"It is at the edge that man is at his best, that life is its
most vibrant and reiterative of the beauty and complexity of our adopted
communal existence." (Torre, 1989).

INTRODUCTION

In any part of the world as well as among all cultures, the water's
dge has traditionally been an environment of great attraction for in-
dustry, transport, living, and recreation. Evidence of this attraction is
both the historical and modern day siting of cities at the water's edge.
Some obvious examples of great coastal cities include Shanghai,
Singapore, Venice, New York, and the city which is the focus of this
study, Rotterdam, the Netherlands. Indeed the durability of Rotterdam
as a vibrant port city supporting long distance economic linkages is as-
tounding; from its early beginnings as a Medieval Hanseatic League port
servicing northwestern Europe, Rotterdam is today the world's busiest
port with maritime transport linkages and economic harbor activities
that are local, regional, and global in scale.

While the "water's edge" of Rotterdam is the frame of this par-
ticular study, the focus is upon the Wilhelmina Pier and its contextual
setting within the docklands of this larger "World port." Constructed in
the 1880s, the Princess Wilhelmina Pier became a focal point of
Rotterdam's evolving economic power as a global transport center. With
its unique location, Rotterdam received raw material from colonial In-
donesia, handled the petroleum oils and minerals of the Scandinavian
countries, served as the departure site for transatlantic passenger ves-
sels, and handled most entrepot cargoes for Western Europe. The city
of Rotterdam was heavily bombed by the Germans during World War II, and changing economic conditions, during the 1960s and 1970s ushered in a period of landscape dereliction. And recent development of the 1980's have witnessed increased attention for the Wilhelmina Pier as a site for post-modern urban redevelopment.

This study is an examination of the changing landscape of the site which the Wilhelmina Pier occupies. The site is not treated in spatial isolation, but is seen as a landscape expression of the interplay of economic focus at the global, regional, and local scale. The first section of this study simply describes the evolution of the site and the city before the construction of the Wilhelmina Pier. Much of the discussion centers upon the natural landscape of the south bank of the Nieuwe Maas River and the reasons why the site remained peripheral to Rotterdam's development as a world class port. The second section of the paper focuses upon the process of site modification through the construction of the Wilhelmina Pier as a landscape expression of wider economic forces. The third section of this paper describes the economic peripheralization during the post World War II era. And the fourth section then isolates the social and economic forces giving rise to the possible rejuvenation of Wilhelmina Pier not as a transport link in local, regional, and economic change, but as a social landscape reflecting trends in modern urban planning philosophies.

"[I]dentity should not be defined as a static and clearly defined notion, but rather as one related to history and developing over time. Thus one must look beyond interpretation of the city in terms of town
planning concepts alone, and place the history of town planning against the background of the ‘genesis’ of Rotterdam’s urbanized area and its ‘settlement history’” (Vroom and Meeus, 1990). The way the city has evolved over time and how the people settled and cultivated the land is the ‘genesis’ of how the landscape has been formed by natural processes. The landscape being the visible scene and, at the same time, the manifestation of all those elements, factors, influences both physical and human, which give the Wilhelmina Pier its character at any given point of time. Therefore, the study of the historical and cultural landscape cannot be merely descriptive but must also deal in terms of origin and evolution. The historical influences are pertinent in today’s society and its importance of everyday life, the city’s identity, and its dynamics.

EARLY SETTLEMENT

Around the tenth century, the area which was sited behind the sea dunes started to collect silt deposits and dying organic matter which caused for the land-level to slowly rise above sea level. The area south of the river where the Wilhelmina Pier was to be located was actually a delta area comprised of dispersed islands which were continuously changing because of the dynamic interaction of the ocean and the land. Also, the fresh river water would be influential in the ever changing land formations, especially in the rainy winter and spring months. The two factors of sea and river, and their effect would be compounded by a third component, the irregular occurrences of disasters and floods which upset the balance and pattern which had gradually built up.
Fig. 1. A) Delta system with first signs of endiking around 1450, B) Consolidation period around 1850, and C) Development of harbour & industry in 1985 (Mod. from Vroom & Meeus, 1990).
Around 1250, the first settlements occurred north of the Nieuwe Maas river which is one leg or channel of the Rhine Delta system on an estuary called the Rotte River from which city of Rotterdam derives its name. The constant threat of these seasonal fluctuations, forced the settlers to fight against the natural power of the sea and river. There have always been dangers involved when man goes against the forces of nature, so every action results in a reaction which is compounded over time.

