamics of natural coastal landscape formation at St. Augustine Beach, which experienced great pressures due to tourist developments in the state of Florida. I focused on two aspects: land/ water (sea) interface, and land/land-cover type (vegetation) interface. The sustainability of these interfaces is in conflict with the costly program of beach nourishment in the state of Florida. Thus, I propose a design for land/water interface that promotes dune formation, and solutions related to beach rehabilitation that might reduce costs on beach preservation.

Monica at the Mediterranean Sea (Summer 2006)

Second, I explore new strategies to diminish conflicts on land/land cover change, and supports local forest preservation. Throughout the design, I also explore the relationship between dunes and the Coastal Hammock forest at Anastasia State Recreation Area, which is part of the Florida State Parks system. Overall, this is a dynamic and sustainable design that supports the inner dynamics of landscape formation.

Martin at St. Augustine Beach, FL (2004)

The research addresses the dynamics of the natural and cultural landscape in St. Augustine Beach by reconnecting the interfaces between humans, water, land, and vegetation. Planners and designers might envision new creative approaches that allow natural landscape restoration, and it is crucial to find ways to produce genuine public space designs that address community cultural values. The project also has a strong educational component in the belief that communities might know how to preserve their landscapes. Much research is needed to qualify and quantify cultural values of human habitats. These further studies might consider community participation and education as paths towards the well-being of the local communities.



Preliminary studies. Topography and dune formation

PART II: Literature Review

A. A brief history of waterfronts: Uses and meanings

Societies have historically chosen to establish new towns near water because of the advantage created by proximity to water as a means of connection with their homeland. History always refers to water trading routes for shipping and transportation, such as the route of the European conquerors to the American colonies through the Atlantic Ocean, which opened market opportunities to trade goods and raw materials to benefit Spain, Portugal, France, or England since 1492 (Morris 1993).

Throughout the history of the world, each community gave waterfronts a meaning pertaining to its life. Those meanings changed as the life of the communities adjacent to the waterfront evolved. Waterfronts marked important moments in the social life of towns around the water's edge, as they were often places of joy for people who awaited the safe arrival of beloved ones. For instance, the design of traditional beach houses at Key West included special balconies on the roof to search for ships returning from the Caribbean Sea. Fishing communities also developed their life around the sea for food provision. Waterfronts have a strong connection with the socio-cultural and economic life in community urban spaces. They were the depot for the merchandise that arrived from remote parts of the world. Nowadays, many waterfronts, such as Jacksonville, FL, are in full activity with an intense shipping of cars from the United States to the Caribbean Islands that can be seen in the waterfront. An example of the powerful relationship between communities and the water's edge is the neighborhood of La Boca, on the Buenos Aires coastline of Argentina. This neighborhood is internationally known because it was inhabited by the European immigrants that arrived to Argentina in the late nineteenth and early twentieth centuries. La Boca was built with

La Boca, Buenos Aires (2004)

discarded materials such as metallic panels and stones that the ships brought in their empty storage rooms for balancing. Then, these materials were disposed off at the waterfront to make storage room to be refilled with the new merchandise that was to go back to Europe. This process in cargo management encouraged the rise of this world famous neighborhood along the Buenos Aires coast, populated by immigrants who arrived via those same ships. Immigrants, lacking resources, recycled the metallic panels to build their own houses at the waterfront that were painted with many different colors, and used the stones to build the streets. Today, La Boca is a tourist destination in Buenos Aires downtown. This example, as many others, demonstrates that waterfronts, historically and romantically, are gateways to other worlds, towards the natural sea life, and other societies connected by the sea.

Given the significance of waterfronts, The Urban Land Institute launched a noteworthy research project about waterfronts and patterns of port development. This history of the evolution of waterfronts tracks the steps of the transformation of the water's edge over time (Riggs 2004). The working waterfront, the post-industrial waterfront, and the recreational waterfront are three main stages in waterfront development that tha Urban Land Institute defined to understand waterfront historical periods.

Identity of a place, New York, 2000

a. The working waterfront

Early American settlements were built at the seashore. Their main objective was to build a safe and accessible port for explorers and adventurers who arrived to the New World. Life at the waterfronts that surrounded the port was always a center of social and commercial connection between the Old and New World. Waterfronts and ports were significant community public spaces for commerce and recreation.

Advances in ships' designs intensify the movement of people and goods across the seas. The operation of different types of ships for cargo and passengers was feasible depending upon the water's depth and the size of the ships. Jetties of varying lengths, seawalls, and bulkheads were built given diverse site demands supporting the working waterfront

Population growth of settlements beside ports encouraged the development of street patterns, commercial and residential areas, storage buildings, and special equipment were installed to assist the waterfront cargo area. Warehouses, docks, and the introduction of the railroad and industrial cranes built the landscape of the working urban waterfront. The increasing growth of the infrastructure for the working waterfront. gradually, separated the waterfront from the residential area.

Barcelona Harbor, Spain (2006)

Later in human history, proximity of water lessened as a driving force for settlement. Large-scale trade and transportation, new technologies and the improvement of urban infrastructure opened other possibilities for the location of new developments within the interior of the continents rather than being confined to the edge of the sea. During the era of industrial urbanism there was a shift in importance of waterfronts. They became places for more social and economic activities (Talesnik 2002). The social and economic conditions of Europe in the nineteenth-century, and the World Wars in the beginning of the twentieth century forced large numbers of the European population to depart and look for new places to settle. America was the promised land and the continent received an astounding immigration. As a result, millions of immigrants arrived from Northwest Europe to the East coast. Most of them, stayed at the East coast because of the proximity with Europe, which developed an intense commerce with other regions of the world.

The immigration process launched a trend of growth in coastal cities that would never cease. Cities of the Atlantic coast received arrivals of immigrants who changed the social composition of the country. During 1815-1860, the United States received five million immigrants, mainly from England, Ireland, and Scandinavia during the first 50 years of immigration. However, 25 million immigrants arrived to the United States from the mid-nineteenth century to the beginning of the twentieth century, after the First World War (Gibson 1999). Waterfronts were adapted to accomplish a great variety of uses; they became “hard trading areas” to support the network of economic world trends (Morris 1993). The “working” waterfronts were shipping and trading areas. Waterfronts were dynamic operational places with specific uses and destinations. According to Sieber, waterfronts were exclusively a source of economic livelihood (Sieber 2000). During the industrialized era, many factories established basis in urban areas at the proximity of water needed in many processes, and human resources. However, the industrialization of waterfronts triggered the pollution of rivers and seas. Baltimore, Sheffield, Montevideo, Barcelona, and Buenos Aires are few examples of coastal pollution that contributed to the later abandonment of urban waterfronts, rapidly converted into drainage areas for urban industries.

New York City.

b. The post-industrial waterfront

During the post-industrial economy of the 1970s, waterfronts were underused, abandoned, or harmfully polluted. The improvement of the aircraft industry after the World Wars developed into a faster alternative for shipping, trading and storage, therefore ports' activities notably decreased. Cities turned their backs on the waterfronts, and they became unpleasant and inhospitable places, hidden from public access and appreciation. The bond between waterfronts and communities was detached. Cities deprived communities of waterfronts as an edge (Breen 1996).

On the other hand, the growth of populations in coastal areas was an attraction for investors that looked for dynamic markets. These cities were not only places to settle down, but were also markets with aggressive economies. Actually, coastal cities produce 55% of GNP in low-income countries, 73% in middle-income countries, and 85% in developed countries (Kullenberg 2001). Due to population growth, cities have a high demand for urban public places, and waterfronts are a great opportunity to meet several recreational conditions.

However, waterfronts still have high level of pollution in soil and water, and are considered brownfields or areas once used for housing, commerce, or industry, and affected for some levels of pollutions. In several sustainable plans, brownfields are primary targets for redevelopment because they hold a privileged location, and provide low cost land in highly populated and well-connected downtown areas. Several ports and working waterfronts in misuse fall into this category, and governments and communities join efforts into waterfronts redevelopment because of the rapid increase of value after recovery of land strongly connected with downtown areas.

Barcelona Harbor, Spain (2006)

b.1. Urban coastal cities:

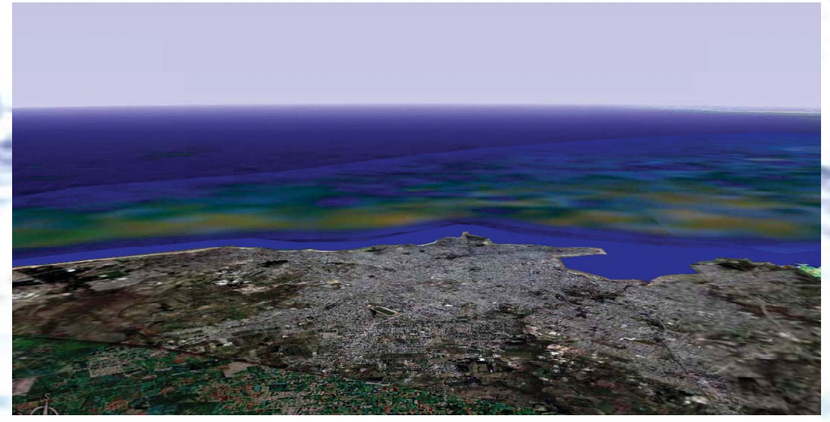
In 1998, given the complexity of the rapid urbanization of the coastal belt, speakers at the International Workshop on Integrated Coastal Management held in Korea, maintained the importance of concentrated efforts in the management of coastal cities and launched a visionary idea: the implementation of the Integrated Coastal Management Area Program (Post and Lundin 1996). This program is a formal call to look for regional strategies that address a framework for the collaborative management of urban coastal cities.

In the 1990s, a new wave of migration driven by the search of new job opportunities in urban areas determined numerous changes at the water's edge. The increase in population and the need to enlarge urban public spaces turned the sights of developers and communities toward waterfronts. Waterfronts were full of meaning, history, and land at the core of the city, which were waiting for an opportunity for revitalization. It was a very significant land recovery opportunity. Gradually, governments and communities set great efforts to revitalize urban waterfronts for recreation. They were the new face of many cities; indeed, the expression of citizen ownership was directed to re-establish the network between people and waterfronts (Breen 1996). In addition, communities' concerns about waste practices and water pollution in rivers and seas draw governments' attention on the water's edge because of the effects on the quality of urban life. Indeed, it was a common understanding of the significant value of waterfronts that offer several recreational opportunities in a distinctive urban public space. Waterfronts are the missing link between sea and communities; therefore, it is essential to make cautious decisions on the character of their recovery (Nicol and Halseth 2000).

c. The recreational waterfront

Urban waterfronts address unique spatial landscape structure and composition However, waterfront designs do not always give landscape the significance of a particular geography related to the richness of the topography, vegetation, and climate of a place, and a particular culture related to the community and the use it does of the place. Precipitation regimes and cycles of dry seasons, for instance, impact soils, produce a unique vegetation type, and induce a particular use of the landscape.

Moreover, parameters of temperature, sun hours, brightness and cycles of rain create the environment that determines the commercial and outdoor social life of a specific place. Humidity, winds, and air cleanliness also establish a state of affairs that shapes settlements in the process of appropriation of a place, and determines community's behavior.



Montevideo, Uruguay
www.earth.google.com (public domain retrieved March, 2006)

Communities that live beside the water are typically communities who enjoy the life of the outdoors and posses a strong relationship with the water, creating great memories of recreational activities such as sailing, canoeing, kayaking, swimming, fishing, surfing, scuba, or just walking along the shoreline. Water is the link with all memories that generate attachments in coastal communities. Water provides recreation, transport, trade, power, sanitation, and economic growth. Given mankind's strong link to water, both to sustain life and for recreational purposes, water has been the motive for the attachment of permanent human settlements to the land.