The most important element in defining the urban structure of Rotterdam over the centuries is its location within the unstable ecotone of the delta of the Rhine River which flows westward into the North Sea. Humans have influenced and manipulated the distribution or arrangement of water and land; The government and inhabitants of the Netherlands have had to fight unending battles with opposing forces of the ocean, river, and land. To stabilize this immature and constantly changing ecotone, an intricate system of dunes, dikes, and levees was developed.

Over the centuries, man and water have faced off in the Rhine delta against each other in both constructive and destructive ways. Nature has shaped the land in several ways. First, the post-glacial rise in sea-level, storm-surges, and river floods were the fluid forces in the creation of land. Second, and just as important, are the oceanic currents which help in the building of beach bars and salt marshes. Human activity in the delta area was often regarded as a solely constructive role (Nelson, 1970) It is true that sizable portions of land have been reclaimed from the sea throughout the Netherlands, but most diking in this area prior to the sixteenth century was to protect extant land
areas. And in many cases that land was later lost to the sea due to the drainage of the bogs leading to peat shrinkage, soil compaction, and the lowering of the land surface. The ensuing results were that the dikes and levees needed repeated heightening to be able to compete with the surging ocean and river flood waters. This process was sustainable because the more the dikes were raised, the higher the chances for a breach with colossal effects on the land and its people. Digging of the peat for fuel was another factor which added to the loss of land in the Rhine river delta.

People in other parts of the country had been reclaiming land for centuries primarily for agricultural purposes. The unpredictable natural forces that made up this small part of the dynamic river delta ecotone were a main reason why the land on the south bank was not used as a polder land reclamation area for the further development of crop and pasture land.

Figure 2. Aerial of the Wilhelmina Pier (gemeente Rotterdam, 1993).
SOUTH BANK DEVELOPMENT

The human modification of the south of Rotterdam is intimately connected with the rise of Rotterdam as a harbor city. In 1871, the sea became more accessible upon the completion of the Nieuwe Waterweg, a new channel linking the city of Rotterdam and the Maas River to the North Sea. Expansion of the city then became absolutely inevitable as the population continued to increase.

Driven from house and home by the farming crisis in the early 1900's, farmers left Brabant, Zeeland, and the South Holland islands to look for a new future in Rotterdam. The farmers and their children, who became contract laborers worked hard from dusk to dawn with little time for pleasure. The transformed dockworkers are the ones who functioned as agents of landscape change for the southern side of the Nieuwe Maas. The level of rural-urban migration resulted in Rotterdam out-growing itself. The increased expansion forced the city council to take the plunge across the river to help its expanding harbor industry to the area known as the "kop van Zuid" (head of the south). Up until that time, the only development of this area had been the Admiralty gallows and a plague house, which was actually just used as a prison for English soldiers and workhouse for Paupers.

Another agent for landscape development on the south bank occurred when there was a need for a railway linking Amsterdam to Brussels. This major infrastructural project was supported by the city council who had also become very interested in the south bank for city expansion. Amsterdam is another major Dutch industrial city approximately
50 kilometers to the north which needed an adequate freight and passenger connection to southern countries for its further development. The bridge crossing to support the ever growing harbor activity officially occurred in 1869 with annexation of an area between Feijenoord and Charlois.

A man by the name of Lodewijk Pincoffs was largely responsible for the initial development on the south bank. Backed by substantial German capital to protect their interest in maritime access, and their ever growing industrialization along the middle Rhine River, Pincoffs created the Rotterdamse Handels Vereniging (Rotterdam Trade Association) or RHU, and employed the company to lead the way in the initial construction of the south side. RHU decided to submit an offer for a joint development project to the city council who eagerly accepted. The city council needed the south bank developed to ease the burden on its overcrowded inner-city and harbor areas. The RHU was responsible for the digging of the harbors while the city council was responsible for the building of road and rail bridges which started with the building of the Willemsbridge. The construction of the railroad was also very beneficial to the ever growing "Kop van Zuid" area. Entirely new types of transshipment basins arose for bulk goods on the south bank of the river. Here the Spoorweg (railroad), Binnen (inner), and Entrepothavens were built essentially for the transfer of goods from ship to warehouse or directly onto the railcars for further distribution to inland areas.