Amsterdam, Holland, boat housing (1999)

B. The importance of waterfronts: The new Urban Public space

a. An economic resource

Barcelona, Baltimore, Montevideo, Tokyo or Buenos Aires's waterfronts are remarkably functional solutions. Waterfronts constitute a new category of design for economic development for the economic revitalization of the cities. However, there is a trend in waterfront's designs that prioritizes the commercial use of the waterfront in detriment of other significant values widely discussed through much literature (Hough 1990, Meyer 1999, Sasaki 2004), and often neglects to address the local identity and the natural environment. Waterfronts represent a new category of thematic park poorly related to the water's edge. Frequently, they can be associated with the functional schema of commercial malls. Several waterfronts' designs only establish visual connections with the water's edge and disregard the opportunity to reinforce communities' activities at the water's edge. Water is a high quality design component, but programs developed to serve waterfronts simplify the complexity of meanings and social values that waterfronts have. Landscape architects not only have to increase commercial activities, but also they have to make available to the community the richness of this significant human gathering place.

Tarragona,Spain (2006)

1. Waterfronts: Accessibility and safety areas

Many times, the access to the beach and the free use of the water's edge restricted the use of the beachfront to private owners, who discourage the access of the local communities. Although national and international laws define a fringe of land of different dimensions in front of the sea for public use, it is possible to appreciate along the coast of Florida, for instance, in St. Johns County that ownership patterns restraint the public access to the beach. From St. Augustine Beach towards Daytona Beach, which is 30 minutes driving distance, there is not a public access to the beach (personal research) Plant design compositions, change in topography, gates, and platforms are some of the resources used by designers and landscape architects in an attempt to control the access to the public place justified by security concerns.. These designs restrain people's access and have the opposite effect on security concerns. In fact, barriers generate isolated areas that result in low use, as we can see in the Malecon 2000 by the design of the open platform over the river without any inviting shaded area in a tropical climate. These failures in design provoke an inhospitable environment that discourages the use and increases the risk. The Comite d'Action Femmes et Securite Urbaine in Montreal states a special concern for women and their security in urban open spaces. Women prefer urban places with great occupancy. Their research shows that people look for a relative distance from others without becoming secluded. Because of the increasing aggressive behavior and violence in cities, citizens often seek public places where they are able to see and be seen by others, but at the same time have the opportunity to regulate the level of personal interaction. Barriers such as planting design, physical barriers, or security guards promote the disconnection of the water's edge by constraining the access of the community to the water edge (Sieber 2000). The recovery of waterfronts should open the opportunity for public access that promotes a safety use, while decreasing the risk of assaults.

The appealing power of waterfronts is based on their unique natural structure and composition. Every day people screen the city by walking, biking, from public transportation, from their own car or on-line at home or at work, in fact, people make permanent selections of places for recreation. Although the importance of the economic recovery of waterfronts, they have to maintain their unique qualities that difference them from other places. In fact, the commercialization of the public space makes waterfronts open air malls (Talesnik 2002). Waterfront designs encourage consumption by following the commercial mall schema; users are watchers more than active people using the place. The life in waterfronts greatly depends on the activities and uses of the surroundings areas, as well as the quality of the common areas such as piazzas and corridors. Waterfront proposals must stress the opportunity of being in front of the sea because water has an appealing power that is generally under-designed. Waterfront designs often fail because they are not focusing on the sea and other natural local components of the landscape (Talesnik 2002). Waterfronts and the sea lost their own significance and power to bring people's attention on the water edge. They are full of what I like to call *noise* that represents the load of added functionality such as shopping areas, spectacles, music, or several others. Waterfronts' designs fail to reveal the essence of the place, while not

appealing to the spirit of the place, their intrinsic components as water, land and vegetation and its unique dynamics. When *noise* stops, for instance, at the end of the day when commercial areas are closed, several public places are empty of meaning. Landscape architects' designs can reveal the natural values of a place by drawing accents on the natural resources for improving this valuable economic resource. By preserving the social and natural uniqueness of a waterfront, landscape architects will also preserve the economic value of a waterfront. Indeed, tourists and visitors will choose to go and use it just because of these differences. If waterfronts become identical in proposal and designs, if they loose the beauty of their natural resources because they are deter or polluted, or the community that built the place is completely replaced, waterfronts will loose their unique characteristics. Even though waterfronts evolve, transformations made on the basis of the particular natural and social characteristics of the place will support a sustainable evolution.

b. A socio-cultural resource: Building an identity

Recreational waterfronts' designs based on the uniqueness of the landscape's structure and composition contribute to build the identity of a place. Kaplan states that natural environments are irreplaceable for the establishment of a healthy relationship between humans and other species (Kaplan 1989). Communities need natural public spaces and high quality design areas to balance the excess of construction of the city. Designs for public places take in account the natural environment and the building environment. The quality of the relationship that the designer established between these two environments defines the quality of the urban public space. Public spaces contribute to the development of different human aspects such as psychological, social, ecological, historic and cultural (Kaplan 1989; Hough 1990). Public spaces which are designed from an environmental perspective enhance the expression and preservation of natural resources such as forests, water features, and soil, which reinforce the image and the identity of a place. On the other hand, public spaces which are designed from a solely economic perspective seek growth through building expansion, and often prevail over the local identity of a place.

Waterfronts have a strong meaning among the different categories of the urban public place, and appealing public waterfronts attract a broad range of people of varied ages and assorted social composition. The action of sharing with family and friends beside the sea develops the sense of place in coastal communities. Waterfronts are related to the sense of belonging to a place or a community (ULI 2004). The link to the sea enhances a coastal community's identity. Castells argues that community identity is a social construction full of meanings, and identities change over time as communities change (Castells 1997). When designers have the commitment to redesign a waterfront in a city, they have the opportunity to rebuild, enhance, or create an identity by looking for its components which are the common values of the community. The attachment to a meaningful place such as a waterfront is part of the shared values of the community, which promotes social cohesion.

Castells defines identity as a social process based on communities' cultural values (Castells 1997). Places and identities are human constructions and are intimately related one to the other. Castells states that to understand the relationship between places and identities it is essential to understand how, from what, by whom, and for what identities give meaning to a place and a place give meanings to an identity (Castells 1997). This argument has a great significance for landscape designers because they are the designers of waterfronts, which are meaningful social places where coastal communities construct their identities.

Another aspect that reflects the importance of Talesnik's argument is how local identities are threatened by a global and more powerful identity. Castells claims that identities are organized around a primary identity that contextualizes the secondary identities or less powerful identities (Castells 1997). Strong and powerful identities can easily erode less powerful identities, resulting in a battle for supremacy. Communities that live in permanent social, cultural or economic threats stop or discontinue their growth (Castells 1997). The rapid growth of urban environments and the threat of globalization over local cultures set the stage for losing identity, and the standardization on waterfront designs shows this cultural conflict.

Hough (1990) discussed how the community identity is linked to natural features such as particular landscapes, group of mountains, lakes, rivers or the sea (Hough 1990). He argues that communities develop a sense of attachment and identity to features of significant proportions, which greatly impact in their every-day landscape (Hough 1990). The intense use of urban waterfronts show the importance of theses public spaces in the life of the communities. The *ramblas* in Barcelona, the *paseos* in Montevideo, or the *malecon* in Guayaquil are meaningful public spaces within the local communities. The attachment of communities to their waterfronts reinforces the coastal community's identity Waterfront' designs should link the every-day life of the community to the sea by bringing plenty of recreational opportunities to interact visually and physically with the sea.

Waterfront designs by restoring the natural, ecological and cultural components of a place have a significant influence on the construction of the community identity (Ulrich, 1983; Kuo 2001)

1. Psychological function: Healing function

Waterfronts are an opportunity to rediscover the psychological and the social healing function of the landscape. Pinkola Estes argues that water conveys spiritual and archetypical meanings deeply acknowledged in the collective memory of the communities; water delivers the cyclical dynamic of creativity. Water presence, proximity, view, odor, sound, and use restore peaceful early memories of human beings. Moreover, water holds a sense of attachment, security, love, and nourishment beginning in the first stage of human life (Pinkola Estes, 1992).

Nature, especially green areas which are a representation of nature in urban environments is a healing component of place (Kuo 2001). In order to liberate stress and anxiety, people often go to public spaces looking for open areas, and focus their attention on features and events outside their daily routine. The view of green space, natural landscapes, and water surfaces has a strong power in stress recovery and foster greater ties within the social network of the community (Kuo 2001). The power of the natural environment in urban waterfronts recreate memories related to water for human beings. The sea and natural landscape attract people and encourage the use of the place. Kuo demonstrates that communities with open and natural areas receive more visitors than those without open natural spaces, which also promote a permanent contact within the neighborhood (Kuo 2001). St Augustine Beach is an example of a community which lives at the water edge and uses intensively the beachfront by walking along the beach, surfing, and fishing. It was possible to me observe during my research, that neighbors know each other, and promote through the local surfing school the continuity of this practice within the young community.

In order to answer programmatic and functional questions, designers and planners quite often disregard the importance of the social restorative function of waterfronts. This is one of the most important objectives of the public place, especially in urban environments where competition and urban life increase social tensions. The healing and restorative function of urban waterfront designs is a tool to balance functional problems caused by the rapid growth of urban population. Projects for waterfronts that advocate standardized proposals and prioritize the commoditization of the urban public space miss the opportunity to design a unique solution for each social and geographic problem. As a product of culture waterfront's programs answer questions and bring into play, as Hough states, what each society values (Hough 1990).

2. Ethical function: Cultural heritage

The ethical function of the landscape is related to the preservation of the cultural heritage of a community. Communities approach the water's edge in different ways. These approaches change over time within a culture because of their socio-cultural evolution (Giddens 1991). Waterfronts and communities have a special relationship between land and water. Waterfronts define the water's edge and the interface with the community. For instance, houseboats in Amsterdam at the channels of the Amstel River in the heart of the city are designed in a singular way where it is possible to enjoy the urban life while living in a boat on the river. They have very defined borders finished with different materials and textures that clearly mark boundaries between water and land.

Waterfronts conserve the history of a community and the evolution of the social and natural landscape. Waterfronts show specific relationships that characterize the unique appropriation that each community develops with the sea. Whittlesey in 1929 established the idea of sequence occupancy of the landscape, which stated that a place is affected and transformed by several socio-cultural interventions that direct the use of the future communities. He also introduced the idea of dynamic character that implies the continuous evolution of the landscape due to the mutations of its natural and social characteristics (Whittlesey 1929). Consequently, it is possible to infer that waterfronts are the expression of the evolution of the place signed by social, economic, and cultural patterns.

c. An environmental resource

Natural landscapes are places for the accomplishment of ecological functions. Bastian and Roder classified ecological functions such as resistant of soils to erosion or compaction, water storage, run-off balance, temperature balance, influence of winds, conservation of genes pools, and many others (Bastian and Roder 2002). However, not always ecological services supported by trees that clean the air or avoid erosion with their roots are considered as an economic value in new waterfront's developments. Waterfronts as one of the largest open areas in urban environments are an opportunity to recover natural landscapes and consequently, the ecological functions of the landscape. Waterfronts are areas along the sea, sometimes with large fronts on natural resources such as beaches and forests. Those natural areas are the habitat for a great number of species that contribute to the preservation of the natural local landscape. Forests and beaches also support the regeneration of plants and animals, playing a vital role in the preservation of local species. Disturbances on soils and nutrients, forest composition, water availability, or climate produce subsequent landscape transformations (Barbour 1999). Prior to making design decisions on the waterfront landscape, landscape architects should know landscape type and the dynamics of

formation of that specific landscape. There is much research on landscape transformation and about the disturbances that human actions apply to the landscape. This knowledge helps to determine vegetation type that will encourage the life of specific fauna and flora and contribute to landscape preservation (Barbour). Landscape architects have the opportunity to apply strategies of landscape recovery and management that support the preservation of this valuable economic resource.