The actual transformation of space on the south bank which led to the construction of the Wilhelmina Pier commenced in the beginning of
the twentieth century. Changing economic conditions and the parallel transformation of transport necessitated infrastructural changes. A primary factor explaining Rotterdam’s increased function as a transport center was its geographical situation at the Rhine River delta. The German Republic increasingly relied upon the Rhine River and its connection to the North Sea for trade with countries all over the world, and used Rotterdam as a transshipment port.

Secondly, the Netherlands had acquired many colonial possessions during a three hundred year period starting in the 1600s and were processing and adding value to raw materials and products from its far flung possessions to enhance its economic position within the European World. This growing economic reach brought much activity to Rotterdam harbors and its shipping industry.

This was an era in which the tradition of the sailor and sea merchant was born because they became the link to global expansion and a new economic banking system. Before this time, the Royalty and the church monopolized economic power because they owned all the land, but these sea merchants didn’t need any because they had their vessels. The Dutch had a strong shipping ingenuity. For example, they had defeated several Spanish Armada fleets by building smaller and faster ships. Therefore, the amount of wealth which was created by such a small country was phenomenal. And Rotterdam with its prime location was, and still is, in high demand for large scale-trading companies to have a base here to distribute their goods. The primary interest of the colonial East Indies trade was controlled by a company called the Pakhuismeesteren who was located on the Wilhelmina Pier. A substan
tial amount of trade originated from the East Indies (Indonesia) which included tea, coffee, tobacco, rubber, and various spices.

The construction of the docks and the adjoining infrastructure of the principal roads, the railways, and the water defenses determine the urban structure of the housing areas. The development of the urban areas has been complementary to the construction of the harbor. Reason being, that the economic boom which occurred was of first and foremost importance. And its build-up of warehouses, storage yards, and work areas completely isolated the living areas to the peripheral boundaries and developed with complete absence of any attempts at a strategic plan for a healthy and cohesive community living environment.

The Wilhelmina Pier was formed by the digging of the Rijnhaven in 1878. The Pier wall was called a kaaimuur which was a layering of concrete blocks to a depth of six and a half meters. At the usual water level they were constructed with a two meter straight wall which protected the pier from the normal fluctuations of high and low tides. On top of that, there was an additional three and a half meters at a slight angle which was a safety measure against unusually heavy flooding.

The Wilhelmina Pier was originally called the Prinsenkade, but was changed on May 30th, 1891. Queen Regentes Emma came for a visit with her daughter, eleven year old Princess Wilhelmina, and during a dedication ceremony the name was changed to Wilhelmina Pier. This ceremony was held to commemorate the first official voyage by the Holland Amerika Lijn (H.A.L.) and its luxury Steamship "The Rotterdam" and "The Maas." Founded by Antoine Plate and Otto Reuchlin, H.A.L. was
Figure 3: The headquarters building for the Holland America Line located at the base of the Wilhelmina Pier (Gemeente Rotterdam, 1993).

First occupant of the Wilhelmina Pier and slowly but surely built its shipping empire to eight seafaring steamboats ranging from 10,000 to 24,000 tons. The largest one, the Rotterdam, was over 660 feet long and 75 feet wide and could hold a storage load of 24,170 tons and 650 people. The company had other administration buildings, warehouses, storage buildings, workshops, and a hotel for the wealthier immigrants located on the pier. The trans-Atlantic voyage included Boulogne-Surmer, France to take on French, Swiss, and Italian immigrants, and past Southampton, England for the British immigrants to its final destination of New York City. The total sailing time of an average voyage would be
approximately six days depending on weather conditions. During the peak years of the Holland Amerika Line there would be weekly departures from Rotterdam. The return trips were usually used for transportation of cargo goods for western European countries.

Along the north side of the Wilhelmina Pier, there were the warehouses of the firm Van Ommeren and Van Es & Co., on which a regular goods and passenger service to Liverpool and Manchester was conducted.

The building of a company called the “pakhuismeesteren” was constructed to handle the import of goods from the East Indies and covered an area of approximately fifteen hundred square meters. The building is divided into four areas each designated by the primary four islands of the East Indies; Java, Sumatra, Borneo, and Celebes. Each handled different goods such as teas, tobaccos, seeds, and groundnuts.