In addition, waterfronts are the place for estuaries where the freshwater of internal rivers join the sea. This is an extremely important source of nutrients for the habitat of many species, and it is also a place greatly compromised by development. Ecologists have been working on developing indicators and models of natural landscape decline and restoration (Haase 2000). Furthermore, these models have to be analyzed across different scales from local to regional, and might include humans as a part of the ecological system (Borgstrom 2000). Waterfronts and their natural areas provide ecological services, and resources such as seas and forests are a primary economic source for tourism (Knights 2000). Waterfronts' landscape designs must convey the sustainability of those resources.

C. Urban Waterfronts: Basis for a proposal.

Urban waterfronts emerge as a wide course of action to initiate urban revitalization and enhance the identity of local coastal communities. There is an ongoing debate between landscape architects and scientists about addressing social and ecological aspects in urban environment in the existing program of waterfronts and the redevelopment of the water's edge. The Urban Land Institute states that coastal developments have to consider the protection of natural areas, the public access to the beach, and safety measures to preserve private properties on the beachfront (Riggs, 2006). Urban waterfronts designs should offer a particular answer to a question of critical complexity regarding the diversity of the social and natural components of a place. Riggs also observe the prevention of disasters such as the ones caused by hurricanes and storms at the United States east coast are a unique opportunity to build community and promote stewardship in coastal cities.

a. Sustainable urban waterfronts: Ian McHarg, and Landscape ecology

Sustainable development takes steps to maintain healthy cities over time. Communities which direct their efforts through a sustainable development set the basis for long term projects, which preserve healthy ecosystems, and local economies. Landscape architects' designs have the opportunity to incorporate social and environmental values to the landscape by balancing communities and private interests. Actually, the challenge for designers and planners is to give solutions for waterfronts with greater social and environmental complexity. The in-depth understanding of the history of a place, the way communities use the place, and the functional and economic problems of a given area is the basis for promoting comprehensive designs for waterfronts. People develop attachments and cultural relationships with the sea, the sand, the beach, and with each component of the natural coastal landscape. Coastal landscapes are characterized by the dynamic of the sea, which evokes memories perceived through the human senses. People who live by the sea are attracted by the cyclic movement of the sea, and the use of the water edge (Hough 1990).

There are different perspectives and methodologies that play an important role in the analysis of natural landscapes: the scientific ecological approach of McHarg, the landscape ecological approach, and the urban ecological approach.

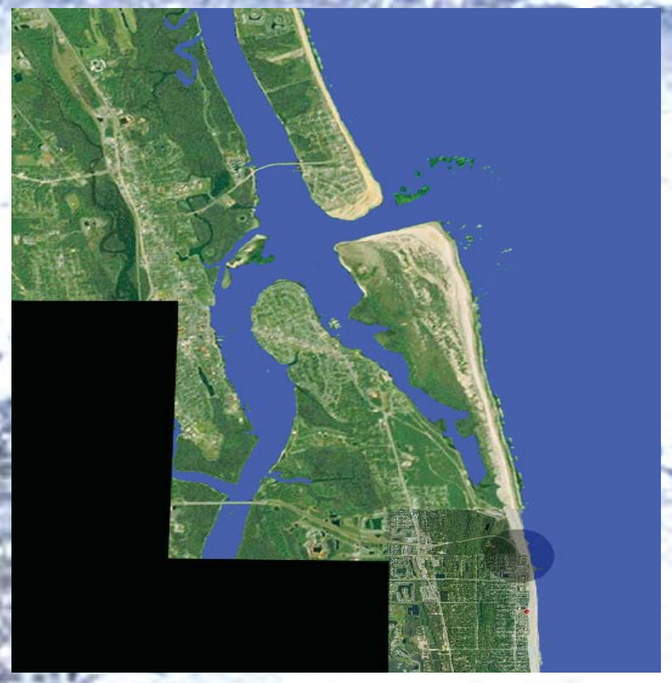
Ian McHarg while writing "Design with Nature" stated guidelines for the scientific ecological design. This author recalled attention on the need to work with nature, the importance of preservation, and challenge designers to include the components of the landscape such as land, water, soil, slope, and vegetation in the design. He introduced the use of maps, aerial photography, and computer based models for the study of landscape transformation. This ecological approach seek to preserve forests, the diversity of landforms, and wildlife diversity to mitigate and recover the natural resources affected by the increase urban built area.

In addition, landscape ecologists bring other perspective to play in the analysis of the landscape. It is a modern science part of Ecology, which studies landscape structure and composition, and how forest structure and composition are affected by different disturbances or events that take place in the landscape. Landscape ecologists established that the main disturbance of landscape structure in urban environments is human activities, which affect distribution and abundance of many organisms within the natural landscape. Human activities such as urban development, roads construction, and impervious areas of parking affect natural urban landscape, and decrease many organisms' populations. Multidisciplinary work with ecologists and landscape ecologists make possible the understanding of the natural and social dynamics of the landscape. Hence, landscape architects make better decisions to support the local landscape preservation or recovery.

Finally, urban ecology is an applied science with roots in Ecology that looks at the city as the result of multiple social and economic systems. This is a new human approach to urban landscapes that includes human beings as a part of the landscape. Urban landscapes are the habitat of most of the half population of the planet. The basic idea in urban landscapes is the assessment of multiple relationships between humans and their urban habitat. The objective is to build more people-friendly urban environments. This approach gives major importance to the ecological and socio-cultural factors that intervene in landscape formation, and it includes human-build and natural structures. In this research I use elements and methodologies of these perspectives for the understanding of the dynamics of St. Augustine Beach's coastal landscape, and I propose a collaborative landscape design with nature for the restoration of the natural local landscape of St. Augustine Beach.

St. Johns Co., Florida

Study Area at St. Augustine Beach, FL. (2005)



PART III: Design

A. Study area: St. Augustine Beach

St. Augustine Beach is located in St. Johns Co. in the northeast of the State of Florida within Jacksonville Metropolitan Statistical Area (MSA). St. Augustine Beach is very well positioned along the extensive tourist market of the Atlantic Coast. Due to the impressive economic growth of Jacksonville MSA, St. Augustine Beach is part of the new tourist redevelopment along the Atlantic Coast.

The study area is located at the North part of Anastasia Island at the South border of Anastasia State Park, in St. Augustine Beach, at St. Johns County, Florida State. The land selected is between Anastasia State Park, and the parking lot area at the North of the Town of St. Augustine Beach. The site is bounded by the Atlantic Ocean to the East, the Anastasia State Park to the North and West, the A1A route to the West and the Town of St. Augustine Beach to the South. St. Augustine Beach is part of St. Johns Beaches sub region along St. Johns County from the Range monument R080 at Ponte Vedra Beach to the Range monument R010 at Marineland at Flagler County (Beach Erosion Control Program 2004). The study area is at the Range monument R130 at St. Augustine Beach; between Anastasia State Park and the sea. This area is highly eroded by northeastern winds, and periodic hurricanes and coastal tropical storms. The site was selected as a model because it represents and receives the dynamic forces of water erosion, wind, and waves for dune formation, and the pressure of the forces of urban development.

In 1990, to support tourist development, the State of Florida implemented one of the most impressive programs for beach nourishment along the whole shoreline of the State to increase the attraction to the sea. The main idea of the program was to increase beaches' surface in front of beach developments that face the sea. The aftermath of this program is that buildings and land prices on the beach increased considerably in value, but the dredge and drop of great quantities of sand on the beach has very adverse ecological consequences in local fauna and flora, which contribute to the local landscape formation.

St. Augustine Beach is very well positioned along the extensive tourist market of the Atlantic Coast. Due to the impressive economic growth of Jacksonville Metropolitan Statistical Area, St. Augustine Beach is part of the new tourist redevelopment along the Atlantic Coast.

The circle shows the area of study at the North of St. Augustine Beach.

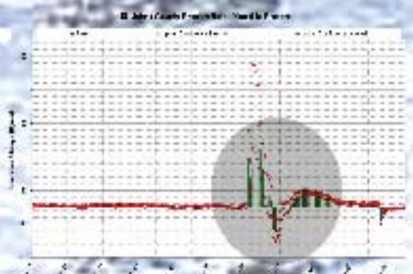


Table of erosion rate at the study area (Florida Department of Environmental Protection 2006)

Study area: The land selected is between Anastasia State Park and the Public Parking area of Town of St. Augustine Beach. The parcel is about 12 acres. The site is bounded by the Ocean Atlantic to the East, the Anastasia National Park to the North, and at the Northwest the highway A1A. The State of Florida has an extensive program of beach nourishment along the Atlantic Coast. The site was selected as a model because it supports the greatest erosion of the area. This area is monitored by the Beach Erosion Control Program 2004.

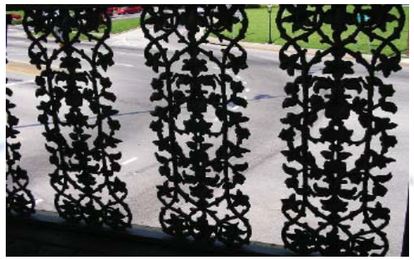
Aerial photography St. Johns Co. 2000 (www.co.st-johns.gov retrieved on February 15, 2005)

St. Augustine Beach after the refillment of the beach

a. Social and economic factors

St. Johns County is known mainly because of the historical City of St. Augustine, the first settlement of Spanish and French communities in the USA. St. Augustine City is an icon of the 18th century where Spanish and French cultures settled near the inlet of the St. Johns River at the actual Jacksonville City. Finally in 1821, the state of Florida passed from Spanish hands to the United States. Today, it is possible to learn about the Spanish life through the reconstruction of its famous 'live' Quartier. The Colonial Spanish Quartier is a living history museum that represents St. Augustine colonial life. Tourists learn about blacksmithing, carpentry, leather working, candle making, and other trades. It is a pleasant educational experience.

St. Augustine, 39 miles South of Jacksonville, is a family tourist destination and is characterized by its cultural and historic heritage. The demand for entertainment and tourism-related services are genuine opportunities to create new attractions. St. Augustine offers a specific historical tourism with a diversity of amenities in downtown. Many families enjoy walking by the alligator's natural habitat, or at the museum of Weapons and Early American History, which exhibits a great collection of weapons of the last 300 years. People who like sports find several opportunities to practice outdoors sports. The city also encourages tourists and locals to practice windsurfing and surfing in the fantastic Atlantic waves. Also, there are numerous festivals such as food and wine tasting, music festivals, and historic events, for instance the Lighthouse festival during the summer season.

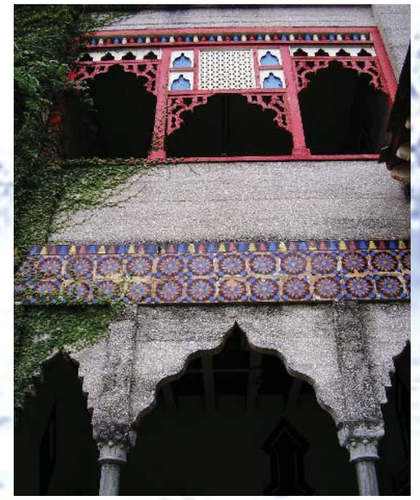


Anastasia State Park: fauna and flora components of the natural and cultural landscape of St. Augustine Beach

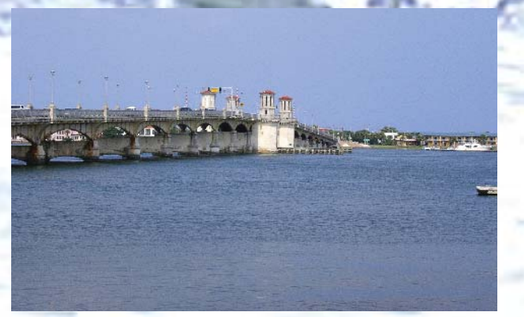
During the summer break, the county hosts the most important Golf Tournament of the United States at the World Golf Village. Visitors also can appreciate the history of the sport at the showroom of the World Golf Hall of Fame that brings economic benefits and joy for locals and visitors. Amenities tend to target the young population such as children, teenagers, and new couples because of their high rate of consumption. Retail trade statistics show sales for $549 million dollars a year especially in cars, clothing and gasoline (EconData 2000). Many restaurants and hotels are located in downtown St. Augustine, an area in permanent expansion.

St. Johns County also offers a great strategic location for housing and entertainment as well as impressive natural resources such as the St. Johns' River Basin, Anastasia Natural Park, and St. Augustine Beach. The regional plan for Jacksonville SMA is directed to attract the industrial sector by offering competitive incentives for opening new job positions. They also offer a series of taxation waivers to enterprises in the aerospace and aircraft manufacturing industry. St. Johns County is overwhelmed by a population growth of 77% in the last 10 years. St. Johns River is an ideal area for receiving a great number of regional short-term tourism during weekends and holidays because of its natural resources such as forests, large plains, beautiful beaches, and the watershed of St. Johns River (www.co.st-johns.fl.us, Gibson 1999)

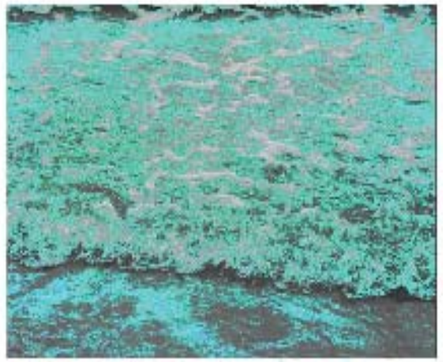
St. Augustine has two distinctive aspects that attract tourism to the area. One is the possibility to learn about the social and cultural aspects of the history of St. Augustine and the history of the United States as a colony of France and Spain, and second the recreational aspect, where many people can enjoy a different landscape with a coastal forest at the beach in St. Augustine Beach, which is a unique ecological system in front of the sea. These are the very unique aspects that make a difference on the selection of these beaches instead of others along Florida shoreline. Therefore, the main goal to support economic and social development in the area should be to observe the preservation of the social and cultural aspects of this society, as well as the diversity of the natural landscape of this area. This project focuses on the recovery of the local natural landscape, which I call a collaborative design with nature (www.staugustinechamber.com).



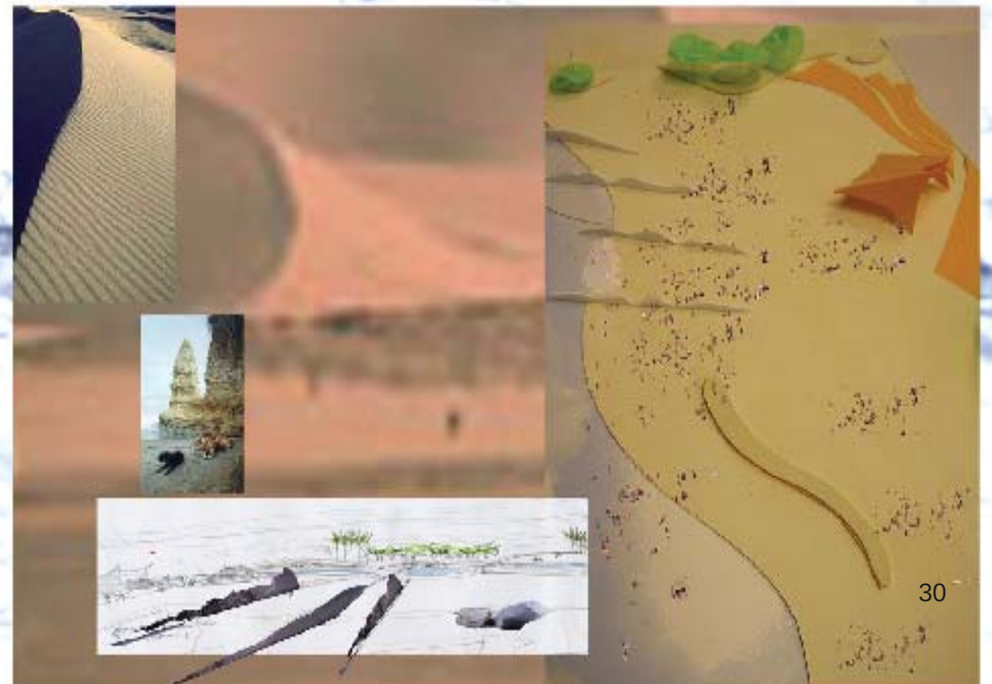
St. Augustine City, FL (2005)



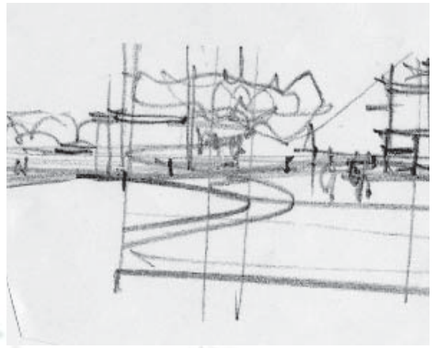
Vegetation, water, soil are some of the cultural and natural components of landscape formation



"Viewed as an essential bond between humans and other living things, the natural environment has no substitutes" (Kaplan 1989)



B. Introduction: St. Augustine Beach



I approached the design of the interface between the sea and the land through a collaborative work with nature by seeking to reveal the formation of the coastal landscape to St. Augustine Beach's community, and at the same time by using the dynamics of the local landscape formation. The design is the expression of life cycles on vegetation and dunes captured by forms, lines, lights, shadows, color, and textures. I learned through the design what are the dynamics of the coastal landscape formation, and each component that I incorporated to the design has a role in the local landscape formation.

a. Objectives:

1. The reinforcement of the expression of St. Augustine Beach's natural landscape and its individual and unique relationship of land, water, and vegetation to enhance a sustainable landscape recovery that contributes to enhancing the identity of that community.

2. The promotion of social activities with a variety of gathering places for interaction which develops new bonds among the people of the community.

C. Methodology:

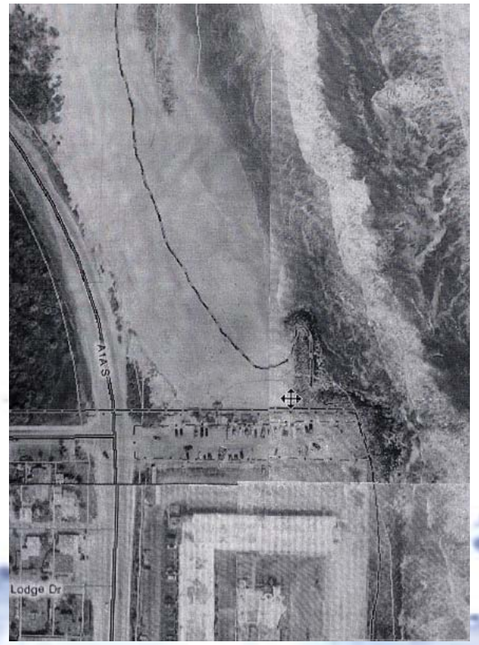
Aerial photography and topographic maps of St. Augustine Beach were used to observe temporal variations at this location. Aerial photography of 2002 helped me to understand the process and components that build this natural landscape. The components of the St. Augustine Beach's natural landscape at Anastasia State Park are: the sea, old sand dunes, and a coastal hammock forest, which includes a broad wildlife population. The community of St. Augustine Beach and the short-term tourists are also an important part of this changing landscape.

a. The process of St. Augustine Beach's landscape formation

The sand dunes where shaped by the prevailing Northeast winds that cause the Caribbean storms. This type of sand dune formation is called coastal foredune (Strahler 2003). These sand dunes "act as a buffer, protect upland property and natural habitats" (Department of Environmental Protection 2005). Purpura (2003) call dunes a natural "insurance" to protect properties and the shoreline. Dunes have irregular forms, and they look like a still image of the sea. In general, they are covered by different beach grasses that trap the dry sand and promote dune formation. In the 2002 aerial photography, it is possible to see the old dune formation at the South part of Anastasia State Park that follows a parallel dune pattern. It is also possible to follow this pattern crossing A1A. By analysis of the aerial photograph, I can see that at the ridge of the old dunes grows the coastal hammock forest.

In order to study the spatial and ecological characteristics of the natural landscape at St. Augustine Beach, I analyzed the forest structure and composition of Anastasia State Park. This park serves for the understanding of the dynamics of a coastal forest formation. This forest is compound by dominant species of *Pinus taeda, Pinus elliotti, Quercus virginiana* in a forest alliance with *Magnolia grandiflora (Forestry Department, University of Florida)*

This forest type is classified as maritime or coastal hammock forest by Dr Edward Fernald at the Geographic Education Technology Program (GETP) of the University of Florida. These communities are found in mesic areas, between uplands and salty wetlands at the eastern coast. The coastal hammock forest grows on sandy soil in linear barrier islands, especially in old sand dunes. These species are salt resistant. Endangered animal's species such as *Terrapene carolina* (Loggerheard turtle), and *Charadrius alexandrinus tenuirostris* (Southeastern Snowy Plover) live in coastal forests. Tourists are the major contributors to the introduction of non-native tropical species that out-compete temperate species (http://webworld.freac.fsu.edu/eco/coastal/beach.html).



High erosion at the North of St. Augustine Beach (2000)

At this moment, the overstory of this coastal forest at St. Augustine Beach is formed by *Magnolia grandiflora*, which will increase in number in the future. *Magnolia grandiflora* is a shade-tolerant species and the scarce sun-light of the understory is an ideal requirement for its growth. This situation is not favorable to *Pinus taeda, Pinus elliotti, Quercus virginiana*, which have high sun-light demands for growing. *Pinus* and *Quercus* are not shade-tolerant, and the new trees will not have the desirable quantity of light/hours to survive at the shady understory produced by *Magnolia grandiflora* and the mature old *Pinus* and *Quercus*. This situation will transform this forest type in composition and structure. One of the changes introduced by the different needs of these species is that *Pinus* and *Quercus* will take each opportunity to grow in open gaps in the forest or at the forest edge that allow them to have the sun-light required for growing. Therefore, I could see in my field visits that new seedling of *Pinus* and *Quercus* is found along the edge and in open areas at the interior of the forest. The significance of this pattern of growth and resource distribution will modify the structure and composition of the actual forest (Walker 1981).

These observations suggest that the most important factor for this landscape project is to support the growth of *Pinus* and *Quercus*, and in due time following stages of succession, new seedlings of *Magnolia* will start to grow.