The site also included businesses which focused on shipbuilding and repairing, engineering, and associated metal trades. These businesses helped shaped the significance of the pier and is a landscape manifestation of the range of global economic impact it had on the city of Rotterdam and the Netherlands.

**WORLD WAR II: COMPLETE DESTRUCTION OF THE CITY CORE.**

Rotterdam’s urban infrastructure was radically transformed as a result of World War II. As an early target of German bombing raids in 1940, the core of the urban area, called the city triangle, including much of the harbor placement were destroyed. Ensuing fires raged for days creating a desolate wasteland, and completely changing the character of the city. World War II presented extreme challenges for urban plan
ners to reformulate urban space.

Immediately after the war, a master plan for the reconstruction of the city commenced. This master plan was called the "Basis Plan" and dealt with the prewar center as its point of reference for planning a new city. The "Basis Plan" attempted to unify the many different and unique elements of the city and give it one unifying theme. Its aim was to transform Rotterdam into a "city upon a river." This plan was the best attempt at making Rotterdam an integrated whole, but there were several factors which hindered its successful implementation. The first factor that prevented the reconstruction of a functionally integrated

Figure 4. A layout for the redevelopment for Rotterdam after the world war II destruction. (Vroom & Meeus, 1990)

city was that the harbors and piers affected by the bombings had already started their rebuilding process. This uncoordinated development
spatially divorced the city from its waterfront. The result was that large and newly constructed warehouses were constructed all along the riverside blocking any connection to the rest of the city.

Another important factor which proved to be detrimental to the character of the city and the Wilhelmina Pier was that the Modern Architectural Movement emerged at this time and it sought to eliminate all historic reference from the design process. This architectural movement led to a wide array of building styles dotting the city and city block layouts that did not comply with the “Basis Plan.” The goal of functionally unifying the various zones of the city never materialized.

**POST WORLD WAR II DEVELOPMENT BOOM.**

Phenomenal growth since 1945 has made Rotterdam-Europoort the world’s greatest port. The port authorities realized the potential of its location to the rest of Europe's highly industrialized and densely populated urban centers. There were 150 million people living within a 300 mile radius of this Rhine Delta port including the cities of Amsterdam, The Hague, London, Brussels, Paris, and the German Ruhr cities (Gemeente Rotterdam, 1985). Another factor which helped Rotterdam’s tremendous growth was the willingness of port authorities to keep pace with developments in waterborne transport that otherwise could have overwhelmed port facilities. There was considerable postwar expansion in Dutch shipbuilding activity; several 200,000 ton tankers and 100,000 ton bulk-carriers had been constructed. In 1938, forty million tons of goods crossed the docks of Rotterdam, and by 1951 that number nearly doubled to 75 million. There are three main reasons for the postwar
growth in trade.

First, the continuous movement of port functions downstream with the increasing size of vessels. The development of the petroleum harbors and the construction of the Botlek harbor district were major contributors to port growth after World War II. These facilities were developed because of the increased demand for oil storage and handling.

Second, the increase in the handling of raw and bulk goods in the restored central harbor areas led to the dramatic increase in trade. And the final factor was the city’s and port work ethic. There was an old adage that claims “that the shirts sold in Rotterdam come with their sleeves already rolled up” (Ronald Van De Kroll, 1993).

The Wilhelmina Pier was directly effected by redevelopment because about half of its building and warehouse space was destroyed and this halted some major global operations of shipping companies. During wartime the national economy was very much at a standstill, but immediately following the war extensive measures were taken to make the pier a driving force in the international shipping industry. The bombings of 1940 destroyed approximately 438 meters of the 700 meter long arrival halls and warehouses of the Holland Amerika Lijn. These arrival halls were completely rebuilt by 1949 and continued to function as the immigration headquarters for Europe. Due to a property transfer, the H.A.L. received another three warehouses for the reparation of its fleet which included by this date, nine luxury passenger steamships with a total of 110,000 tons of freight capacity, and several smaller inland going ships.
EUROPOORT -- THE WORLD'S LARGEST HARBOR.

There are three phases of port abandonment which can be recognized of which two are of central significance. The first phase was the reclaiming of some disused and derelict early seventeenth-century docks called the Glashaven, the Bierhaven, and the Westerhaven. The latter was just fifty years old and was located just downstream from the stadsdriehoek (the central town district). At the time this stage was not looked upon as negative because the area which developed where the Westerhaven was transformed into a high-class residential area of town. Then in this century, this district turned into an office quarter, much of it with port-related functions.

Secondly, and more important, is the previously mentioned bombing by the Germans in 1940. The attack devastated the urban triangle and, with the clearance of the site, some older harbors became convenient dumping sites for the rubble. While port related recolonization of the Waterstad occurred during this postwar period, the historic docklands never regained their former importance. It was just easier to start from scratch in the vast expanses of the Maasvlakte.

And finally, the port's retreat during the postwar era has naturally reflected the imperatives of spatial scale and technological change common to other primate port cities around the world. "To a great extent the world's largest harbor has achieved its premier position through the relentless pursuit of scale economics "(Pinder, 1981), and this type of business is not conducive to the older harbors for continuing use. Ever since the 1950's a process of concentration and "scaling-up" has arisen in the Rotterdam Harbor in response to the greater areal
concentration of transshipment industries. As a result, a substantial number of larger oil refinery and petroleum industries gradually moved out of this area to the more modern part of the harbor situated west of the city down the Rhine river delta called the Maas Blakte.

The Maas Blakte is an area which is situated between the mouth of the river to the North Sea, and the city center located some twenty miles inland (figure 1c, page 4). This, similarly to the city itself, is land reclaimed from the delta marshes.

The first signs of Western movement started to occur in the late 1950's with the digging of harbors conducive to handling and storing the petroleum activities. These and numerous other harbors were completed in 1970 and this area became known as the Europort. In that same year, the Rotterdam Europort handled 228 million tons of seaborne freight (84 percent of the Dutch total), and approximately 65,000 ships used the port each year. Rotterdam is the leading world port in terms of tonnage of freight handled. Its volume and transshipment function is greater than London, Antwerp, and Hamburg combined; Rotterdam's Europort handled appreciably more freight than the port of New York. Much of this freight consists of bulk imports of crude oil, mineral ores, cereals, timber, and such food materials as groundnuts, soya beans, sugar, and bananas.

Another feature has been the enormous growth of container traffic; the port handled over 200,000 containers in 1970; a quarter of this box traffic was with North America. This industry has helped the Dutch economy greatly. The storage, handling, and distribution of containers is just one aspect of this multi-billion dollar economic industry.
The sheer size of these vessels is tremendous, and there are several shipyards in the Europoort building these giants of the sea. These companies had to completely reconfigure dock layout to construct these ships, but since there is a great demand these changes have been well worth the changeover. The shipbuilding industry has been one of Holland's leading financial contributors to the economy.

RECENT EVENTS: A MULTI USE WATERFRONT.

Because of these dynamic economic developments many companies were relocating from the smaller inner harbors to the Maasvlakte. Since the mid-1970's an accelerating program has been pursued in and around the late nineteenth century harbor areas (Pinder & Rosing, 1988), to revitalize the abandoned port areas which disconnected the city from the waterfront. All port development responds to economic cycles. Just as in the 1970's, there was this push to reestablish the cities' downtown centers, there is now a major thrust underway to reclaim those waterfronts from which cities and countries have grown. "After turning our backs on these valuable assets for almost three to four decades and allowing industry and transportation to segregate us from life at the water's edge, we are now busy trying to restore not only what was, but to simultaneously create even broader uses and activities that will contribute to the overall quality and image of community life." (Breen and Rigby 1994).

The area on the south bank of Rotterdam, the before mentioned "Kop van Zuid," is undergoing some major changes. The Kop van Zuid covers an area of 300 acres which used to be predominantly industrial
in function. The plans for the site now are focusing on an urban city center incorporating office, residential, retail, and recreational uses.

The need for office space is growing rapidly. The westward expansion has brought many new companies to the region, and many large international companies, such as Sony, I.B.M., and General Electric. The economic activity that has transformed Rotterdam into the world’s largest harbor has also brought these companies to the city because of its strategic location and close proximity to Germany, France, and the United Kingdom.

These ever growing economic forces are bringing in more people to the city and with it comes the need for residential units. The aim is to improve the housing conditions while avoiding the leveling of the communities which total destruction would cause. The setting that the city of Rotterdam is trying to create is a blending of commercial activities with the residences as well as social, cultural, functional, and spatial uses.