D. The design process:

For the re-establishment of the cultural landscape as a mean to enhance the identity of the community at St. Augustine Beach, the main objective of this project is to recover the natural landscape. Consequently, the understanding of the landscape transformation will serve to define components and reuse them in the recovery of the natural landscape. Because of the multiple factors involved on this transformation, many of them irreplaceable, as a designer, I will use metaphors or similar designs that represent this coastal forest type. Therefore, this waterfront design will be based on the natural design and forms of dunes, beaches, and coastal forest.

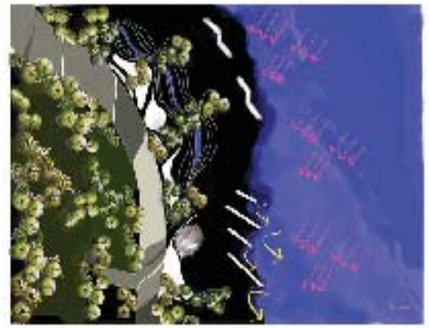
a. Two alternatives for landscape transformation and sustainability

1. Florida beach nourishment program

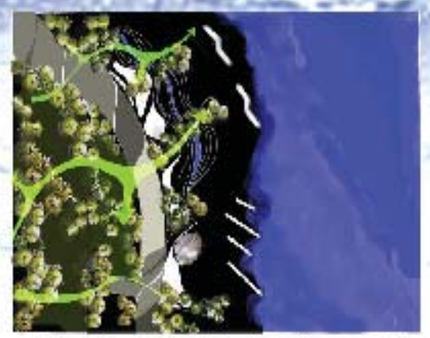
The Florida beach nourishment program is designed to rebuild beaches after the hurricane season by supporting tourism. The beach nourishment program consists of refilling the beach by dredging sand from offshore and from inlets maintenance. Erosion in St. Augustine Beach is due to winds of NE, hurricane seasons, and the effects of the northern inlet of St. Johns River. St. Johns River inlet is maintained twice a year for navigation. The process of maintenance of inlets keeps them in shape and with an adequate depth for navigation. This process consists in dredging sand at the inlet and placing the sand in disposal areas at the beach shore. This sand in very fine, but experts of the Florida Department of Environmental Protection of Florida define it as beach compatible (Florida Department of Environmental Protection 2000). This sand is used in the plan of beach nourishment at St. Augustine Beach.

Dynamics of Landscape formation

New dune formation proposed paralell to old dune formation within the forest



Predominant currents in North-South direction. Tidewater produces variability in color, salinity and temperature of water.



Coastal Hammock forest will be extended to the beach

Dominant winds from the East (12 mph average). This area is seasonally affected by hurracaines.

Coastal Hammock forest is a screen that collects sand and encourages dune formation

Wind carries dry sand that form dunes

Natural fences

On the other hand, ecologists and environmentalists concerns are about the many organisms, vertebrates and invertebrates that are involved and can not survive the dredging process because their habitats are absolutely disrupted. This concern is related to the fauna and flora of the beach shore, and to the fauna and flora which live at the ocean side of the beach shore.

The plan of beach restoration was initiated in 1985.with sand of the navigation project. The major issue related to the beach nourishment program in St. Augustine Beach is the disruption caused to the natural process of dune formation.

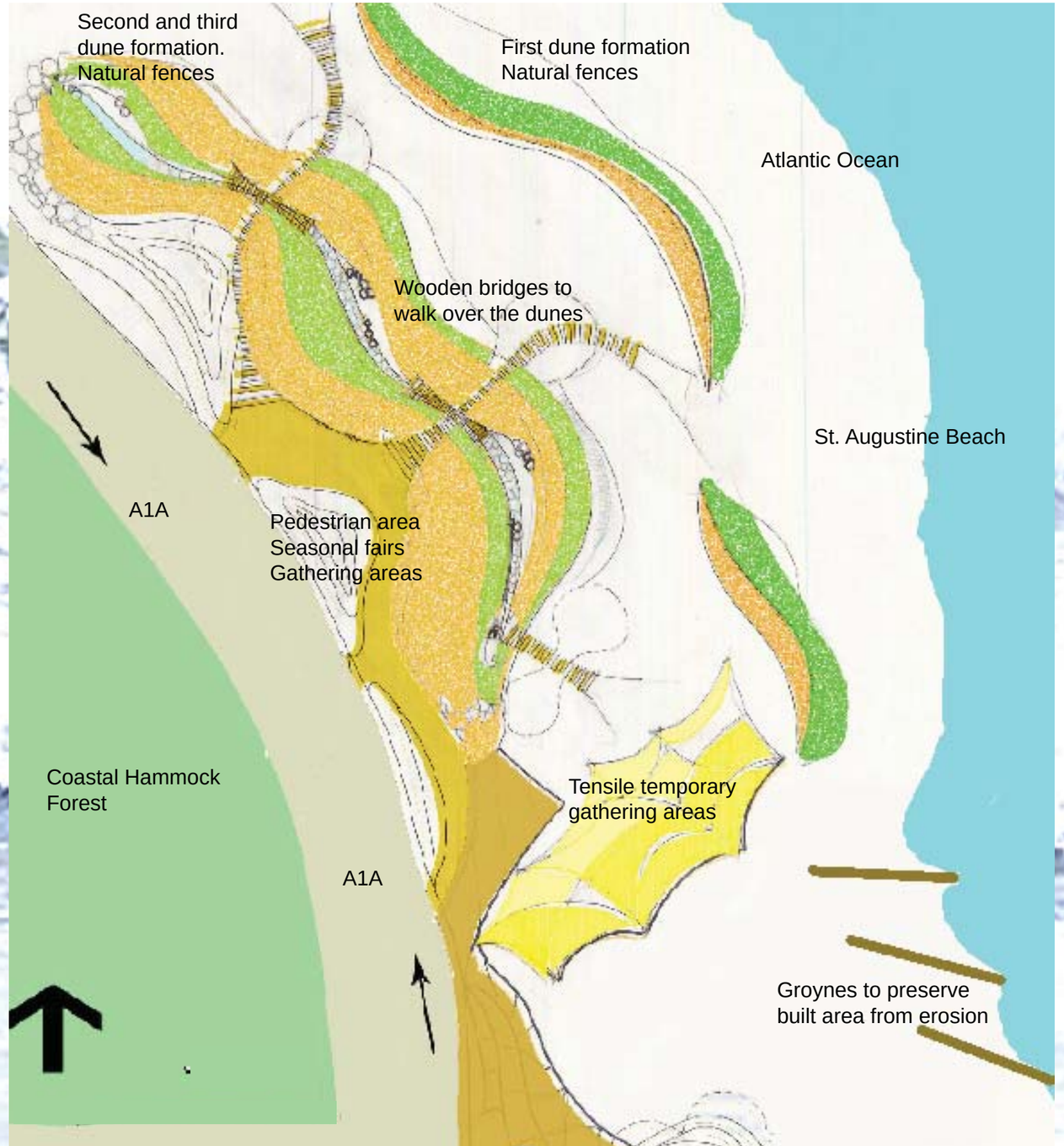
First, the process of dune formation is possible with a particular sand diameter in accordance with the diameter of the sand at the beach. The quality, composition, and diameter of the sand used in the nourishment process, is a key component of this process. Sand diameter has to have a specific diameter to be able to accumulate and build dunes. If the diameter of sand used is incompatible with the sand of the beach that could cause ecological problems. Furthermore, there is a public concern about the quantities of sand used in this process, which are greater than one million cubic yards of material, and the restoration plan is in a permanent search for identifying more areas offshore (Florida Department of Environmental Protection 2000, Strahler 2003, Beach Erosion Control Program 2004).

It is important to understand that the natural process of dune formation is the first step that guarantees beach formation, and it is strongly related to the dynamics between the sea and the beach shore. Dunes are also the habitat of many species at the beach shore. Moreover, dunes keep the dynamics of the beach formation and it could be a way to reduce the costly plan of beach nourishment. Although many environmental concerns about the future of marine turtles, whales, beach mice, and shorebirds are raised; the activities for beach nourishment, for instance, are not restrained during turtle nesting season (Florida Department of Environmental Protection 2006). Therefore, it is evident that the cycles for plants and animals that live at both sides of the beach shore are strongly disrupted.

Beach recovery takes place during the six months after hurricane season, and in general, beaches should recuperate naturally by 80% of the surface before the hurricane. The tourism industry, hotel owners, and realtors set pressure to have the beach back before tourist season arrives. The Florida nourishment program's budget for 2005/06 for the Northeast Atlantic Coast is compounded by $ 4,721,000 from Federal funds, $ 9,516,600 from State of Florida's funds, and $ 15,606,000 from local governments funds. The total amount is about $ 29,843,600 dollars (Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems, 2005/06).

In addition, many buildings at the beach shore face problems trying to contain the effects of erosion at the beach. Under the process of beach accretion and erosion the coastline is in permanent change and the distance between the construction line and the sea is reduced. The Coastal Construction Control Line Program of Florida (CCCL) demonstrates the negative impact of armoring structures at the waterfront (Florida Department of Environmental Protection 2006). Armoring structures are supposed to be solutions for preventing erosion caused by the construction of large ports or buildings at the water's edge. However, many times those armoring structures produce greater erosion at the beachfront.

Beach nourishment plan. Dredging at the beachfront at St. Augustine Beach, FL. October, 2005



Tools for changing the landscape: The process

Water, land vegetation in a particular climate develop a relationship with the environment that ties one component with the other in a unique landscape.

1- **Land-Water-climate dynamic:** dune formation
Dune formation is a long-term process. Several sand layers might be protected by induced vegetation that grows and covers the dunes. I use Vetiver grass as a groundcover. It is strongly recommended for sand retension. Vetiver grass takes an average of 3 months to develop a strong root system.

2. **Natural fences**: Soft structures (18 months)
They are soft structures build in wood or natural materials called natural fences. Experiences demonstrate that fences of two feet height, which allow 50% porosity retain about nine inches of sand carried by the wind in 18 months (Florida Department of Environmental Protection 2000)

3. **Groynes**: Semi-hard structure: Short term
Three semi-hard structures were added at the end of the beach to protect the top of the buid area. Those structures are built with stacked stones.

4. **Coastal Hammock forest.** Long Term
It is my intention to extent the local Coastal Hammock forest of Anastasia State Park to the land by planting local species in groups and lines towards the beach. Mangnolia grandiflora, Pinus elliotti, and Quercus virginiana form the traditional *canopy streets.* They function as sand screens and induce dune formation.

These tools collaborate in landscape formation. It is also a low cost dynamic process to preserve the beach. This ecological collaborative design with nature ensure the survival of the local fauna and flora community.

Hurricane season is during the months of August through September while the tourists' winter season starts in December. The beach nourishment program of Florida is just an attempt to be ready for the tourist season, and it is not related to the preparation for hurricane season. It is a quick solution for the rehabilitation of a commercial area such as beaches in eastern Florida. Under the beach nourishment program, beaches can be rebuilt in less than 3 months, ready for the arrival of a great number of tourists during the peak season of December. Beach nourishment, however, has adverse consequences on marine wildlife and on beach turtles' nesting that occurs from May 1 to October 31. Therefore, this design will promote a first step by using the beach nourishment program on the first group of dunes parallel to A1A and then the installation of several systems of plants and fences to support the natural beach formation in medium and long-term by dune stability and rehabilitation.

Finally, the idea of using dune rehabilitation in my design is an attempt to restore the local landscape of this particular place, with the understanding that it is part of the identity of a community. In reality, due to the increase of urban areas, it is not always feasible to support natural landscapes within such proximity of urban areas without being affected, polluted, or overwhelmed by the excess of urban areas. In the belief that the proximity of natural areas enhances healthy urban population, I focus my design in the restoration of this particular coastal landscape. Indeed, the image that I am looking for is a metaphor of a place that existed in the past. This image is in the memory of the community, and even if they can remember a piece of history of that place while looking at this natural landscape, I accomplished my goal.