The planning strategy planned for the Wilhelmina Pier is also a diverse one. Planning for a final result which which glorifies the city and fits in with recent urban waterfront development progresses that are occurring throughout the world. The program is one which focuses on multi-functional space that includes a downtown urban city center, and a development with features and amenities to attract tourists to the Wilhelmina Pier. The plans are for a very dense and function mixing development similar to some of the areas North of the river. Developers want to have cafe’s, restaurants, hotels, cinemas, retail stores, a concert hall, a casino, etc.
The international character is another aspect which will be emulated through various themes. The handling of goods which occurred a century ago will be brought back, but in a different form. The old Pakhuismeesteren building (warehousemasters) which handled the goods from the East Indies will be remodeled and turned into a festival food market displaying and selling the foods not only of colonial Indonesia, but of other areas of the world as well. The theme of nautical history will be a common feature throughout the site to show the rich history of Rotterdam and the Netherlands.

The building heights are not lower than eight stories anywhere on the site. And the average building heights for all of the towering building complexes is going to be 300 feet. Around the Wilhelmina Pier there are publicly accessible harbor walls, so the north side shall be designed as an esplanade along which the most important recreational and cultural activities are to take place. At the point of the pier, in front of the newly remodeled Hotel New York (formerly the headquarter building for the Holland America Line), there is an area designated for a lookout point from which the whole Nieuwe Maas can be viewed. The residential living environments are also primarily situated alongside the visual aesthetic edges of the pier.

The underlying structure for the site is that two roads traverse the site parallel to each other which gives access to all the major areas on the site, and the streetcar system will also traverse the site along these streets. The Kop van Zuid is being connected by the Erasmus Bridge which should be completed at the end of 1995. This bridge connects right at the base of the Wilhelmina pier, and provides for a major
North-South access between the city center and the Kop van Zuid.

"The aim is the rehabilitation of existing property rather than its redevelopment" (Pinder and Rosing, p. 120). There will still be a substantial amount of demolition occurring because of the state of the existing structures; trying to re-establish the character of the pier is the main goal. "A notable aspect of successful waterfronts is the financial success that is created by either touristic, residential, or work amenities." (Torre 1989).

CONCLUSION

The dynamics and history of the development of the Wilhelmina Pier beginning in the early middle ages is a very rich one. The interaction of land and the water's edge has always been a powerful one. This and the regional setting of Rotterdam provides this study with a the dynamic and historical site, the Wilhelmina Pier. From early actions of reclamation to industrial harbor activities to recent urban planning philosophies, the site has been a vivacious and eventful response to cycles of economic change.

The Wilhelmina Pier has made global contributions to the city of Rotterdam and the Netherlands. The Holland America Line and its immigration service provided a connection to North America and a new life for thousands of people. The Pakhuismeesteren company had its ties with the East Indies Islands and the handling of goods to be distributed throughout Western European countries.

World War II was an inoperative period for the Wilhelmina Pier. Complete destruction of the city center and several buildings on the
site coupled with German occupancy stagnated the further economic possibilities for the site.

The period following World War II was an explosive one for the Pier as well as the entire country. The rebuilding of the devastated war countries was a major focus and brought an immense amount of development and growth to the region.

Stemming from this growth period, a westward movement of harbor activities added to the economic growth of the city and country. Oil refineries and large scale containerization needed large expanses of space to handle their transport operations. This and the technological advances that were made put Holland at the forefront of nautical and harbor industrial activities.

This continuous westward and downriver movement, and the large scale operations caused the abandonment of the smaller inner harbors. The Wilhelmina Pier has been in a declining state ever since. Its buildings are in a dilapidated state, and the companies are leaving the site for newer and larger areas to accommodate their operations.

Present trends for the Wilhelmina Pier are for an interactive urban waterfront development. Combining such uses as office, recreational, cultural, historical, and residential living to enjoy the amenities the water's edge has to offer. "Waterfront development is not just about the actual water's edge, but it is also about the redevelopment of cities and their traditional downtowns. And in part, it is also about a still larger context, where we see taking shape a new appreciation for what we'll call "urban values," in a countertrend to the general denigration of such values in our culture, and development trends focused
outside cities” (Breen and Rigby, 1994).