2. Dune rehabilitation: Supporting a natural process

Beaches change their forms permanently because of the natural regime of accretion and erosion at the beach shore. I look at the accumulation of sand blown by the wind, which is the first step of dune formation. Dune rehabilitation is a friendly option in beach recovery, even though it takes a long time, sometimes decades. However, dune processes can be supported by a comprehensive landscape design and a careful planning process, with natural fences, vegetation, protective structures or groynes, and walkover pathways (Anastasia State Park, 2005). This previous planning will help to accelerate the process of dune stability.

Alicante, Spain (2006)

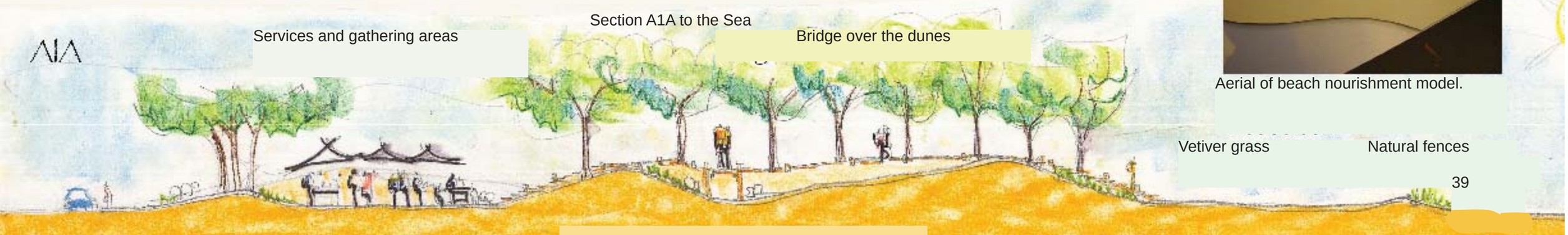
Model of dunes and groynes along the coast

Line of dunes along the beach and forest formation.

Preliminar idea “...to bring people and nature to the water edge...” May, 2004

Aerial of beach nourishment model.

Section A1A to the Sea



b. Tools for a collaborative design with nature:

Landscape architects can modify three components: water, land (sand, in this case) and vegetation. These components are impacted by climate, and develop a unique relationship that ties one component with the other in a functional pattern. In this design I develop three lines of dunes; one protects the other and it avoids losing sand. I also plant a coastal forest, and design a gathering and walking area. I propose an initial dredging to restore and fill the third and the second lane of dunes, which will be the closest to A1A in a fringe that runs parallel to the shore. Between the first two lines of dunes, I designed an elongated water feature. This design represent a river and it is linked to underground water that connects to the sea.

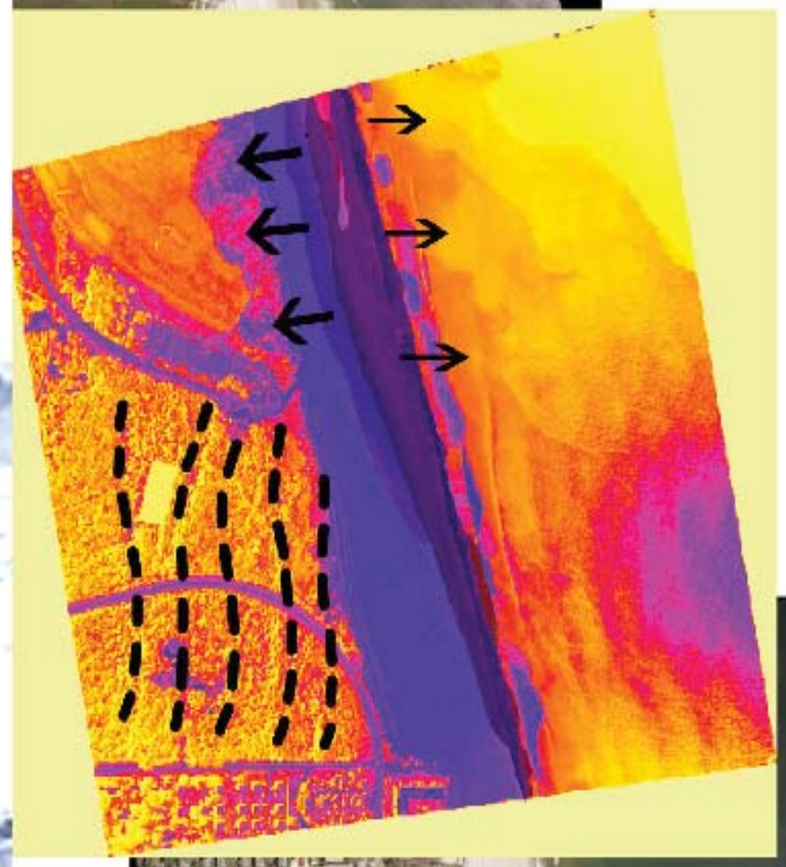
1. Land-Water-Climate dynamic: Dune formation:

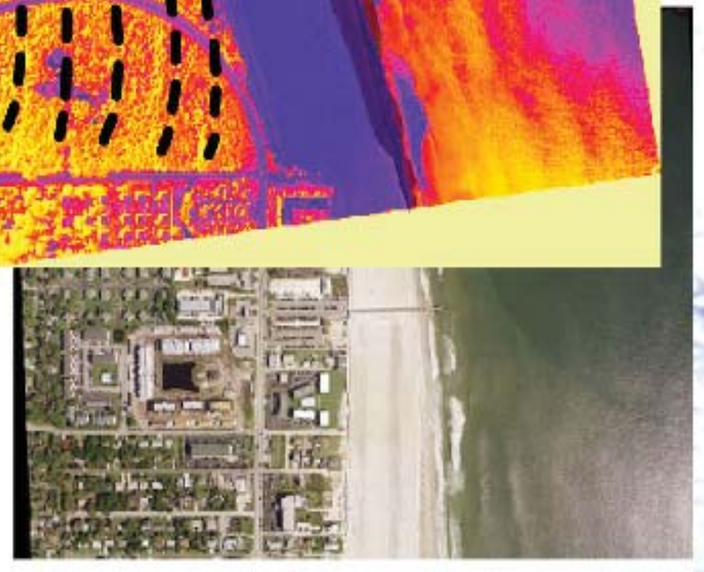
I used aerial photos to analyze the landscape structure and composition. It is possible to look at the direction of the old dune formation with several dune lanes. Topographic maps confirm the movement of the different curvatures of the slopes in the landscape design produced by the dynamics of wind and sand. In the proposed design, I used the same directionality of the old dunes to position the new set of dunes. Dune formation is a long-term process that takes many years to stabilize, and often hurricanes and storms disrupt this natural process, causing it to be started all over again. This is part of the understanding of landscape dynamics. The main goal is to understand dynamic changes of the landscape by making designs that support landscape transformations.

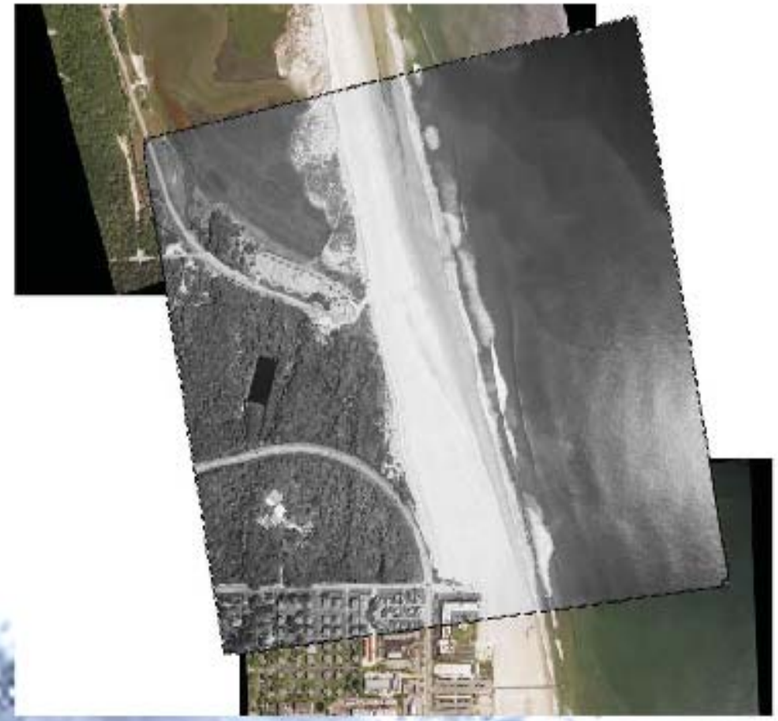
The several sand layers blown by the wind, might be protected by induced vegetation that grow on the dunes. Because dunes are fragile structures, dunes formation and vegetation have to be protected from people, and they are not recommended for walking areas. The stabilization of dunes is centered in the growth of grasses used as landcover. Different grasses such as sea oats (*Uniola paniculata*) to cover 60-80% of the dune area and Bitter panicum (*Panicum amarum*) are highly recommended for dune retention by the Department of Environmental Planning of Florida State (2005). In her study of dune rehabilitation, Dr. Miller remarks that seedling of *Uniola paniculata* have a great capability to survive and recover after storms (Miller 2003).

My research made in Anastasia Park showed that a certain width is needed to initiate this program with a minimum of 600 feet from the dry part of the beach. I proposed to build three dune lines. One in the proximity of the main road A1A is the urban-natural interface. I expect, it will be the tallest one. This dune line is in the proximity of walking area and connects with the bike trail. A second line of dunes are designed parallel to the first line. In order to cross towards the beach, I designed two bridges to pass over the ridges. A third line is beside the sea, out of the water flooding area. I incorporated series of structures that work as natural fences to help in the natural process of dune formation.

Barcelona, Spain (2006)







Natural Dynamics:

Beach erosion is a natural process. Beaches are dynamic systems.

Aerial photography shows that:

1- Waves and tidewater erode the beach by taken sand out of the shoreline
2- Sand is blowing by the wind over the upland forest area and cover A1A
3- Lines between the forest denote the old dune lane formation

Even though the primary concern at the beachfront is the conservation of private and public properties, it is necessary to understand the dynamics of beach formation to avoid greater loss.

2. Natural fences: Soft Structures: Short term

Cambers (2002) recommends the construction of soft structures for sand retention and applied this concept to the first dune ridge level. Soft structures are built from wood or natural biodegradable materials called natural fences. Experience demonstrates that fences two feet in height allow 50% porosity and retain about 9 inches of sand carried by the wind in 18 months. These fences have to be raised before a sand dune can accumulate 18 inches of sand. It is important to maintain these fences to assure that they always overpass the new ridge formation. These fences have to be monitored and kept up because they could be a threat for many animals that live at the beach.

The report for Building Back the Sand Dunes of the Department of Environmental Protection of Florida State (2005) recommends that fences should be located as far away as possible from the sea, and waterward must be planted with grasses. Furthermore, they suggest that fences should be positioned in 10 foot sections with 7 feet minimum of separation between each other. Finally, grasses and dunes can support hard disturbances such as winds, salt conditions, low nutrients and limited fresh water that depend solely on rainfall; they cannot, however, support human steps and vehicles. Therefore, the construction of walkovers to cross these protected areas is imperative to successfully accomplish the dune rehabilitation process. So, bridges to cross over the dunes are needed until dunes become stable.

Anastasia State Park, FL 2005

3. Groynes: Semi-hard structures: Short term

At the top of the beach, at the south corner of the parcel, there is a rigid structure built on stones and concrete that instead of protecting a coastal building, it causes higher erosion. This structure was constructed to protect the corner of an existent private hotel at the beachfront. Aerial photographs show the action of the sea, which indicates permanent and hard erosion at the northern face of the structure. The actions of the waves produce beach erosion and loss of sand at that point.

While studies on shoreline are in process, the idea of this collaborative design is the addition of four structures as a system, positioned to balance beach erosion. Those structures are built with soft stones or similar biodegradable materials, which contribute to allocate sand on the beach in a collaborative work with nature in the process of beach formation. The permeability brought by using loose stones contributes to diminish the intense erosion caused by hard structures at that corner. Even though the semi-hard structures could be eroded by the sea in a term of five years, new additions can be realized. As they are not previously experienced in using these structures, new research has to be done. Professor Lee Daniels of the Crop & Soil Environmental Science Department at Virginia Tech and resident of St. Augustine for many years, demonstrated great interest in this design that use local materials (personal communication).

4. Vegetation: Coastal hammock forest: Long term

It is my intention to reconnect the local coastal hardwood forest with the land by planting *Pinus* and *Quercus* in groups forming lines towards the beach. This tree association functions as sand screens and induces dune formation. Despite these species being salt resistant and having low fresh water requirements, they have to be planted in prepared soil that encourages root system formation. Root systems retain soils and ensure the process, but it takes decades for the root system to develop strong soil structure (Barbour 1999).

These actions together collaborate with the natural process of dune rehabilitation, and will diminish beach erosion. This design also incorporates and supports the natural tree association of the coastal forest, and reduces expenses on the beach nourishment program budget.

5. Human connection: Linking the town of St. Augustine Beach

The project proposes a pedestrian friendly walking and bicycle area that connect with the main street of St. Augustine Beach along A1A. This is a pleasant urban street that follows the image of the St. Augustine Beach's canopy streets by running the length of the site. The designs of the pathways are sandy colors, and beach stones are used for the construction of the designs that imitate the sea movement. Also, it is projected to be the community's temporary gathering area which will have transportable tensile canopies, and can be use as auditoriums, community workshop areas, and community centers for the assembly of different uses and community needs.

Anastasia State Park, FL 2005

Finally, with the design of an environmental and human friendly waterfront, I wanted to raise the attention to communities and scientists on the importance of waterfronts as major urban public spaces. Waterfronts are resources to enhance the natural and cultural value of a place. Projects that preserve the natural landscape that people value and where people have their spatial memories will strengthen the identity of that community. The recovery of people's places, and subsequently reinforcement of people's attachment to a place will enhance community's identity. The strengthening of the community identity will promote a more healthy and social friendly urban environment.

Barcelona, Spain (2006)

Allicante, Spain (2006)

PART IV: Conclusion and Future Research

A. Conclusion:

When I started this research I wanted to know about natural landscapes and what I could do as a landscape architect who *designs with nature,* by paraphrasing Ian McHarg, to support a landscape strongly incorporated in the life of a local community and harshly treated by global models of economic development. I came along with a deep understanding of the process of nature to build this particular coastal landscape; I studied each part of the process by thinking as a landscape designer. I wanted to find the components and understand the processes that made possible the natural construction of this coastal landscape to be able to work side by side with nature and communities.

Emphasizing and highlighting the environment, with the flow of tides, winds, sand, and vegetation, I was able to recreate a beach with a variety of microlandscapes and spatial qualities. This was made with the advantage of being a more economic design, when compared it with the great expenditure of economic resources allocated to serve the plan of nourishment of the coast of Florida. This project helps to build a memory of landscape dynamics in the mind of the local community, and it is also a users' reminder of the cycles of nature. This project brings the understanding of the dynamics of nature to the local community, and with this understanding, landscape design that is a sustainable solution for storms and hurricanes impacts. Overall, this is a project that intends to reveal the power and beauty of natural landscapes by working in cooperation with nature and communities. The results: a design that reflects respect for nature and helps to reproduce and sustain a coastal landscape and recreational amenity.

I hope this study helps people find the layers of common understanding to protect their habitat and the natural resources of a place. I hope also this research establishes a basis of reflection in the analysis of waterfront recovery for community building and future economic development planning. The debate is ongoing and there are many opportunities for a collaborative design with nature. This is a new way to design with nature based on reestablishing the natural process. I also wanted to include communities in designing public places by making people protagonists at the process of cultural and natural landscapes' formation. I wanted to help nature to heal itself by reconnecting the missing links between land, water, vegetation, and communities.

B. Future Research

The analysis of economic, social, cultural and environmental factors will guide future research on waterfront designs. The development of a holistic and multidisciplinary framework that incorporates social and environmental aspects will restore cultural and natural values to a place.

a. Economic factors:

Despite a waterfront's recovery being a successful strategy for economic revitalization, there is little research about the real impact of waterfront designs in the recovery of the economy of local communities. It is necessary to analyze waterfronts' economic impact on commercial areas in downtown cities or in the proximity of the waterfront to evaluate true impacts in the revitalization of local economies. Designers disregard and break connections with the city and the economic local stores. Waterfronts bring dramatic changes that affect the life of those communities. In addition, sales revenue leaves the city rather that having it spent in the local economy. It is important to develop educational strategies that help communities to address a sustainable life.

b. Social factors:

Social factors are related to the cultural values of a community. Components such as history, art expression, music, languages, and literature, are significant elements of the social and cultural landscape. The analysis of their relationships is a tool to enhance equity, solidarity, and social interaction. Overall, those components will re-establish the connectivity of waterfront areas with the city network by linking communities at the water's edge. The preservation of cultural values and the heritage of the communities will reinforce the bonds within the communities. Public accessibility to waterfronts has to be guaranteed. In fact, accessibility not only improve the walkable human environment, but it also helps to rediscover the value of public social life as a forum for community expression. Local community values increase the richness of diversity. In fact, places are the expression of their community and the expression of what they were, what they would like to be, and what they actually are. It is necessary to look at the public space with the dynamic of social interaction.

A successful urban public place cannot be measured by the success of their commercial areas. It has to be measured by its success in attracting people who live in the area and the quality of socialization that they evoke. Each time designers draw a line on a paper, they decide who is in or who is out of the place. They support unity or fragmentation, solidarity or selfishness. In design, we have to make purposeful decisions, not only oriented to solve problems but also including people in rediscovering the meanings and values that support the identity of the community.

Theory and practice have to come together to solve problems in the real world by using creativity as the arrow to reach the target. Urban public spaces are about culture and values, about the manifestation of the society in the public space.

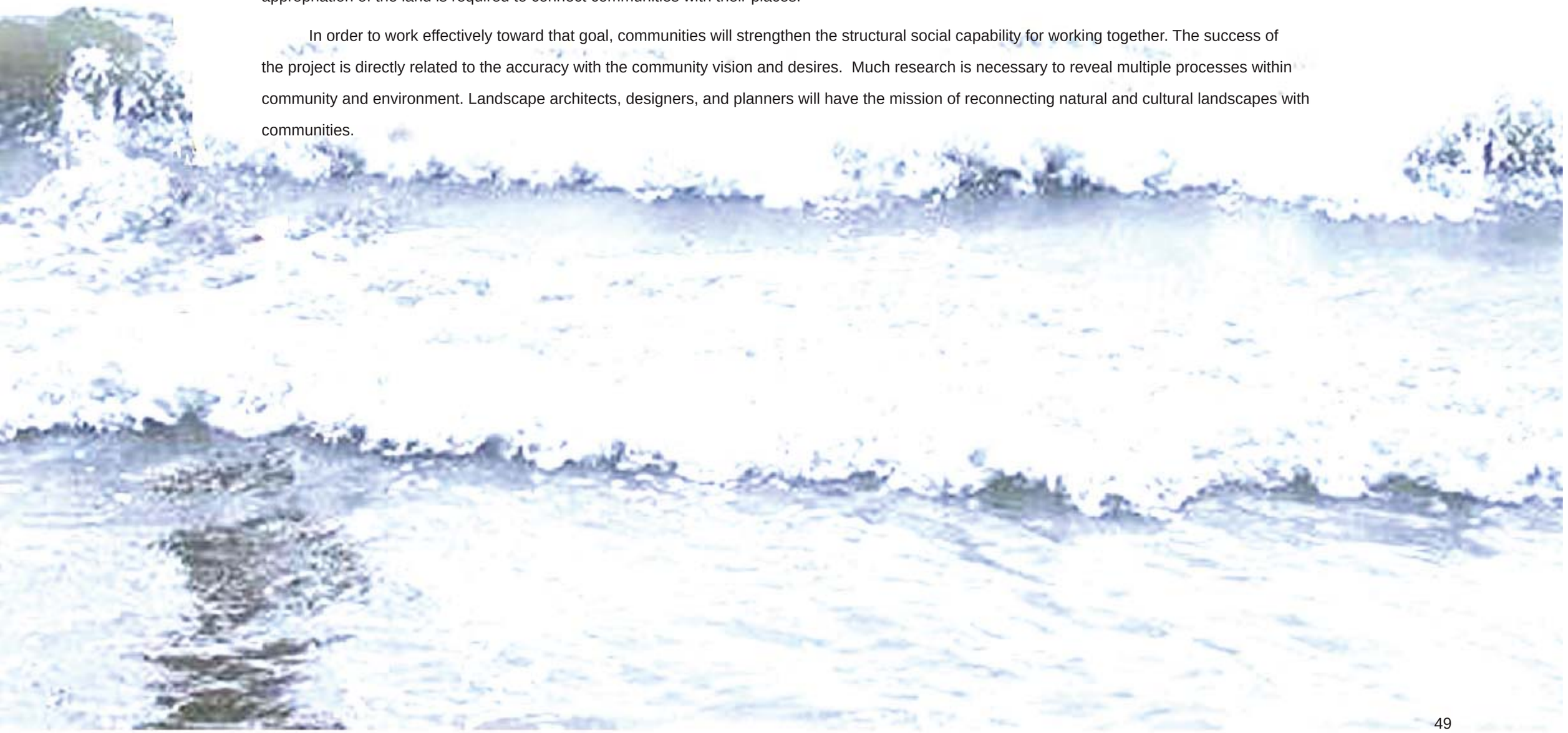
c. Environmental factors:

Environment raises a critical question about what we do to support sustainable and ecological designs. Humans are the major cause of natural habitat change and habitat loss. We are not able to measure the value of the view of a great natural landscape, but we can value the sense of calm and security that the view of the sea gives to everybody. We can measure how many times people use one place or another and identify which are the preferences in the use of the place. It is possible to restore components of the environment such as land, water structures and vegetation, which once existed in a particular landscape and stayed in the memory of a community. This enhancement of what one landscape is or used to be, is the most important measure to recover the community identity.

This collaborative design with nature is a laboratory to approach the dynamics of nature. It is necessary to do further research to test outcomes and failures of the system to do required adjustments by ensuring links and relationships between cultural and natural landscapes and communities.

Added to the traditional analysis of components is the analysis of the dynamics of multiple processes that take place between landscape and communities within a specific landscape. The participation of communities to develop a comprehensive plan that project social meanings and cultural appropriation of the land is required to connect communities with their places.

In order to work effectively toward that goal, communities will strengthen the structural social capability for working together. The success of the project is directly related to the accuracy with the community vision and desires. Much research is necessary to reveal multiple processes within community and environment. Landscape architects, designers, and planners will have the mission of reconnecting natural and cultural landscapes with communities.



PART V: References

Anastasia State Park. 2005. Florida Online Park Guide. Retrieved on February 10th, 2005 from http://www.floridastateparks.org/

Baiping, Z., Shenguo, M., Ya, T., Fei, X, Hongzhi, W. 2004 Urbanization and De-urbanization in Mountain Regions of China. *Mountain Research and Development.* 24 (3): pp. 206-209

Barbiere, J. 2001. Third Millennium Special Issue on Megacities. *Ocean & Coastal Management.* 44 (4):v-ix.

Barbour, M. 1999. *Terrestrial Plant Ecology*. 4th ed, *University of California, Davis*. California: Addison Wesley Longman, Inc.

Bastian, O. and Roder, M. 2002. Landscape functions and natural potentials. In Development and Perspectives of Landscape Ecology. pp 213-230. Ed. Bastian. Dordrecht Beach Erosion Control Program (BECP). 2004. Retrieved on December 10th, 2004. Florida Department of Environmental Protection. Beach http://www.dep.state.fl.us/beaches/programs/bcherosn.htm

Borgstrom, S. 2000. An Integrated Ecosystem Based Management of Urban Landscapes to Stem Urban Sprawl. Proceedings for the International Conference for Integrating Urban Knowledge and Practice. Sweden Breen, A. 1996. *The New Waterfront: A worldwide urban Success Story*: McGraw-Hill.

Cambers, Gillian. 2002. Copying with beach erosion. Coastal Management Sourcebooks Series. UNESCO. Retrieved on November 20th, 2004 from Environment and Development in Coastal Regions and in Small Islands. http://www.unesco.org/csi/pub/source/ero1.htm

Castells, M. 1997. *The Power of Identity: The information Age*. United Kingdom: Blackwell Publishing Ltd.

Comite d'Action Femmes et Securite Urbaine. retrieved on May 10, 2005. http://www.cafsu.qc.ca/

Department of Environmental Protection.State of Florida. 2005.Building Back the Sand Dunes. Retrieved on January 6th , 2005 from http://www.dep.state.fl.us/beaches/publications/pdf/bldgbkvw.pdf

Dicken, P. 2003. *Global Shift: Reshaping the Global Economic Map in the 21st Century*. 4th ed. New York: The Guilford Press.

EconData. 2000. Regional Economic Data. Retrieved on February 7th, 2005. http://www.econdata.net

Florida Department of Environmental Protection. 2005/06. Florida Beach Management Program Report. Long Range Budget Plan - FY 2005/06

http://www.dep.state.fl.us/beaches/programs/pdf/fy-05-06.pdf - retrieved on June 2005

Florida Department of Environmental Protection. 2000. Office of beaches and coastal systems. Strategic beach management plan Northeast Atlantic Coast Region.10-2-00

Florida Department of Environmental Protection. 2006. The coastal construction control line permitting (CCCL) retrieved November 5th, 2006. http://www.dep.state.fl.us/beaches/programs/ccclprog.htm

Florida Forestry Information. 2005. University of Florida. IFAS Extension. retrieved on January 2006. http://www.sfrc.ufl.edu/Extension/ffws/thf.htm#thf%20menu)

Gibson, C. 1999. Historical census statistics on the foreign born population of the United States: 1850-1990. retrieved from US Bureau of Census May, 10, 2005 http://www.census.gov/population/www/documentation/twps0029/twps0029.html

Giddens, Anthony. 1991. *Modernity and Self-Identity*

Post, J. and Lundin, C. 1996. Guidelines for integrated coastal zone management. Environmental Sustainable Development Studies. World Bank. Washington, DC

Haase, D. 2000. Towards an interdisciplinary monitoring of European floodplain landscapes: geo-ecological approaches of terrestrial monitoring in floodplain forests within an urban landscape. In: Ed. Brandst J, Tress B, Tress G Multifunctional landscapes: Interdisciplinary approaches to landscapes research an management. Roskilde, Denmark, p. 206 Hough, M. 1990. *Out of Place: Restoring identity to the regional landscape*. 1st ed. New Haven & London: Yale University Press.

Jackson, L. 2004. A Regional approach to projecting land-use change and resulting ecological vulnerability. *Environmental Monitoring and Assessment* 94:231-248.

Jacksonville Regional Chamber of Commerce. 2005. Retrieved on January 10th, 2005. http://www.myjaxchamber.com

Kaplan, R. and Kaplan, S. 1989. The Experience of nature: A Psychological perspective. New York: Cambridge University Press Knight, J. 2000. Recommoditizing the Japanese forest. Development and Change 31(1): 341-359 Kaplan, R. and Kaplan, S. 1989. *The Experience of nature: A Psychological perspective*. New York: Cambridge University Press

Kullenberg, G. 2001. Contributions of marine and coastal area research and observations towards sustainable development of large coastal cities. *Ocean & Coastal Management* 44 (2001):283-291.

Kuo, F. 2001. Coping with poverty. Impacts of Environment and Attention in the Inner City. Environment and Behavior. 33(1): 5-34 Loffler, J. 2002. Landscape structures and processes In *Development and Perspectives of Landscape Ecology.* ed. Bastian, U. 49-112. The Netherlands: Kluwer Academic Publishers.

McHarg, Ian. 1969. Design with Nature.Garden City: New York.The Natural History Press.

Meyer, H. 1999. *City and Port, Transformation of Port Cities: London, Barcelona, New York, Rotterdam*. Utrecht: International Books.

Miller, D., Yager, L. Thetford, M. Schneider, M. 2003. Potential Use of Uniola paniculata Rhizome Fragments for Dune Restorarion. Restoration Ecology, 11 (3): 359

Millspaugh, M. 2001. *Waterfronts as Catalysts for City Renewal.* Ed. Marshall. *Waterfronts in Postindustrial Cities*. London: Spon Press.

Morris, A. 1993.*History of urban form, Before the Industrial Revolution.* Ed. Longman Scientific & Technical. Essex: England

Nicol, H. and Halseth, G., 2000. *(Re) Development at the Urban Edges. Reflections on the Canadian Experience.* Geography Department. Waterloo UP.

Purpura, J. 2003. Establishment of a coastal setback line in Florida. Oceans. 7: 177-179

Pinkola Estes, Clarissa, 1992.“Mujeres que corren con los lobos” Mitos y cuentos del arquetipo de la mujer salvaje. New York: Vintage Books (Eds). Riggs, T. 2006. ULI Urban Land Institute Organization retrieved on May 9th, 2006. http://www.uli.org/AM/Template.cfm?Section=News_Roundup&CONTENTID=58970&TEMPLATE=/CM/ContentDisplay.cfm

Rudovski, B. 1964. *Architecture Without Architects: A short introduction to non-pedigreed architecture*. Albuquerque: University of New Mexico Press.

Sasaki, T., 2004. *Nature and Human Communities*. Tokio: Springer.

Slaiby, B. 2003. *A handbook for managers of cultural landscapes with natural resource values*. Woodstock, Vermont: Conservation Study Institute.

Steger, M. 2002. *Globalism: The New Market Ideology*. Lanham: Rowman and Littlefield Publisher, Inc.

St. Augustine Chamber of Commerce (www.staugustinechamber.com retrieved on October 2004)

St. Johns County Florida. 2005. Government Gateway. Retrieved on February 6th , 2005. http://www.co.st-johns.fl.us

Strahler, A. 2003. Introducing Physical Geography. 3rd. Edition. John Wiley & Sons, Inc.Cambridge: USA

Talesnik, D. 2002. Transformaciones del frente de agua: la forma urbana como producto estándar. *Eure* Santiago 28: p. 84.

ULI. 2004. *Remaking the Urban Waterfront.* Washington, DC, ULI-The Urban Land Institute.

Ulrich, R. 1983. Aesthetic and affective response to natural environment. In I. Altman, & J. F. Wohlwill Eds.Human behavior and environment: 6 : pp. 85-126. New York: Plenum Press. Tuan, Yi-Fu. 1990. Topophilia: A Study of Environmental Perception, Attitudes and Values. Columbia University Press. N.Y.

Walker, CH Thompson, IF Fergus, BR Tunstall. 1981. Forest Succession, Concepts and Application Plant succession and soil development in coastal sand dunes of subtropical eastern Australia.

Web World Wonders Project. 2006. Institute of Science and public Affairs. University of Florida retrieved on February 2005.

Weiland, U. 2002. Sustainable development of cities and urban regions. In: *Development and Perspectives of Landscape Ecology*, ed. O. a. S. Bastian, U. . The Netherlands: Kluwer Academic Publishers

Whittlesey, D. 1929. Sequent Occupance. *Annals of Association of American Geographers.* 19: pp. 162–165

Curriculum Vitae

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Objective Urban and Landscape Planner. GIS Environmental Impact Analyst

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Education

MS Geography, Spring 2007
Virginia Polytechnic Institute and State University (Virginia Tech)
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MLA., Landscape Architecture, Fall 2006
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Educational Teaching Program, December 1996-2000
Pontifical Catholic University, Quito, Ecuador.

- Teaching tecniques for college students

Studies in Environmental and Urban Planning, December 1985
School of Landscape Architects, Buenos Aires, Argentina

- Extensive studies of architecture within the urban environment.

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Coursework Forest Ecology (FOR)**,** Arboriculture (FOR), Land Analysis(LAR), Info Technology for Natural Resources Management (GEO), Introduction to Remote Sensing (GEO), Urban Forestry (FOR), Scholarship (LAR), International Development (SOC), Community Building (UAP), Global Division of Labor (SOC), Local Economic Development Planning (UAP), Globalization of Nature (GEO). Biostatistics (STAT)

Computer Skills PC and Macintosh software. MS Word, MS Excel, MS PowerPoint, ArcView GIS 9,1, Adobe Photoshop, Autocad, Adobe InDesign

Language Skills Spanish**,** native speaker
English and French, written and oral fluency
Portuguese, and Italian conversational

Work Experience 1- Barcelona Regional Internship- Spain Summer 2006. Human impact in natural resources evaluation. GIS analysis
2- Seminario Montevideo: March 2005.
Poster presentation: "Cultural and ecological landscape in St. Augustine Beach, FL." This research is about how landscape architects address social and environmental issues to reconnect communities at the water´s edge.

3- "La ciudad de las mujeres: espacio publico y violencia doméstica"
The city of women: Domestic violence and public space – Speaker at Consejo Nacional de la Mujer – June 2005 – Quito Ecuador

4. **Graduate Teaching Assisstant** for Dr. Lawrence Carstensen.
Department of Geography. Virginia Tech. August – December 2006
- Teaching ArcGIS9.1 labs to undergraduate/graduate students – Introduction to GIS- Course 4084
- Teaching theory and applications of data collection, analysis, and management
- Conduct homework assistant sessions, grade test, and maintain course gradebook.

4- **Graduate Teaching Assisstant** in Introduction to Landscape Architecture, and Construction Documents Prof. Dean Bork and Brian Keaten

5- Research Writer for **www.trama.com.ec**
Revista de Arquitectura digital. Trama Ecuador, since 1989

Project Manager, CEO, Plantart Co., Quito, Ecuador. 1986-2002
- Manage a landscape design and construction office
- Design and constructed private and public parks and gardens
- Produce drawings and color renderings for a wide variety of projects
- Consultant for landscape and urban projects
- Manager of several projects of landscape restoration in the Ecuatorian Jungle

Assistant professor, 1996-2002
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- Explore new methodologies to design to urban design
- Investigate habitat and tree species in urban settings
- Guide and counseling students in career decisions
- Motivate research about urban community open spaces

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Tai – Chi junior
Volunteer VT Women Center and VT Cranwell International Center

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Monica in Barcelona (Summer 2006)